

REPORT
OF THE
INDUSTRIAL COMMISSION

ON
AGRICULTURE
AND
AGRICULTURAL LABOR,

INCLUDING TESTIMONY, WITH REVIEW AND TOPICAL DIGEST THEREOF.

VOLUME X
OF THE COMMISSION'S REPORTS.

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[Extract from act of Congress of June 18, 1898, defining the duties of the Industrial Commission and showing the scope of its inquiries.]

SEC. 2. That it shall be the duty of this commission to investigate questions pertaining to immigration, to labor, to agriculture, to manufacturing, and to business, and to report to Congress and to suggest such legislation as it may deem best upon these subjects.

SEC. 3. That it shall furnish such information and suggest such laws as may be made a basis for uniform legislation by the various States of the Union, in order to harmonize conflicting interests and to be equitable to the laborer, the employer, the producer, and the consumer.

LETTER OF TRANSMITTAL

OFFICE OF THE INDUSTRIAL COMMISSION,
Washington, D. C., December 5, 1901.

To the Fifty-seventh Congress:

I have the honor to transmit herewith, on behalf of the Industrial Commission, a report to Congress on the subject of agriculture, prepared in conformity with an act of Congress of June 18, 1898. This report consists of the testimony on this subject taken before the Commission, with a review and digest thereof. The Commission has also had prepared several special reports on topics connected with agriculture, which are printed in Volume XI. The conclusions and recommendations of the Commission on this subject will be presented in its final report.

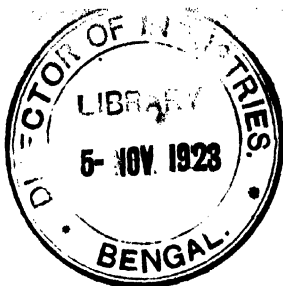
Respectfully submitted.

ALBERT CLARKE, *Chairman.*

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REVIEW AND DIGEST OF EVIDENCE.



REVIEW OF THE EVIDENCE.

INTRODUCTION.

The importance of agriculture among the industries of the country is attributed in part to its fundamental character,¹ but is due also to the large number of persons engaged in agricultural employments. The agricultural population of the country doubled during the 40 years between 1850 and 1890, and at the latter date constituted more than one-third of the entire population, about 8,500,000 persons being engaged in gainful agricultural occupations and representing a total agricultural population of about 27,000,000. A little more than 60 per cent of those engaged in agriculture owned their farms, the remainder being either tenants or hired laborers.²

The wealth of the farmers, which is estimated to have been nearly one-half of the entire wealth of the country in 1860, has increased less rapidly than other forms of wealth, and in 1890 amounted to about one-fourth of the wealth of the country. In some of the Eastern States there has been an actual diminution in the number of farms.³ The value of farms was given by the Eleventh Census as a little more than \$13,000,000,000, or, including live stock and farming implements, about \$16,000,000,000.⁴

Productivity of agriculture.—Professor Bailey calls attention to a decided increase in the average productivity of farms during the past century. The average yield of wheat near Philadelphia in 1791, according to the testimony of a contemporary observer, was rather less than 8 bushels to the acre, while dairy cows averaged only 104 pounds of butter a year. A comparison of these figures with present conditions in the same locality shows an increase of more than 100 per cent in the yield of both products, and Professor Bailey's final conclusion is that the average productivity of agriculture has increased in even a greater ratio than this. He attributes the increase to the use of better tools and fertilizers, rotation of crops, and better tillage. The activity of the farmers has been stimulated both by increased competition and by more varied demand for agricultural products. On the other hand, insect pests and diseases of plants and animals have been introduced from abroad; but they are under better control than formerly.⁵ Other witnesses think it doubtful whether the product per acre has increased on the whole, in spite of the tendency toward intensive agriculture in certain lines.⁶ According to the census the aggregate value of farm products remained nearly stationary during the two decades, 1869-1889, while the value of manufactures nearly doubled during the latter of these decades; but the census is thought to show too small a product in the case of agriculture and to magnify the increase of manufactured products.⁷ Comparing 1880 with 1894, there appears to have been an increase in the aggregate production, and also in the yield per acre, but a loss in the money value of the product.⁸

¹ Stockwell, 882.

² Holmes, 152, 157; Powers, 170.

³ Wedderburn, 628; Stockwell, 887, 888.

⁴ Powers, 184.

⁵ Pages 1004-1006, 1013.

⁶ Holmes, 156; Nail, 109.

⁷ Hammond, 835, 836; Holmes, 154, 155.

⁸ Wedderburn, 628.

GENERAL AGRICULTURAL CONDITIONS.

The testimony of different witnesses as to the general condition of agriculture shows marked differences of opinion, some complaining of depression and others testifying to increased prosperity. This conflict of testimony may perhaps be reconciled to some extent by remembering that the different witnesses speak with particular reference to their own sections of the country, and also that the standard of comparison varies. It is mainly from the Eastern and Southern States that complaints of depression have been heard, and both in the East and in the South there is evidence of an improvement of conditions during the past few years.¹ Some witnesses compare recent conditions with those of the period of high prices following the civil war,² and the discontent of farmers in certain sections is attributed to the tendency to use that era of agricultural prosperity as a standard of comparison, whereas if the comparison were made with the period preceding the war an increase of prosperity would be shown.³ A number of witnesses call attention to an increase in the usual standard of living of many farmers.⁴ Again, the testimony of Southern agriculturists varies greatly with the time at which it was given. A South Carolina cotton planter testified that he made money steadily until 1890, but after that date, in spite of fertile soils and propitious seasons, there was hardship and distress, prices had fallen, crops would not pay the expense of production, and landowners were losing their property. Cotton planters and other Southern witnesses who testified after the close of 1890, however, reflected the influence of better prices for cotton.⁵

While these conflicts of testimony may be explained to some extent by differences of time and locality, they appear to be due also in part to differences in the point of view. Thus, a series of questions as to the existence and causes of agricultural decline sent out by Professor Bailey to representative New York farmers brought out decided differences of opinion. Out of 20 farmers who replied to the questions, six affirmed the existence of a general agricultural depression. The decline in the selling value of farm land is frequently taken as an evidence of agricultural depression in the East, but it is pointed out that from the standpoint of intending purchasers of farms a low purchase price makes possible a good rate of profit and comparative ease in paying for the farms bought after the decline in price.⁶

Causes of agricultural depression.—The cause most often assigned for the depression of agriculture in the Eastern States is the increased production due to the opening of Western lands in advance of the natural demand, especially through the agency of liberal land laws and grants of land in aid of railroad construction. The competition of the West has been rendered especially severe by the policy of the railroads in making freight rates relatively low for long distances. The old staple products having thus become unprofitable in the East, it has been necessary for farmers to change their methods and vary the character of their crops, taking up especially the culture of products which are not easily transported long distances. Thus truck farming has largely superseded cereal growing along the Atlantic coast, but farmers in the North Atlantic States now complain of the severe competition of States farther south in this industry, and much the same may be said of fruit growing. Even so perishable a commodity as milk is trans-

¹ Crowell, 337; Bachelder, 40, 41; Stockwell, 884; Stevens, 905, 906-915; Poole, 924, 925; Stubbs, 782; Balch, 496, 497; Hill, 503; Norfolk, 488; Moseley, 515; Kyle, 470.

² Ketchum, 132; Hill, 508.

³ Miller, 614; Ketchum, 132.

⁴ Coles, 125-129; Moran, 711; Graham, 433, 434; Powers, 178; Holmes, 157.

⁵ Stubbs, 782; Stevens, 916, 917; Balch, 496, 497; Hill, 503; Norfolk, 488; Moseley, 515; Kyle, 470.

⁶ Bailey, 1006-1010; Ketchum, 134-136.

ported much longer distances than formerly since the introduction of refrigerator cars.¹

Another cause which several witnesses assign for the unsatisfactory condition of agriculture in some parts of the country is the conservatism of the farmers, their lack of quick adjustment to changed conditions, and lack of effective business planning and management. The farmers as a class have not kept up with the times, but have raised the same crops year after year without regard to changes in supply and demand.² This undue conservatism and lack of managing ability among farmers is especially emphasized with reference to the Southern States, and is given as an explanation of the too exclusive attention to cotton production prevailing there.

Another cause assigned for agricultural depression in the South is the scarcity of money, the difficulty of borrowing on real estate security, and the consequent high rates of interest.³ It seems to be possible, however, to borrow money in the South at somewhat lower rates of interest than formerly.⁴ The decline in the price of cotton is of course an important element in the depression of agriculture in the South.⁵ The inefficiency of negro labor is assigned as another cause.⁶ On the other hand, it is affirmed that there is too much good and cheap labor in the South. An abundance of cheap labor is said to be unfavorable to the success of agriculture, because it results in planting too large an acreage and in neglect of personal attention by the planter.⁷

Against the charge that farmers are unduly conservative is put the counter-charge that they turn from one crop to another without sufficient regard to the suitability of the climate and soil, or to the conditions of the market.⁸

Professor Bailey considers the lack of good farming the fundamental cause of most of the agricultural unrest. By this he appears to mean not only exhaustion of the soil by injudicious methods of culture and failure to adopt sufficiently intensive methods of cultivation, but also the general lack of executive ability which makes it difficult for the farmer to direct the labor of others with profitable results.⁹

Diminution of profits.—The preponderance of testimony is to the effect that capital employed in agriculture yields a lower rate of profit than it did 30 or 40 years ago,¹⁰ but it is pointed out that profits in all other industries have been falling, together with the rate of interest, and the number of men who are seeking and acquiring farms is cited as evidence that relatively there is more profit in farming than ever before. To those who understand farming the farm is said to be the best place to make money.¹¹ It is also pointed out that in calculating the rate of profit much depends upon the basis of calculation. Much land that was bought at very low prices 40 years ago is now worth many times the original price. If the rate of profit is calculated upon the present selling value of the land it will, of course, be much lower than if calculated upon the price which was paid for the land while it was cheap. The actual profit of the farmer, therefore, depends upon whether the land was bought at a low or a high price.¹² Again, where land was bought at inflated prices and has since fallen in value, it may fail to pay a fair profit upon the actual purchase price and yet afford a reasonable prospect of profit to a new purchaser who is able to secure it at a lower price. The agricultural depression which results in lower selling values of land thus becomes an opportunity to the

¹ Brigham, 10, 11; Snow, 240; Whitney, 865, 866; Hamilton, 866, 867; Dye, 595, 596.

² Bailey, 1010; Ager, 113-115; Whitney, 867.

³ True, 145, 146; Crowell, 335.

⁴ Brown, 60-62; Lovejoy, 75-77.

⁵ Hale, 381, 382.

⁶ Lovejoy, 75-77.

⁷ Brown, 60-62.

⁸ Hale, 378.

⁹ Hanley, 286.

¹⁰ Page 1013.

¹¹ Norris, 325; Coles, 126; Ager, 110; Wilson, 247.

¹² Powers, 184.

¹³ Davenport, 205.

prospective buyer of farms, and makes it easier for farm laborers and tenants to rise to the position of independent proprietors.¹

Prices.—The general tendency of prices of farm products during the latter part of the nineteenth century was downward. Meat, poultry, and dairy products seem to form an exception to the rule,² but a Southern witness speaks of a marked decline even in the price of meat.³ While the apparent decline was due partly to the inflation of the currency during and after the civil war,⁴ it is stated (with special reference to South Carolina) that it now takes twice as much of the products of labor to pay taxes, debts, and fixed charges as it did in 1873.⁵ It is claimed by some witnesses that the decline in the prices of farm products is fully offset by the cheapening of manufactured goods and supplies consumed by the farmer, and by improved and cheapened methods of production.⁶ Since about the middle of the last decade, when prices reached a very low point, there has been a reaction. Attention is called especially to a steadier demand and an upward tendency in the prices of meat.⁶

The cause of low prices for agricultural products is identified with the principal cause assigned for agricultural depression in general: that is to say, the rapid development of the West, which led to an overproduction of staple crops.⁷ It is pointed out that there has been no great decline in prices except in the case of those crops which have been overproduced in comparison with the increase of population. Inasmuch as the demand for food products remains nearly constant, assuming the population to remain the same, even a slight increase in the production may result in a material lowering of prices. The law governing prices is said to be that the diminution of price is in proportion to the square of the increase in the product per capita.⁸

The recent reaction from the tendency toward lower prices has extended to many manufactured articles, as well as to agricultural products. Specific complaints are made of the increase of prices of iron and steel articles, especially wire fencing and nails, also of lumber and other building materials. The increase in prices is attributed partly to natural causes and partly to the influence of large industrial combinations.⁹ In the case of agricultural machinery, the testimony shows a decided lowering of prices since 1870. A self-binder, for example, which formerly cost from \$300 to \$400, is now obtainable for about \$125. The high price of these machines when first introduced is explained by the necessity of sending a mechanic with each machine to show the purchaser how to use it, an expense no longer necessary after farmers have become generally familiar with the use of such machinery.¹⁰ Plows also are now obtainable for less than half as much as in 1870, besides being of better quality.¹¹ On the other hand, within a few years the price of plows and other steel implements has risen somewhat, and it is said that some implements have been sold in Europe and in Canada at considerably lower prices than in this country.¹²

Prices of land.—The prices of agricultural land in the Eastern States have generally fallen, in some cases to about 50 per cent of the figures asked during the time of high prices. There is said to have been also a general decline in the price of land along the Mississippi River.¹³ Figures given for Pennsylvania show an increase in the average price of farm lands between 1859 and 1879 (the high prices preceding the latter year being explained by the inflated currency), but a drop by 1889 to a lower price than that of 30 years previous.¹⁴ While one observer says

¹ Bailey, 1006-1010.

² Holmes, 155, 156; Wilson, 248, 249.

³ Youmans, 118.

⁴ Hamilton, 306.

⁵ Hill, 388, 389; Davenport, 267.

⁶ Stockwell, 891; Greeley, 496; Norris, 328.

⁷ Brigham, 17; Spear, 407; Wieting, 993, 994; Ketchum, 134, 135.

⁸ Powers, 186.

⁹ Miller, 615; Wedderburn, 624; Burke, 210.

¹⁰ Powers, 183-187; Moran, 710.

¹¹ Powers, 183-187.

¹² Wedderburn, 625.

¹³ Hale, 339; Whitney, 867; Spear, 404, 407; Powers, 178; Ketchum, 124, 125.

¹⁴ Hamilton, 306.

there has been a slight increase in the value of farm lands in New York State within the past few years, this is denied by another citizen and official of that State.¹

Since any cause which tends to diminish the profits of agriculture will have an effect upon the price of farms,² the causes assigned for low prices of farm products, and for agricultural depression in general, may be taken as causes of the decline in the price of farm land: but special stress is laid upon the effect of the ease with which farms have been obtained on the public domain, and of the acceleration of Western development by land grants to railroads and by discriminating freight rates.³ It is also pointed out that owing to the growth of manufacturing and commercial interests in the United States, capital finds a more remunerative field of investment in those directions than in agriculture.⁴ One of the chief causes for the decline in value of land in the Eastern States appears to be a loss of fertility in the land itself, due, perhaps, to careless farming,⁵ though on the other hand there is evidence showing that the rapid exhaustion of soils in the Eastern and Southern States is in reality not the exhaustion of the soil in a chemical sense (for the elements of plant food remain present in abundance), but is to be explained rather by the failure of the farmers to make the most of the natural resources of the land; and this, in turn, is explained partly by social rather than physical causes.⁶

In the Central and Western States there appears to be no such marked decline in farm values as in the East, and so far as there has been an apparent decline it is explained in great part by the inflated currency in which values were reckoned at the close of the civil war,⁷ and partly, as in the East, by the exhaustion of the soil and the neglect of buildings and other improvements.⁸ In the Northwest lands seem to have been increasing in value, and in some localities to a very marked degree.⁹

It is somewhat difficult to compare the prices of land in the South with the prices prevailing before the war, because lands were not then generally for sale.¹⁰ There seems to be no doubt, however, that there has been a general decline in the money price of Southern lands; but this is explained largely or wholly by the increased purchasing power of money, and the Kentucky Commissioner of Agriculture is of the opinion that land in that State would bring less in gold 25 years ago than at present.¹¹ It is questioned whether the South has suffered more than other sections east of the Mississippi, so far as the price of land is concerned. While cotton land suffered materially for some time after the war, during the past few years there appears to have been a reaction in the direction of better prices.¹² So far as there has been a decline in the price of land in the South, it is attributed to the decline in the prices of agricultural products and to the insufficient population. It is said that white labor is kept away from the South to some extent by the presence of negroes.¹³

About 1890 California lands showed the effect of the high prices of fruit in an increase of values which could scarcely be expected to be permanent. Land can now be obtained at about one-third, or even less, of the prices prevailing at that time. Land suitable for cereals may be obtained for very much less than the price of fruit lands, and grazing lands can of course be had at still lower figures. It is said that there was never more favorable time than the present to secure homes in California at reasonable prices.¹⁴

¹ Flanders, 999; Deyo, 1000.

² Dye, 86, 92.

³ Brigham, Dye, 86, 92; Jones, 37; Hamilton, 366.

⁴ Crowell, 340.

⁵ Jones, 37; Greeley, 944.

⁶ Hale, 392; Whitney, 871, 872.

⁷ Miller, 614; Wilson, 247, 249.

⁸ Brigham, 17.

⁹ M. F. Greeley, 937; Powers, 187; Budge, 846; Prom, 789; Jumper, 740.

¹⁰ White, 423.

¹¹ Nall, 611.

¹² Hale, 392; Stevens, 915; Poole, 922; Balch, 496.

¹³ Wedderburn, 622.

¹⁴ Turnbull, 968; Nafziger, 961, 963.

Agricultural implements.—The introduction of improved agricultural implements and machinery during the latter half of the nineteenth century was a development of such importance as to amount to an industrial revolution in agriculture. The most conspicuous effect of the use of improved machinery is the reduction in the cost of producing farm products.¹ Figures are given by one or two witnesses showing in a striking manner a remarkable reduction in the time required to perform certain agricultural operations.² One obvious result of the use of improved implements is the lessening of the number of laborers required on a farm;³ but machinery seems to have brought with it a more intensive system of agriculture and an extension of agricultural operations, so that in some localities, at any rate, the number of laborers employed has not been diminished.⁴ It is also stated that improvements in agricultural machinery have brought about diversification of crops,⁵ and that by opening up new avenues of industry it has given employment to those formerly engaged in hand labor, and so, on the whole, improved the condition of labor.⁶ One witness estimates that the cost of production of a crop is approximately the same as about 40 years ago, notwithstanding the use of improved machinery, because of the necessity of using commercial fertilizers and the increased cost of farm labor.⁷ Moreover, it is charged against agricultural machinery that it has made the work of agricultural laborers less regular than formerly, the work being hurried through as rapidly as possible.⁸

Machinery is also charged with having helped to reduce the price of grain by making it possible to open up large areas of prairie land, and a good many farmers are said to have been ruined by buying machinery which they did not need and could not pay for.⁹

There is no doubt, however, that improvements in machinery have lessened the drudgery of farm labor and made the work less severe and fatiguing.¹⁰

One important effect of improved machinery is doubtless the educational effect upon those who use it. While there is perhaps less manual skill of certain kinds among farm laborers than formerly, as there is no longer any demand for expert cradlers, expert binders, etc.,¹¹ on the whole the effect of the use of machinery has been to raise the intelligence and skill required on the part of those who use it, whether hired laborers or farm owners, and this is said to have resulted in improving the intellectual status of the American farmer. The less general use of improved machinery in the South than in other sections is cited in partial explanation of the slow rate of agricultural progress in that part of the country,¹² and is itself explained by the lack of mechanical skill on the part of the negroes, and by the cheapness of labor, which makes it more economical to employ hand labor in many operations which could be more cheaply done by machinery where labor is more expensive.¹³ Various kinds of agricultural machinery are being gradually introduced in the South, however, notably in the cultivation of sugar cane and rice in Louisiana.¹⁴ Where improved machinery is used in the South it is said to increase the wages of those who are able to handle it.¹⁵

Mr. Hammond, of South Carolina, complains of a stagnation in the mechanics of agriculture. The period of great development in agriculture, he says, was the golden decade of 1850-1860, during which the increase in the value of farm implements and machinery was 62 per cent. a rate of increase which has not been maintained since that time. Mr. Hammond attributes the decline in the rate of increase

¹ Stockwell, 896; George, 220, 223; Hill, 346; Miller, 617; Agur, 115; Clohan, 600.

² Holmes, 157; Davenport, 267.

³ Agur, 104; Clohan, 591; Hammond, 816; Nunnally, 454; M. F. Greeley, 938.

⁴ Ketchum, 132, 136; Davenport, 256, 267.

⁵ Coles, 125.

⁶ Norris, 320.

⁷ Ketchum, 132, 136.

⁸ Clohan, 591.

⁹ Greeley, 938.

¹⁰ Clohan, 591; Spear, 402; Budgo, 852; Brigham, 5; Jones, 33.

¹¹ Davenport, 256.

¹² Stockwell, 884; Powers, 171, 183.

¹³ Lovejoy, 79, 80.

¹⁴ Stevens, 906, 915; Redding, 453; Poole, 821; Stubbs, 770.

¹⁵ Hale, 376.

to the consolidation of farm-implement firms in large combinations, which acquire possession of new patents, and in some cases suppress them rather than incur the expense of adopting new models.¹

FARM TENURES.

Ownership.—While many statements are made by various witnesses concerning the ownership of farms in different sections of the country, the testimony on this subject does not rest upon a very satisfactory statistical basis for the most part. One witness makes the statement that a young man who starts with nothing as a farm laborer can not generally acquire a farm of his own and get out of debt within his natural life, even in the Northwest.² On the other hand, it is stated that a larger proportion of the immigrants to this country have become farm owners in recent years than before the enactment of the liberal land laws.³ There is some evidence that farm laborers do frequently rise in the course of time to the position of proprietors,⁴ and also that farms are quite commonly purchased as investments by persons in other occupations.⁵

Mortgages.—The mortgage indebtedness of farmers seems to have been reduced, in some localities at least, during the past decade. This appears to be true of the Dakotas⁶ and Alabama.⁷ On the other hand, considerable land has been forfeited to mortgage companies and other creditors, even in South Dakota,⁸ and also in the East⁹ and South.¹⁰ Where this is the case the mortgagers are becoming tenants or are drawn into the towns and cities. The existence of mortgages on farm property need not necessarily be taken as an evidence of adversity, because of the general custom of buying farms on credit and giving a mortgage for part of the purchasing price. It is even stated that many of the farmers of North Dakota who might pay off their mortgages prefer to keep their original purchase incumbered in order to have money to buy additional land. The so-called crop-payment plan of reducing indebtedness is frequently resorted to in that locality and is pronounced to be an excellent plan. Under this arrangement the purchaser binds himself to pay each year one-half the grain he raises.¹¹

Tenancy.—The farm tenancy existing in the United States is distinguished from a system of absentee landlordism under which lands are leased to a permanent tenant class. Fear of the development of such a system has led to statutory provisions to prevent it. In New York State farms were formerly leased for a period of time as long as 100 years, but dissatisfaction with this custom led to a provision in the State constitution of 1846 forbidding the leasing of farm lands for more than 12 years.¹²

Farm tenancy is considered from a number of different points of view. There is some testimony to the effect that capitalists, foreseeing that agricultural land is likely to increase in value, are buying up small farms, or acquiring them through the foreclosure of mortgages, and putting on tenants. This practice is said to be growing in the richer portions of Minnesota, the Dakotas, and other States.¹³ Through the foreclosure of mortgages many who formerly owned farms have become tenants, and it is predicted that the Twelfth Census will show more tenant farmers than ever before.¹⁴ From another point of view, tenancy is considered as an upward step on the part of those who were formerly farm laborers, enabling them to go into business for themselves with but little capital.¹⁵ Some tenants

¹ Pages 818, 819, 830.

² Moran, 710.

³ Powers, 171.

⁴ Clohan, 583.

⁵ George, 221; Stockwell, 904; M. F. Greeley, 934, 935.

⁶ M. F. Greeley, 935; Prom, 790.

⁷ Poole, 922.

⁸ Jumper, 733, 734.

⁹ Powers, 175.

¹⁰ Norfleet, 492; Clohan, 583, 589; Youmans, 120.

¹¹ Prom, 790.

¹² Powers, 173.

¹³ M. F. Greeley, 934, 935.

¹⁴ Wedderburn, 623.

¹⁵ Powers, 170; Crowell, 340.

who might buy land seem to prefer to remain tenants. Thus in the Yazoo Basin some tenants pay as much as \$6,500 rent a year, and in some cases subrent to smaller tenants.¹

Of the two main kinds of tenancy, cash rentals and crop sharing, the former seems to be on the increase in some parts of the country, both North and South.² Most of the testimony concerning the conditions of tenancy, however, has reference to crop-sharing contracts. The share of the crop which is paid to the landowner under these contracts varies apparently from one-fifth to two-thirds, this wide variation being due mainly to varying circumstances. The fertility of the soil is an element sometimes considered in fixing the terms of the lease, the owner of a rich soil expecting a greater share of the product than one whose soil is comparatively barren. A more important cause of the variation, however, is the varying practice of landlords in furnishing utensils and supplies as well as the land itself. In many cases where the tenant has little or no capital the landlord furnishes the implements, live stock, seed (or in other cases half the seed), and half the commercial fertilizer, or a share of the fertilizer equal to his share of the crop. The most common arrangement seems to be that for the land alone the owner shall receive one-third of the crop, while if the equipment is furnished also and the tenant's contribution to the partnership is limited to little or nothing beyond the labor required the crop is divided equally. In some parts of the South these two plans are distinguished by distinct names. A tenant whose landlord furnishes the land and utensils and pays for the fertilizers in proportion to his share of the crop is called a "cropper," while a tenant who furnishes his stock is called a "renter." Under either plan it is common for the landlord to furnish the tenant a house, an acre or so for garden purposes, and firewood.³ The house and garden are commonly provided in the North also, but there the rental value of these premises is perhaps more apt to be considered than in the South, in fixing the rent or the terms of the contract, and the tenant is sometimes required to pay for firewood.⁴ In the South the conditions of crop sharing have been so far elaborated that a distinction is frequently made between different crops in determining the share which is to go to the landlord. Thus in Georgia the landlord receives one-fourth of the cotton, one-third of the corn, and one-half of the small grain,⁵ and in South Carolina, where payment of rent in kind is said to be passing away, the former practice was to pay the landlord one-fourth of the corn and one-fifth of the cotton. This practice is giving way to cash rents and to the system of cropping on halves, the equipment and half the fertilizer being furnished by the landlord, who also pays half the cost of ginning and marketing the cotton.⁶ In Kentucky the landlord receives one-half the corn, but in the case of tobacco one-half the net proceeds after expenses are deducted; and in the case of corn land the tenant is not usually furnished with a house.⁷ Cotton land is sometimes rented for a stipulated amount of cotton, a system which has features both of crop sharing and of fixed rental. Thus in Georgia a tenant pays from 500 to 1,000 pounds of cotton for as much land as he can work with one mule.⁸ In Tennessee about 10 acres of land, more or less, rent for a bale of cotton.⁹ In Louisiana croppers divide the cotton equally with the landlords, who furnish the mules and their feed, while renters pay a stipulated rent, either in money, in cotton, or in cotton per acre.¹⁰

The system of cash rental is sometimes found to work more satisfactorily than crop sharing,¹¹ but, on the other hand, it is thought that a tenant who rents on

¹ White, 421; Norfleet, 487, 488.

² Powers, 172, 173; Spear, 403; Hammond, 822;

Dillingham, 100.

³ Graham, 494.

⁴ Stockwell, 885.

⁵ Stevens, 907, 909, 911.

⁶ Hammond, 822.

⁷ Nail, 804, 805.

⁸ Barrett, 48, 47.

⁹ Godwin, 474-476; Mason, 498-500.

¹⁰ Stubbs, 775.

¹¹ Dye, 84.

shares is more apt to keep up the fertility of the soil, at least where the landlord bears part of the expense of fertilizers and supervises the work of the tenant to some extent.¹ There is some testimony to the effect that renting land on shares is more profitable to the landlord than renting for a cash rent or a stipulated amount of cotton.² Mr. Greeley, of South Dakota, while emphasizing the advantages of crop sharing, advises paying the tenant partly in cash, in order that he may feel sure of something in case of failure of the crop. Mr. Greeley finds it more profitable, in the case of sheep husbandry at least, to give tenants two-thirds than to give them only one-half, because the tenant's self-interest is aroused by the larger proportion.³

Some of the advantages and disadvantages of tenancy in general are brought out in what Dr. Crowell says of the English tenant farmer, who has his capital free to use in cultivation, but, on the other hand, is obliged to sow the crop prescribed in the lease, although there may be little sale for it.⁴ It is said that tenancy reduces the average yield,⁵ but the principal disadvantage of the system from the landlord's standpoint is the impoverishment of the soil, which is apt to receive less attention and care from a tenant than from an owner.⁶ In Massachusetts attempts are made to overcome this disadvantage by prescribing in the contract that a tenant must fertilize the land. In some parts of the South, on the other hand, the contracts are said to have grown looser and looser, until the tenants have come to ignore their landlords.⁷ The persistence of tenancy in the South, notwithstanding its serious drawbacks, is attributed to the desire of land-owners to be free of the trouble of managing their farms in person, while the negro tenant, on his part, is glad to be his own master and to be free to go and come as he pleases. This lack of supervision results in deterioration of the property, and also, it is said, has a bad moral effect upon the negro tenants.⁸ Another reason for the prevalence of tenancy in the South is found in the economic difficulty of paying cash wages, especially when the price of cotton is low; and one witness says he can not get the laborers to work for wages while his neighbors farm on the other plan.⁹ On the other hand, witnesses who make a practice of paying cash wages testify that it is the more satisfactory system, and that the farmers who adopt it are the most successful.¹⁰ The intelligent and economic cultivation prevailing in southern Louisiana is attributed to the universal custom of working hired-labor under intelligent supervision.¹¹ There is some evidence that, from the standpoint of the laborer also, a cash wage, even as low as \$6 or \$8 a month, is preferable to the system of crop sharing, under which the tenants share also the risk of the business.¹²

Crop liens in the South.—The scarcity of money in the South at the close of the civil war rendered it apparently necessary to make some provision for a credit system, and nearly all the Southern legislatures passed crop lien laws. While something of this kind may have been a real necessity at the time, it is generally agreed that the continuance of the crop lien system has been detrimental to Southern agriculture. The merchants who loan money or make advances of supplies on crop liens protect themselves by requiring the borrowers to plant a specified acreage of cotton, the principal money crop, and the system thus causes overproduction of cotton and prevents diversification. The debts secured by the crop fall due in October, and thus the greater part of the cotton is forced into the market at about the same time, depressing the price. The tenant farmers are tempted by the credit

¹ Brigham, 9; Hale, 379.

² Eldridge, 518; Godwin, 475-479.

³ Page 629.

⁴ Pages 333, 340.

⁵ Jumper, 738.

⁶ Powers, 173; Nunnally, 455; Ager, 106; Dillingham, 186; Norfleet, 488, 487; Hale, 379; Hill, 504.

⁷ Nunnally, 455.

⁸ Norfleet, 488, 487; Peek, 459.

⁹ Graham, 484; Nunnally, 455, 456; Manson, 506; Godwin, 479.

¹⁰ Reading, 448; Hale, 390; Hill, 504.

¹¹ Stubbs, 770.

¹² Lovejoy, 76.

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system to buy more freely than they would if paying cash, and if they succeed in getting out of debt at the end of the crop year they become involved again almost immediately.¹ The risk of the merchant who sells on credit is so great that a high rate of profit is charged on these credit sales.²

Several witnesses express the opinion that the crop lien laws should be done away with.³ Mr. Holmes suggests that the extinguishment of the lien system might be brought about gradually by first limiting the maximum credit to a certain percentage of the value of the cotton produced, this percentage to be diminished year by year, in order to compel the planter to produce the principal portion of his supplies. It is thought that this plan would have the effect of raising the price of cotton.⁴

Interest and banking in the South.—Many witnesses complain of the scarcity of money and the high rates of interest prevailing in the South as among the Southern farmer's most serious disadvantages. Not only are the nominal interest rates higher than in the North, but in many cases money lenders exact additional payments in indirect ways; for example, a planter may borrow from a cotton factor nominally at 8 per cent, but is also obliged to agree to send the factor a certain amount of cotton and to pay him a commission of \$1.50 a bale for disposing of it, and this commission must be paid even if the planter fails to raise the prescribed amount of cotton. In some parts of the South money lenders have gradually come into possession of many of the plantations.⁵

The difficulty of borrowing money at reasonable rates of interest in the South is attributed to the prohibition of loans on real estate by national banks, and to the prohibitory tax of 10 per cent on the circulation of State banks.⁶ The establishment of numerous new banks in some parts of the South during recent years has relieved the stringency of the money market to some extent.⁷

AGRICULTURAL LABOR.

There is much evidence to the effect that the general condition of agricultural laborers has improved during the latter part of the nineteenth century. While farm work is rendered less severe than formerly by the use of improved machinery, wages have risen. Farm laborers are declared to be as well off as their employers, or, since the fall in the prices of farm products, even better off than some of the farmers who employ them.⁸ It is also said that there is a greater opportunity for laborers to rise to independent positions in agriculture than ever before.⁹ In some localities it is common for farm laborers to own their homes,¹⁰ but it is estimated that the farm laborers of Louisiana own less property per capita than at the beginning of the past decade.¹¹

Some farmers prefer to employ single men and board them in their own families so as to have them at hand, others prefer to hire married men, who are more apt to remain permanently, and to provide them with tenement houses, gardens, and perhaps a cow or horse. Mr. Greeley, of South Dakota, suggests that the solution of the hired-help problem is to be found in the encouragement of the married laborer.¹² Professor Davenport, of the University of Illinois, finds more married men employed than twenty or thirty years ago, but the opposite tendency is noted in other localities, and the youth of most farm laborers is cited as evidence that the hired men in time become independent farmers.¹³ On the other hand, Profes-

¹ Stubbs, 776; Holmes, 180-182; Barrett, 47-49;

Hale, 380, 381.

² Lovejoy, 75-78.

³ Hammond, 822, 830; Barrett, 47-49.

⁴ Pages 160, 162.

⁵ Barrett, 47, 49, 54, 58.

⁶ Barrett, 47, 49, 54, 58; Brown, 61, 65, 67, 73-75;

Youmans, 118, 119.

⁷ Poole, 926; Stubbs, 776.

⁸ Brigham, 5-8; Jones, 13; Dye, 82, 83; Norris, 320, 321.

⁹ Powers, 178, 179.

¹⁰ Clohan, 592.

¹¹ Stubbs, 770.

¹² Brigham, 9; M. F. Greeley, 928.

¹³ Dye, 83, 84; Powers, 174, 178, 179; Davenport, 255, 256.

sor Davenport notes a diminution of the average farm laborer's ambition to become an independent farmer, and a tendency to work without any very definite object in view, and so without as much incentive to economy as formerly.

Duration of employment.—One of the principal disadvantages of farm labor is irregularity of employment. While some laborers are employed throughout the year, it is more common to be employed only from six to eight or ten months; and those who are hired as harvest hands of course obtain much less work.¹ On dairy farms the laborers are employed the year round,² and there is some testimony, for example from Massachusetts and New York, to the effect that a good worker can usually find work at all seasons.³ In the South there is more work that can be done in the winter than in the more severe climate of the Northern States.⁴ On the sugar plantations in Louisiana there is a time during the winter when part of the hands are not needed, but some of the laborers work the year through.⁵ The difficulty in the South, so far as regularity of employment is concerned, seems to be due to the desire of the laborer for a respite from work rather than from lack of opportunity to work.⁶ This inclination to get along without working part of the year is not confined to the South, however.⁷

The greatest irregularity of employment is said to be found where one or two staple crops are raised to the neglect of diversified agriculture. This is especially true in the grain-growing districts of the Northwest, but is also true where cotton is raised to the exclusion of other crops. Wherever diversified farming is practiced the amount of transient labor is relatively decreasing, and the duration of employment is increasing.⁸

Scarcity of farm labor.—Farmers from different parts of the country complain of the scarcity of farm labor, and especially of the difficulty of securing and of keeping reliable laborers. This difficulty is perhaps greatest in the vicinity of manufacturing establishments, which are said to take the best laborers from the country, and in sections where railroads or other public works are being constructed. The difficulty of obtaining enough labor is most acutely felt where an unusual number is required for a few weeks, as in the wheat harvest⁹ and in the raising of sugar beets.¹⁰ In other cases the complaint is of the inefficiency and irregularity of the workers, rather than of the impossibility of securing a sufficient number. One of the most frequent complaints made against the negro laborers of the South is that they go about from plantation to plantation whenever they have an opportunity of bettering their condition. A Tennessee planter speaks of the impossibility of getting white men to take charge of his dairy work.¹¹ A common custom in the South is for farmers to maintain tenant houses for the negroes, so that they can more easily be found and hired when wanted. Another plan is to keep a commissary and furnish supplies on credit.¹² In some parts of the country it is a common practice to secure farm laborers through employment bureaus. Thus the farmers of Vermont secure immigrants from the immigration offices at eastern ports,¹³ and bureaus have been organized in Western cities to send men out to the surrounding country.¹⁴ In California Chinese laborers are secured through Chinese labor bureaus or through the Six Companies.¹⁵

Hours of labor.—While one witness testifies that the hours of farm labor have increased since the introduction of improved agricultural machinery,¹⁶ the preponderance of evidence is to the effect that they have been considerably shortened

¹ Spear, 402; M. F. Greeley, 928; Budge, 846.

² Ager, 104.

³ Stockwell, 888; Norris, 320.

⁴ Nall, 803; Hammond, 819, 820.

⁵ Stubbs, 775.

⁶ Nunnally, 455.

⁷ Norris, 320.

⁸ Powers, 172; Hale, 876.

⁹ Hanley, 275.

¹⁰ Rogers, 554.

¹¹ Godwin, 475, 477.

¹² Hammond, 819.

¹³ Spear, 408.

¹⁴ Powers, 184.

¹⁵ Naftager, 954.

¹⁶ Moran, 711.

during the past 40 or 50 years. In many localities the customary duration of work is said to be about 10 hours a day; in Illinois the hours in the field are said to have been diminished to about 9 a day. The chores in the morning and evening, however, make the actual hours of work somewhat longer than stated,¹ while on dairy farms the hours are longer than elsewhere. In the Northwest and in the South the general custom seems to be to work from sunrise until sunset, sometimes, however, with as much as an hour and a half or two hours nooning;² and in some parts of West Virginia the hours of work are from daylight to dark.³ In the South Saturday is generally either a holiday or a half-holiday. Mr. Hale estimates that the hours of labor in the South are from 8½ to 9 a day in the shortest days and from 12 to 14 in the longest days of the year, averaging at least 11 hours a day of field work.⁴

Farm wages.—The general tendency of farm wages has been upward since the end of the period of inflated currency, though the recent industrial depression had its effect upon agricultural wages for a few years after 1893. In 1895 the average monthly wage, without board, was \$29 in the Eastern States, \$23.80 in the Middle States, \$12.71 in the Southern States, \$30.04 in the Mountain States, and \$31.68 in the Pacific States.⁵ Farm wages vary greatly, however, even in the same locality, according to the character of the work and the experience and skill of the laborer. Truck farmers, market gardeners, and florists pay higher wages than general farmers because they require expert labor for a short season, but long hours, and also because the proximity of cities increases the demand for labor.⁶ In the Northern States farm labor is nearly always paid in cash, usually once a month or as the money is needed, and a balance is often left in the farmers' hands until the final settlement at the end of the season.⁷ In the South wages are sometimes paid in provisions or by store orders;⁸ while instead of the Northern custom of boarding the laborer at the employer's table, stated rations are often issued in addition to a cash wage. In Maryland the custom of furnishing rations is on the decline.⁹ The difference between wages with board and without board in 1895 was \$5.67 for the country as a whole, but only \$4.03 a month for the Southern States, showing one effect of the custom of issuing uncooked rations.¹⁰

On the cotton plantations of the South it is customary for women and children to hoe and pick cotton.¹¹ Children as young as six years of age sometimes pick cotton, and boys of ten become plowmen. This child labor on farms is not confined to negro children.¹²

Cotton is sometimes cultivated on the acreage plan, the laborer being paid \$4 to \$5 an acre.¹³ In the North a system of profit sharing is sometimes adopted, under which, after the owner is paid a certain rate of interest on the value of his property and the laborer a certain rate of wages, the surplus is divided equally. In other cases the laborer is paid so much a bushel for raising corn.¹⁴ A survival of the "bee" may be found in some localities in the custom of exchanging labor, as for example in filling silos.¹⁵

The average earnings of farm laborers, after making allowance for the period of unemployment as shown by the Eleventh Census, are found to be only \$215 a year, and the census figure for unemployment is criticized as being too small. Agricultural labor is found to be the lowest paid of all the great groups of occupations, even allowing for the laborer's garden and other privileges.¹⁶ Farm laborers are

¹ Wilson, 244.

² Nunnally, 456; Stevens, 906.

³ Clohan, 592.

⁴ Page 376.

⁵ Holmes, 152, 157.

⁶ Coles, 125; Hamilton, 349, 350.

⁷ Spear, 402, 403; Stockwell, 885.

⁸ White, 423; Hammond, 821; Barrett, 46; Hale, 378, 379.

⁹ Ager, 104, 105.

¹⁰ Holmes, 152.

¹¹ Reading, 448; Godwin, 478; Hammond, 816.

¹² Graham, 420.

¹³ Norfleet, 489.

¹⁴ Jones, 34; Wilson, 245.

¹⁵ Spear, 408.

¹⁶ Holmes, 158.

often able, however, to save something out of their wages; more, perhaps, than men employed in cities at much higher wages. A young unmarried man who takes his pay partly in board has few necessary expenses, and a married farm laborer's family can be supported in a large part from the products of the garden, poultry, and one or two cows.¹ In contrast with the low wages of the average farm laborer should be mentioned the occasional large salaries paid to plantation managers, who sometimes get as much as \$2,000 a year, or, in certain cases where scientific skill is required, even greater amounts.²

The tenant houses provided for negroes in the South seem to be in most cases furnished without charge. This is the general custom in Louisiana at least, the only condition of occupancy being that the tenants shall work on the owner's plantation whenever called upon; if one refuses to work he must vacate the house. In some parts of the South the tenants are required to work for two days a month to pay the rent.³

In some instances where a large number of laborers are required at a particular time of the year, as for fruit picking and packing, and for thinning sugar beets, a sort of camp is established either in a tent or in a more permanent structure, and meals are furnished at about cost.⁴

The packing of fruit, which requires considerable skill, is done sometimes by women and children, while in California Chinese and Japanese are sometimes employed for the purpose, and are said to be the best fruit packers available. The California fruit growers say that it would be practically impossible to harvest their crops without the Chinese.⁵

The Negro as a farmer and as a farm laborer.—From the agricultural standpoint the "negro problem" is very closely associated with the general problem of farm labor. There is much conflicting testimony as to the character of the negroes and as to their industrial value. In some cases they are said to be indolent and unreliable,⁶ but there is some testimony to the effect that they work better and even more continuously than white men.⁷

Several witnesses testify to the trustworthiness of negro laborers,⁸ and there is testimony to the effect that negroes sometimes fill places of responsibility on Southern plantations.⁹

Intemperance is considered one of the greatest curses of the colored race, but it is pointed out that the negro's propensity for whisky was acquired by imitating the white man.¹⁰ The negroes are charged with many forms of immorality,¹¹ but there has been a marked diminution of lawlessness since the years following the war,¹² and it is said that the negro laborer seldom shirks or repudiates his debts.¹³ Southern planters complain of the migratory disposition of the negroes, but this restless disposition, like the propensity for whisky, is said to have been acquired from the white man.¹⁴ The best friends of the negro admit that he is inclined to be improvident,¹⁵ and that the best results are secured when he works under supervision;¹⁶ yet many negroes have become independent farmers and have made some progress in the acquisition of property.¹⁷

Negro education.—Some Southerners are of the opinion that education is a detriment rather than an advantage to the negroes, making them discontented with

¹ Moran, 711; M. F. Greeley, 928, 929.

² Norfleet, 491; Whitney, 868-869.

³ Hale, 379; Stubbs, 771.

⁴ Hale, 375, 377; Rogers, 555, 556.

⁵ Naftzger, 954.

⁶ Graham, 494.

⁷ Hammond, 823.

⁸ Hale, 383, 384; Clohan, 598-594; Balch, 497.

⁹ Brown, 73; Poole, 928.

¹⁰ White, 427.

¹¹ Manson, 707, 709; Stubbs, 770.

¹² Poole, 926; Hammond, 824.

¹³ Hammond, 819.

¹⁴ Stubbs, 770.

¹⁵ Poole, 926, 926; Hale, 384; Nunnally, 454, 455.

¹⁶ Hale, 383.

¹⁷ White, 418, 423; Dillingham, 165, 166; Hale, 381, 401.

farm work and not improving their morals.¹ This belief may partly explain the discrimination against the negro schools in certain States, at least in the salaries paid the colored teachers.² Yet there is testimony to the effect that equal school facilities are provided in some of the Southern States,³ and that the Southern whites are in favor of negro education.⁴

There is an annual migration of negro agricultural laborers from Virginia and other Southern States to the North, at least as far as New Jersey, where they readily find employment during the crop season. In some cases they remain permanently in the North.⁵

It is thought by some witnesses that the labor of the negroes was more productive under the system of slavery than it is at present, and also that the laborers were better taken care of than now;⁶ but it is also said that their labor cost the slave owner more than is paid under the wage system, and there seems to be no desire to return to the system of slavery.⁷ Yet comparisons between the elder negroes who received their training under the system of slavery and the younger generation are very much to the disadvantage of the latter. It is said that the younger negroes are discontented, idle, and disinclined to receive instruction.⁸ Incompetence of the negro as a farmer is even assigned as one of the great causes of agricultural depression in the South. The specific charges brought against him in this connection are his inability to use improved machinery, his exclusive cultivation of cotton, and the necessity of white supervision. He is also said to be cruel and careless in his treatment of stock.⁹ His low standard of living is also mentioned as a cause of cheap cotton.¹⁰ On the other hand, the negro has a certain economic advantage over the white farmer in the South, in that he is his own laborer, and as a result of this the negroes of the Black Belt can afford to pay more rent for their land than white tenants can.¹¹ Several witnesses agree that, however great his delinquencies, the negro is after all the best agricultural laborer available for the South; indeed, there seems to be a quite general agreement that negroes are better adapted to farm labor in the South than white men,¹² though some Louisiana farmers prefer Italians.¹³

One proposed solution of the negro problem is the separation of the races and the colonization of the negroes, either in some part of this country or elsewhere;¹⁴ but there is considerable opposition to this plan among Southern planters, partly because of the feeling that the negro is needed in the South as a laborer.¹⁵ It is suggested, however, that the overcrowded agricultural communities of the South might be gradually thinned out by sending some of the negroes into the Northern States.¹⁶ Mr. Dillingham emphasizes the necessity of further investigation of actual conditions before the negro problem can be satisfactorily solved, but agricultural education is proposed as an important element in its solution.¹⁷

Foreigners as farmers.—While there is a feeling that the United States has been too generous in encouraging immigration, especially by its liberal public land policy,¹⁸ high tributes are paid to the general intelligence of the foreigners who have settled upon the farms of America: they are said to have elevated the character of Western and Northern agriculture, because they have appreciated the necessity of keeping up the fertility of the land and tilling the soil thoroughly.¹⁹

¹ Youmans, 119, 120; Manson, 508, 509.

¹⁰ Redding, 445.

² Ager, 106, 107; White, 424; Reading, 451, 452.

¹¹ Poole, 496.

³ Clohan, 594; Nail, 808; Manson, 507, 508; Hill, 504; Kyle, 466; Batchelder, 497.

¹² Stevens, 912, 913.

⁴ Hammond, 826, 827; White, 424, 426.

¹³ Stubbs, 777.

⁵ Dye, 87; Ketchum, 123, 134.

¹⁴ Brown, 62, 63.

⁶ Nunnally, 466; Kyle, 467, 469, 471; Manson, 509; Nail, 802.

¹⁵ Youmans, 120; Duncan, 518; Poole, 924.

¹⁶ White, 428, 429.

⁷ Hill, 504, 505; Manson, 509.

¹⁷ Crowell, 336; Dillingham, 166.

⁸ Hill, 504, 505; Stubbs, 770.

¹⁸ Brigham, 10, 11; Dye, 86, 87.

⁹ Brown, 62; Barrett, 58, 59.

¹⁹ Powers, 179, 180; Davenport, 263; Norris, 323.

Immigrants from Holland have, in various localities, reclaimed lowlands which might otherwise have remained useless.¹ While the foreign-born farmers are at a disadvantage because of the time it takes them to adapt themselves to changed conditions,² their careful agriculture and their economy have enabled them in many cases to acquire considerable property, and immigrants and the children of immigrants often purchase farms from American farmers.³ Even Chinese farmers have, in many cases, become owners of fruit plantations in California.⁴ The most general complaint against the foreign farmers arises from their tendency to clannishness and to the preservation of their own languages and customs, which make them slow to become Americanized.⁵ Yet Dr. Crowell maintains that certain colonies of foreigners, such as the Pennsylvania Dutch, the Scandinavians in the Northwest, and the Huguenots of North Carolina, have, by reason of that very solidarity, preserved their agricultural instincts and abilities on a high level. Dr. Crowell considers the economic traditions of the European farmer as among the most valuable assets of American agriculture.⁶

Agricultural distribution of immigrants. (See also Vol. XV, Part III, Chapter X.)—Mr. Godwin, of South Dakota, calls attention to the desirability of distributing immigrants throughout the farming districts of the West, where he says any sober, land-loving man, with a little agricultural experience, would have no difficulty in working into permanent employment. He thinks this would be of mutual advantage to the country and to the immigrants.⁷

Public lands.—While there is some criticism of the Government's land policy, the extraordinary development of American agriculture is attributed by one witness to liberal land laws and the admission of foreign labor to occupy free lands.⁸ Most of the claims taken up in North Dakota are said to have passed from the hands of the original settlers either through voluntary sale or mortgage foreclosure.⁹ While most of the public domain has been disposed of, except in the arid and semiarid regions, there still remain considerable areas of State and railroad lands.¹⁰ Several of the Western States lease part of their public lands.¹¹

Emigration to Canada.—There has been a noticeable emigration of farmers from some of the Western States, such as Michigan and South Dakota, to north-western Canada, induced by agents of the Canadian government; but most of those who have migrated to Canada from South Dakota are said to have returned.¹²

THE RURAL EXODUS.

Abandoned farms.—The abandonment of farms in New England is said to have begun about 50 years ago. The two important causes of this rural exodus appear to be the rapid development of the West and the attractions of the cities, the former cause being assisted by cheap transportation and local discriminations in freight rates, and the latter being both cause and result of the difficulty of obtaining suitable farm laborers, especially for truck farming. A contributory cause is said to be the demoralizing effect upon agriculture exerted by summer boarders.¹³ Professor Bailey remarks that many of the farms now abandoned would never have been settled if the more fertile lands of the West had been accessible earlier, and that all the more fertile accessible lands in the East are still good farming areas. He regards the abandonment of the unfertile farms as a necessary and desirable change.¹⁴ In Maryland the abandonment of farms is attributed to the

¹ Norris, 323; Jones, 34.

² Powers, 179, 180.

³ Cole, 124; Norris, 323, 324; M. F. Greeley, 929, 930.

⁴ Naftzger, 955.

⁵ Wilson, 243; M. F. Greeley, 930; Hanley, 277.

⁶ Pages 333, 335.

⁷ Page 930.

⁸ Crowell, 333-335.

⁹ Prom, 739.

¹⁰ Powers, 182; Poole, 922, 924; Kyle, 469; Naftzger, 951, 952.

¹¹ Mead, 1064.

¹² Smith, 553, 557; Jumper, 734.

¹³ Bacheider, 40, 41, 42; Whitney, 890, 890.

¹⁴ Page 1012.

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loss of farms by the original owners through mortgage foreclosures, and to the exhaustion of the soil by continuous farming.¹

Several of the New England States seek to bring the abandoned farms back into use by advertising them for sale. Three-fourths of the abandoned farms in New Hampshire have been taken up, in many cases by people of wealth for summer residences; and in Massachusetts, also, there are now said to be practically no abandoned farms.²

The growth of cities.—The movement from country to city has been going on for centuries, and seems likely to continue. While the movement is sometimes attributed to the depression of agriculture, Mr. Powers finds the fundamental cause in the increased productiveness of farm labor, which makes it possible for a smaller proportion of the total population to produce food enough for all, thus giving opportunity for the development of manufactures and other industries.³

It is pointed out that the trend to the cities has been accompanied not only by a decline of agriculture in New England, but also by the decline of the smaller manufacturing industries in the hill towns, where abandoned wagon shops, shoe shops, sawmills, etc., are found, as well as abandoned farms.⁴

The difficulty experienced in getting reliable farm labor has led a great many to give up agriculture.⁵ A part of the movement to the cities is explained by the difficulty of finding room on one farm for all of the farmer's sons;⁶ and the migration of the most intelligent young men to the city is assigned as a cause of the diminished efficiency of farm labor.⁷

Aside from the underlying economic causes of the movement to the cities, much stress is laid upon the desire for an exciting environment and for the social advantages of the city. The absence of good roads and good schools in rural districts is also mentioned as contributing to the movement.⁸ Among other causes mentioned are the higher wages paid in the cities, the development of industries along mechanical lines, the success of individuals in commercial and industrial occupations and the apparent ease of their lives as compared with the hard work of a farm, the opportunities for advancement in the city, and the opportunities for the employment of the various members of the family. It is also said that many young men have an idea that farm work is degrading, and that some boys and girls are obliged to work so hard on farms that the thought of farming is distasteful to them throughout life. In parts of the South the cotton mills have drawn heavily upon agricultural labor.⁹ Attention is called to the disposition of the American to engage in commerce and speculation rather than depend upon the slow processes of agriculture. The New Englander is said to be a man of the city rather than of the country, and the children of native Americans prefer school teaching or work in a store to manual labor.¹⁰ The lack of steady employment on farms is mentioned as one of the causes of the movement to the cities, which is also attributed in part to the failure of attempts to farm on unsuitable land or by men not adapted to agriculture.¹¹

It is pointed out that there is nothing alarming in the migration to the cities so long as people are free to go and free to return, and it is predicted that the development of transportation facilities will lead to the return of men to the country as they grow older or when work is slack in the cities.¹² Already there is some evidence of a reaction from the movement to the cities, which manifests itself in a

¹ Ager, 100.

² Bachelder, 41, 42; Stockwell, 901.

³ Pages 174, 178, 179.

⁴ Stockwell, 888.

⁵ Ketchum, 123, 128.

⁶ Coles, 125.

⁷ Clohan, 501, 502.

⁸ Hamilton, 385; Powers, 174; Redding, 449, 451; Stevens, 906, 915.

⁹ Graham, 435; Crowell, 328.

¹⁰ Crowell, 326; Norris, 323.

¹¹ M. F. Greeley, 928, 935, 936.

¹² Crowell, 328.

slackening of a movement away from the farms and in a tendency to return from the city to the country.¹

Among the remedies which are suggested for the too rapid depopulation of agricultural districts are a wider education of farmers along agricultural lines,² better roads and schools, and other conveniences in rural districts.³ It is also suggested that if farming can in any way be made more profitable the tendency will be checked.⁴ One witness suggests that the tendency will cure itself through the difficulty of making both ends meet in the city, even with a fair salary.⁵ While congestion in the cities and the scarcity of farm laborers may both be relieved to some extent by finding employment on farms for men from the cities, the plan of sending men ignorant of farming into the country to farm on their own account is criticised as likely to inflict an injury both upon the men most directly concerned and upon the community at large.⁶

Relative advantages of city and country.—Nearly all the witnesses who discuss the relative advantages of city and country life consider country life the more desirable, though Mr. Hanley, while recognizing the moral dangers of the city to young men and women suddenly freed from parental restraint, also emphasizes the lonesomeness and monotonous character of farm life and work, which, he says, cause farmers' wives and daughters to break down physically and mentally.⁷ The isolation of the farm, however, is growing less with the development of trolley lines, better wagon roads, rural mail delivery, neighborhood telephones, etc., and the wide dissemination of books and papers.⁸ Mr. Powers thinks the style of living of the uneducated farmer is about the same as that of the average day laborer in the city, while he knows some successful farmers who live better than the average lawyer.⁹

The chances of economic success are said to be greater in agriculture than in other industries, for men of equal mental equipment.¹⁰ A man adapted to agriculture can be reasonably sure of at least making a living on a farm.¹¹ While a man who is able to control large interests is likely to come into that control more readily in the city than in the country, one who would remain a workingman in the city has a better opportunity to become influential in the country than in the city.¹² One witness, however, maintains that, as a general rule, an industrious and frugal young man can succeed better in the city than in the country, notwithstanding the difference in the cost of living.¹³

In discussing the rate of profit on the capital invested many witnesses agree that it is much less than in other kinds of business;¹⁴ but an investment in a farm is considered safer than mercantile investments, and the difference in the apparent rate of profit is said to be due to disregarding the products consumed on the farm and the rental value of the farmhouse; making these allowances, Mr. Greeley maintains that agriculture is more profitable than other occupations.¹⁵ Mr. Holmes calculates, on the basis of the value of agricultural products as given in the Eleventh Census, that the farmers of the United States, if allowed reasonable interest on their capital, receive no remuneration for their labor; but the general opinion is that the census figure is too low. Mr. Holmes attributes the small income of farmers, and also the small wages of farm laborers, to the small value of the wealth they produce as compared with workers in other industries, and

¹ Greeley, 635; Spear, 402; Norris, 320-322; Davenport, 256, 257; Wilson, 245.

² Powers, 172.

³ Hamilton, 365; Stevens, 506.

⁴ Hanley, 275.

⁵ M. F. Greeley, 564.

⁶ Powers, 184.

⁷ Page 223.

⁸ Bailey, 1013, 1014.

⁹ Page 174.

¹⁰ Bailey, 1014; Hale, 286, 287.

¹¹ Ketchum, 136, 137; Davenport, 259.

¹² Davenport, 257.

¹³ Clohan, 591.

¹⁴ Brigham, 14; Ager, 110, 111; Norris, 325, 326; Wilson, 247; George, 221, 227; Hanley, 284, 287; Dye, 90.

¹⁵ Davenport, 255, 256; M. F. Greeley, 564.

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points out that in the Western States, where the product per capita in agriculture is greatest, the rate of farm wages is also high.¹

Dr. Crowell explains the comparatively low profit of agriculture by the theory that the farmer is governed by the law of diminishing returns, getting less than a proportional return for additional amounts of capital and labor applied to the land; and by the persistence of the competitive principle in the sale of agricultural products, while in manufacture, after a certain limit of competition is reached, there is a tendency to combine for the purpose of controlling production and prices.²

AGRICULTURAL EDUCATION AND RESEARCH.

Agricultural colleges.—The development of agricultural colleges and experiment stations in America is part of a world-wide movement for the organization of technical education and scientific research in agriculture, due mainly to Governmental action, though there is at least one case in England in which a large private fortune has been devoted to experimental work in agriculture.³ The American agricultural colleges are organized under the land-grant act of 1862, which granted to each State and Territory 30,000 acres of land for each Representative and Senator in Congress; though a few States had even before that date made some efforts in the direction of establishing such colleges.⁴

There is some dissatisfaction with the manner in which the land-grant funds have been disposed of. In many cases the funds were turned over to colleges and institutions the management of which took little interest in agricultural education.⁵ At the time of the land grant there was comparatively little demand for scientific instruction in agriculture, especially in the West, because large crops could be raised without special agricultural knowledge or intensive culture; but with the necessity of producing the best possible results on each acre of land there is arising a demand for scientific methods, and hence for better education.⁶ Moreover, the principles underlying agriculture had to be discovered before they could be taught, and it has taken time to develop a literature upon which agricultural education may be based. While the universities were longer in working out a satisfactory basis for agricultural instruction than the separate colleges, which had but one problem to solve, a number of the State universities have recently established very strong departments of agriculture.

Instruction in the mechanical arts was naturally developed more rapidly than agricultural instruction, because of the relative simplicity of mechanical problems and the rapid development of mechanical industries.⁷

There is some complaint relative to the large amount of attention still given to the mechanical arts in some of the agricultural colleges, and it is suggested that the curriculum should be modified so as to lay more stress on agriculture.⁸ It is also suggested that if the agricultural and mechanical colleges were kept distinct from the State universities they would be more likely to develop an enthusiasm for agriculture.⁹ Other witnesses, however, point out certain advantages of union, and predict that in the future the best work in agricultural education and research will be done at the universities.¹⁰ The Association of Agricultural Colleges and Experiment Stations is studying the methods of teaching agriculture with a view to further improvement.¹¹

There is a demand for agricultural schools below the college grade, at which

¹ Pages 154, 155.

² Pages 330, 340.

³ True, 138; Wiley, 643.

⁴ True, 139, 144.

⁵ Hale, 386.

⁶ McKay, 434.

⁷ Davenport, 250, 261.

⁸ Batchelder, 44.

⁹ Brigham, 13.

¹⁰ M. F. Greeley, 332; Davenport, 250-261.

¹¹ True, 145.

boys could obtain practical agricultural training.¹ The University of Minnesota has met this demand by the establishment of a School of Agriculture of high-school grade, nearly all the graduates of which return to farm homes; and a similar school has been started at the University of Nebraska.² The practical agricultural training at such institutions as Hampton and Tuskegee is universally commended.³

At some of the agricultural colleges students are enabled to pay their way, in whole or in part, by working on the college farm at so much an hour, and so gain practical agricultural experience.⁴ Many of the colleges have established winter courses along practical lines for farmers who are unable to take a complete college course, and in some cases special schools have been established to prepare students for such special industries as dairying, sugar-cane growing, or forestry.⁵

Critics of the agricultural colleges point to the large number of their graduates in other than agricultural occupations in support of their assertions that the curricula are not sufficiently devoted to practical agriculture. A census of the graduates of the Michigan Agricultural College taken some years ago showed that a little more than half of the graduates were engaged in agriculture, and the proportion of the graduates of other professional schools who follow through life the calling they were educated for was found to be less than 50 per cent. In explanation of the tendency to go into other employments, it is pointed out that it requires capital to acquire a farm, and that it is therefore more difficult for a young man to establish himself in agriculture than in a profession; so there has been a tendency for agricultural-college graduates to teach school for a time, or do something else by which they could get more money than by doing ordinary farm labor. Nearly all the recent graduates of the Michigan Agricultural College look forward to owning land as soon as they are able. It is also pointed out that many young men attend the agricultural college without any idea of practicing agriculture, because it is a cheap place to get an education; yet some of these afterwards do become farmers.⁶ Among the graduates of agricultural colleges, besides those engaged in practical agriculture, are a number of directors of experiment stations, professors of agriculture, and officers of agricultural colleges.⁷ Students who take special courses in dairying or sugar making are apparently quite apt to follow the occupation for which they are trained. The agricultural college of the University of Wisconsin has found places on farms for large numbers of its graduates.⁸ Agricultural-college graduates who engage in practical agriculture are said to be more successful farmers than farmers of less education, other things being equal,⁹ and are thought to exercise a very beneficial effect upon the agriculture of the localities in which they settle, becoming centers of better agricultural methods.¹⁰

Experiment stations.—Experimental work in agriculture has grown up as a natural result of the establishment of agricultural colleges. There were 17 experiment stations in the country before the passage of the Hatch Act (1887) making an annual appropriation to each State and Territory for the maintenance of such stations. The work of the stations is classified under four heads: (a) Police duties connected with the control of fertilizers, dairy products, etc.; (b) study of the natural resources of the States; (c) demonstration experiments applying scientific discoveries to local conditions; (d) investigations for the discovery of new truths and new applications of old principles.¹¹

¹ Whitney, 868, 870; M. F. Greeley, 861.

² True, 140; Powers, 172.

³ True, 145; Poole, 923.

⁴ Miller, 609, 610.

⁵ True, 139, 140; Stubbs, 778, 780; Fernow, 1000, 1001.

⁶ Davenport, 231.

⁷ McKay, 536.

⁸ True, 139; Stubbs, 779.

⁹ Hale, 887; Whitney, 868.

¹⁰ True, 140; Davenport, 233.

¹¹ True, 144, 147.

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The experiment stations, like the agricultural colleges, are subjected to some criticism on the part of those who think that their work should be made of more practical value to the average farmer who is unable to employ expensive methods;¹ but the attitude of farmers toward the experiment stations is increasingly friendly throughout the country, and it is not questioned that their work has been of great advantage to agriculture, not only in inducing improved methods, but also in showing the possibilities of agriculture in the various localities and encouraging diversified farming, both in the North and in the South. It is suggested that they should do more work of this latter kind.²

The movement for agricultural education and research in the United States has resulted in a body of trained experts and up-to-date literature on American agriculture; wide distribution of a large amount of useful information, and a breaking down of the idea that agriculture is nonprogressive, while the competition of improved methods has rendered the condition of ignorant, nonprogressive farmers worse than formerly.³ The attitude of the farmer toward the scientists has changed in recent years. Experts who were formerly listened to with indifference, because of the farmer's contempt for theory, have proved their right to be considered authorities in practical agriculture, and are listened to with the greatest interest;⁴ and while practical farmers were formerly the most popular speakers at farmers' institutes, there is a growing demand for scientific lecturers.⁵

Common schools in rural districts.—Among the causes most often assigned for the depopulation of the rural districts are the inferior school facilities to be found there, and the neglect of subjects connected with agriculture in the common-school curricula. In Pennsylvania the rural school districts receive from the State only about half as much for each pupil as is paid to Philadelphia.⁶ In some parts of the South the school facilities are said to be poorer than thirty or forty years ago, notwithstanding some improvement in recent years, and the funds insufficient to keep the schools open more than a few months in the year.⁷

The ordinary common-school curriculum is criticised as being very poorly adapted to the needs of those who are to engage in farming. Such pupils learn nothing of the profession they are to follow. School children go into an artificial world having no relation to rural life, and read about phenomenally successful men in other than agricultural lines, but nothing about crops, plant and animal foods, or even the nature of the soil.⁸ The lack of prosperity in Southern agriculture is attributed to this educational deficiency,⁹ and it is said that the public schools as at present conducted unfit the negroes, especially, for the struggle for existence, tending to make them think they can live without working.¹⁰ Manual training of every kind is neglected.¹¹

The teaching of elementary agriculture in the common schools in agricultural districts is earnestly advocated, and nature studies are recommended for both city and country schools.¹² Several of the States have already taken up the matter of nature study, New York, Pennsylvania, and Massachusetts taking the lead in this direction.¹³ The establishment of township graded and high schools in country districts is advocated as another means of improving the educational facilities of the country.¹⁴

¹ Clohan, 595, 602, 608.

² Powers, 177; Stubbs, 787, 781.

³ True, 151, 152.

⁴ Howard, 762.

⁵ True, 141.

⁶ Crowell, 386.

⁷ Redding, 451.

⁸ Davenport, 264, 265; Whitney, 370; Hamilton, 351; Stubbs, 779.

⁹ Brown, 62.

¹⁰ Dillingham, 187.

¹¹ Stockwell, 887.

¹² True, 142, 143; Ager, 107; Brigham, 12; Jones, 29; Hamilton, 352.

¹³ Hamilton, 351, 352; Stockwell, 887.

¹⁴ Hamilton, 353.

EXHAUSTION AND IMPROVEMENT OF SOILS.

Until recently American agriculture has consisted in raising cheap crops, without much reference to the effect upon the soil; but it is argued that a man who leaves a farm poorer than he found it has committed an offense against society.¹ While the exhaustion of soils may be excused on the ground that the future is necessarily forgotten because of present necessities,² it is pointed out that it is possible to get as much income while improving the soil as by letting it deteriorate.³

In the South one cause of diminished fertility is the system of cultivation which leaves the land bare a large part of the year, so that the soil is decomposed by the continued warmth and humidity, thus eliminating the organic elements.⁴ Notwithstanding the desolate appearance of much of the land of the East and South, however, it is denied that it lacks the needed elements of plant food. Mr. Whitney, Chief of the Bureau of Soils in the Department of Agriculture, says he has never seen a case in which the exhaustion of soil was probably due to the absence of plant food and that all the soils of New England and of the South have the essential elements for crop production, which need only to be rendered available by methods which will facilitate the natural weathering of the soil. With proper cultivation it is possible to obtain fair crops from the same land for an indefinite period. The soil of the South has never been thoroughly tilled, and deep plowing brings out an abundance of plant food.⁵ The reputed exhaustion of soils in Maryland and Virginia, and in the South generally, is attributed to injudicious methods of cultivation and to social conditions unfavorable to agriculture, rather than to the actual exhaustion of plant food. Mr. Whitney contrasts the typical Maryland farm, managed by an overseer or a tenant farmer, and producing such staple crops as grain and tobacco, with the typical farm of Lancaster County, Pa., where the farm work is done by the owner and his family, and where there is such a variety of products that very little is either sent out or brought into the county. Mr. Whitney admits, however, that the cultivation of cotton has resulted in a great loss of organic matter, leaving much of the Southern soil poor in the organic substances necessary for the weathering of the soil.⁶

Maintenance of fertility.—In some parts of the country the fertility of the soil has been actually increased. Thus the soil of Illinois, where it has been properly managed, is said to be more fertile than when the prairie was first broken. The increase of fertility is attributed to rotation of crops, cultivation of clover, careful tilling, and use of manure.⁷ In Virginia, also, the yield per acre is said to be larger than in the past where the soil has been properly cultivated,⁸ and in Alabama, lands which formerly produced less than one-fifth of a bale of cotton to the acre have, by the use of fertilizers, been made to produce a bale to the acre.⁹ In New Jersey the land is said to be improving where enough stock is kept.¹⁰

The crops grown the first year on prairie soils are said to be small as compared with the second year, and small the second year as compared with the third, but fair beginning with the third year.¹¹

The principal methods used for maintaining fertility of the soil are rotation of crops, especially the use of leguminous crops to gather nitrogen from the air, thorough tillage, and artificial fertilization. Attention is called to the importance of the bacteria which grow in the tubercles on the roots of leguminous plants. Some of the leguminous crops will not grow unless these bacteria are in the soil,

¹ Wiley, 647, 648.

² Stockwell, 808.

³ Davenport, 362, 363.

⁴ George, 223.

⁵ Whitney, 850, 866; Hale, 380, 389, 393.

⁶ Pages 871, 872.

⁷ George, 223; Wilson, 249.

⁸ Wedderburn, 622.

⁹ Poole, 924.

¹⁰ Coles, 123.

¹¹ Moran, 708.

and cultures of these bacteria are sold in Germany, and to some extent in this country, by the use of which the yield may be greatly increased.¹

While nitrogen can be supplied to the soil through leguminous plants, lost potash and phosphoric acid must be returned by artificial fertilization.² Fertilizers are sometimes used to neutralize the acidity of the soil, which is more common than was formerly supposed, or to balance the ratio of the soil constituents in some other way.³

The main sources of supply for the animal substances used as constituents in commercial fertilizers are Chicago, Omaha, and Kansas City, while the rock phosphate comes from South Carolina, Tennessee, and Florida, and potash from Germany. The phosphate industry of South Carolina has declined somewhat in recent years because of the discovery of the Tennessee and Florida phosphates.⁴ Tankage from slaughterhouses is used largely in sugar-cane culture in Louisiana, and cottonseed meal is used as a fertilizer both there and elsewhere in the South.⁵

Mr. Dye expresses the opinion that the sewage of cities would be of great value if utilized as a fertilizer.⁶

Prices of fertilizers.—Phosphates have been growing somewhat cheaper because of the large territory from which mineral phosphates are derived,⁷ but there was a sudden advance of from 15 to 25 per cent in the prices of fertilizers early in the year 1900, which is attributed to the influence of a trust, the raw material being said to be controlled wholly or in part by the companies making the fertilizers.⁸

Fertilizer laws.—The Massachusetts Experiment Station is credited with having first shown that farmers were being cheated by dealers in commercial fertilizers, and with having secured the passage of the Massachusetts fertilizer law, which has been followed with variations by many other States.⁹ Laws governing the inspection and sale of fertilizers now exist in most of the Eastern States, and the desirability of a more uniform system of laws, including national regulation of interstate trade, is suggested.¹⁰

Intensive and extensive culture.—Two witnesses express the opinion that much harm has been done by the excessive and constant use of commercial fertilizers, without the intensive methods which should be employed with them.¹¹ On the other hand, it is claimed that American farmers have adopted intensive methods as fast as the conditions have justified.¹² A farmer can not afford to spend very much money in maintaining the fertility of cheap lands, but when the yield diminishes and the scarcity of lands increases their value, more intensive methods will doubtless be introduced.¹³ Even now, intensive farming is claiming the attention of the people in some parts of the country, at least, more than ever before.¹⁴ One of the most striking examples of intensive culture is the raising of tobacco and of pineapples and truck crops under cheese-cloth covers. While this involves an initial expense of \$500 an acre in the tobacco fields of the Connecticut Valley, it is said to yield in large profits.¹⁵

Size of farms.—Nearly every witness who discusses the subject is of the opinion that small farms are of more advantage than large ones, partly because they make more thorough cultivation feasible, and partly because comparatively few men can direct the labor of others to advantage.¹⁶ Some witnesses emphasize the social advantages of the system of small farms, which brings the farmhouses nearer

¹ Whitney, 882.

² Kedzie, 549.

³ Whitney, 874.

⁴ Miller, 611; Hammond, 894.

⁵ Stubbs, 774.

⁶ Page 98.

⁷ Miller, 611.

⁸ Graham, 437.

⁹ Stockwell, 894.

¹⁰ Whitney, 874.

¹¹ Whitney, 882, 883; Hammond, 894.

¹² Crowell, 341.

¹³ Whitney, 888.

¹⁴ Stevens, 915.

¹⁵ Whitney, 876, 877.

¹⁶ Powers, 187, 188; George, 221; Wilson, 249; Jones, 88.

together and near to the schools.¹ One witness thinks the percentage of profit is larger on bonanza farms than on small farms;² but the preponderance of testimony is to the effect that the bonanza farms are in many cases both unprofitable to their owners and detrimental to the communities in which they are situated. It is charged that bonanza farmers fail to take advantage of the rotation of crops, and exhaust the soil.³ It is believed that the subdivision of bonanza farms into small tracts would be beneficial by giving employment to more people and increasing the permanent population of the locality.⁴ The chief advantages of the bonanza farms are said to lie in the marketing and shipping of the product.⁵

Drainage of swamps.—It is estimated that there are 168,000 acres of tide marshes along the Atlantic and Gulf coasts, and several million acres along the Pacific coast, which might be reclaimed for agricultural purposes, while at the same time increasing the healthfulness of the localities in which they are situated. Swamp lands which have been drained in Illinois and Michigan have become very productive and valuable.⁶

IRRIGATION.

While there are remains of prehistoric irrigation works in Arizona and New Mexico, and the early Spanish settlers in the Southwest also promptly resorted to artificial means for supplementing the scanty rainfall, irrigation by English-speaking people in the United States began only about half a century ago among the Mormons in Utah, and it was twenty years more before it was generally resorted to in Colorado, California, and other States. It is estimated that 40 per cent of the area of the United States (exclusive of the detached possessions), including most of the country west of the one-hundredth meridian, requires irrigation for successful agriculture. In the arid part of the country irrigation is not only necessary to the development of agriculture, but also, by providing a food supply, makes the development of other industries possible, and adds greatly to the attractiveness of the country. In 1890 only 3,600,000 acres of land in the arid States were irrigated. It is estimated that by the construction of reservoirs, about 74,000,000 acres, or not more than 10 per cent of the lands of the arid region, can be profitably irrigated. It is said to be no longer possible to irrigate wheat, but the possibilities of irrigation are very great for such crops as fruits and alfalfa.

Water rights.—Much litigation over water rights in the Western States has resulted from the lack of adequate laws governing such rights, and also, in Mr. Mead's opinion, from errors in the adjudication of water rights. Certain principles, however, have been established by State legislation and judicial interpretation. Thus it is settled (1) that the first appropriator from the stream has the first right to its water, the rights of subsequent appropriators following in order, and (2) that all rights must be based on the actual beneficial use of the water; but there are wide differences in the laws governing the limitations of an appropriation. In States where the irrigating canals are small and are owned by the owners of the land irrigated, the water rights are attached to the land and the appropriation limited to the needs of the land; but in some States and Territories where corporations have built extensive irrigation works, water has come to be regarded as personal property which can be disposed of like any other commodity. Especially difficult complications arise where a stream crosses the borders of a State, since in that case it can not be wholly controlled by any one State legislature. Mr. Mead emphasizes the necessity of laws for the more adequate regulation and control of water rights.

Seepage and alkali.—The loss of irrigation water by percolation where canals

¹ Wilson, 249; Budge, 850, 851.

² From, 701, 702.

³ Brigham, 17, 18; M. F. Greeley, 634; Powers, 128.

⁴ Dye, 94, 95.

⁵ Hanley, 379.

⁶ Whitnev, 884, 885.

and ditches pass through porous soil or gravel is not only a serious problem to the canal owners themselves, but is frequently the cause of injury to the lands of others. Where the seepage is not excessive it may be beneficial to the lands reached by the water, but excess of water may itself be injurious to the crops and result in an accumulation of alkali which is still more harmful. Evaporation from water surfaces, which ranges from three to six inches a month in the west, also in some cases concentrates the alkali in the water used for irrigation to such an extent as to make it injurious to crops.

In order to prevent the loss of water by seepage irrigating canals are sometimes lined or cemented. In other cases clay is dumped into the canal and distributed by agitation of the water. In California it is common to protect canals against percolation by wooden troughs or pipes.

Mr. Whitney is convinced that by using greater care in the application of water twice as much land could be irrigated with the amount of water now commonly used, and that greater care will be necessary to protect the soil from the injurious effects of overirrigation and the accumulation of seepage water and alkali.

Silt.—Another physical difficulty in irrigation is the accumulation of silt on the sides and bottom of the canals, which makes it necessary in some cases to clean out the sediment from time to time.

Cost of irrigation.—The cost of irrigation from many of the original ditches was as low as from \$3 to \$5 per acre, but as it became necessary to construct larger ditches the expense increased. At the time of the Eleventh Census the average cost of placing land under irrigation was \$12.12 an acre, and the average annual cost \$1.07 an acre. In some canals the estimates for water now run as high as \$20 an acre, which is more than can be paid in many cases, because an improved farm could be bought in the Mississippi Valley for what it would cost to develop a farm farther west by irrigation.

Public and private irrigation.—Irrigation in the United States differs from that of most other irrigating countries in that all the canals and reservoirs have been constructed by private enterprise, except that Colorado has built a few reservoirs and begun one canal with State funds. Under the system of private construction the leading consideration has been the cheapness with which water could be secured, and little attention has been paid to the development of a comprehensive system of irrigation for the future. It is predicted that along many of the streams the irrigated area can now be extended only by the construction of reservoirs. Mr. Mead distinguishes between reservoirs located on the channels of streams and those at a distance from the streams. He believes that those located away from the streams can be safely left to private enterprise, but that those built to supplement the natural flow of the streams and to meet the needs of a number of ditches or canals should be either State or national works. He points out that the arid States lack the resources for constructing canals and reservoirs, because they are sparsely populated and the public land within their borders contributes nothing in taxes and can not be used as a basis of credit in borrowing money.¹

Rice irrigation.—Irrigation is coming to be of considerable importance in the East and South as well as in the far West, especially in the production of rice. The rice lands of South Carolina were formerly protected by substantial levees built before the civil war through cooperation between individuals and the State, but these levees were destroyed during the war, and large areas of rice lands were abandoned. While the remaining rice lands of South Carolina are still flooded by the rivers without artificial means, rice is now grown in Louisiana exclusively by artificial flooding; and the success of rice irrigation in Louisiana has led to increased interest in the industry on the Atlantic seaboard.²

¹ Mead, 1049-1074; Whitney, 860-865.

² Whitney, 864, 865; Stubbs, 772, 773; Mead, 1060, 1070.

FORESTRY.

The destruction of forests is thought by some authorities to result in a reduction of the rainfall.¹ However that may be, it is generally agreed that deforestation results in irregularity in the flow of water in the streams, low water alternating with floods; for while the forest stands the snow melts slowly and the water oozes gradually through the mosses and loam to the rivers, but when the forest is destroyed the water runs much more rapidly into the streams. It is therefore suggested that preservation of forests at the headwaters of the Mississippi would save an expenditure of large sums for dikes to protect the Lower Mississippi Valley from flooding. The financial possibilities of Government forestry are illustrated by the statement that the German Government receives annually about \$95,000,000 from its forests, of which about \$55,000,000 is clear profit; while in many districts the forests supply all the revenues for schools and roads, and no taxes are levied.²

Several States have made a beginning in the direction of forestry administration. In Pennsylvania, for example, authority has been granted to purchase lands on the headwaters of rivers for forest reserves. There is also less tendency than in former times to waste timber. Whereas hemlock trees were formerly cut simply for the bark and the logs left on the ground, the wood is now utilized either for lumber or for making paper.³

New York College of Forestry.—Professor Fernow, of the College of Forestry of Cornell University, gives some account of the work of his college. The college was established by the State of New York, primarily to make an experimental demonstration of forest management with special reference to a permanent policy for the treatment of the State reservation in the Adirondacks. Forestry, according to Mr. Fernow, is the business and art of managing woodland so as to derive a continuous revenue from successive crops of merchantable timber. It is admitted that crops which take from 50 to 100 years or more to mature are not suitable for cultivation by the small capitalist. They can be grown to advantage only on a large scale, and cultivation of them is an enterprise particularly suited to the circumstances of permanent bodies like States and communities.

The State bought 30,000 acres of Adirondack woods and made over the tract to Cornell University for 30 years. A working capital of \$30,000 was provided by the State to start with, but all the further expenses of managing the tract and planting and protecting a new crop of timber on it must be met from the profits of harvesting the old crop. Over a million seedlings of conifers are already growing in nurseries upon the tract, to be set out in the forest when they attain a sufficient size.

The college course covers four years, of which only the last two, however, are occupied with special courses in forestry management. Each spring the students have a period of practical work in the forest under the direction of the instructors. The number of students is increasing, and many students from other departments of the university are taking special courses in the college.⁴

STAPLE AND DIVERSIFIED PRODUCTS.

Diversification and specialization.—It is pointed out that while there is often an overproduction of such staple articles as cotton and wheat, there is seldom an overproduction of other crops, especially of those which are used as luxuries.⁵ Many witnesses therefore recommend diversification of crops as an important means of improving the condition of the farmers, especially in the South; and there is evidence that some progress has been made in the direction of diversified

¹ Naftzger, 368.

² Hamilton, 368, 364; Greeley, 944.

³ Hamilton, 364.

⁴ Pages 1000-1004.

⁵ Bailey, 1011, 1012; Hale, 398.

agriculture in many parts of the country. There are, however, great difficulties in the way of introducing diversified agriculture in the Southern States. Cotton being the universal money crop, it is the only crop on which money can be borrowed, and it is also said that it is the only crop which is always certain of a market.¹ The conditions are such that it is easy for a Southern farmer to grow cotton, but if he attempts to raise other crops he must try expensive experiments, and must have capital. For those who have gone in debt in order to buy homes, it seems impracticable to discontinue the growing of cotton.² Moreover, there are cases in which Southern farmers who have tried to raise vegetables, tobacco, or watermelons have lost considerable money in the attempt.³ On the other hand, the profits on diversified crops are sometimes ten times as great as on cotton, although the precarious rainfall makes the amount of profit somewhat uncertain. The railroads gain from diversification as well as the farmers themselves, because fruits, for example, afford fifteen times as much tonnage to the acre as cotton, at a higher rate.⁴ Even where it is impracticable to raise other crops than cotton on a large scale for the market, Southern farmers often find it advantageous to produce their own supplies, and so become to a greater or less extent independent of the country stores and of the credit system.⁵ This is a return to something like the system of agriculture which prevailed before the war, when the work animals and nearly all the supplies were produced on the plantation.⁶ As regards diversification with a view to marketing the various crops, it is pointed out that the chances for diversity increase with nearness to city markets.⁷

While it is universally conceded that too much attention has been paid to a few staple crops, it is questioned whether farming is after all an exception to the tendency of business in general toward specialization. It seems possible, however, to reconcile the principle of specialization with that of diversified crops by combining specialization on individual farms with diversification in a given locality as a whole. It is not essential to diversification in this sense that every farmer should produce a great variety of crops; but each farmer may devote himself to the cultivation of the particular crops his land and capabilities are best adapted to. Thus a man who has good wheat land might supply wheat for all his neighbors, and one who has good rice land might furnish rice for an entire neighborhood. It would not be desirable for a farmer to raise wheat and rice for his own consumption alone, because they require milling.⁸

Wheat.—Attention is called to an inclination in the West and Northwest to get land into producing wheat as rapidly as possible, because cultivated land is more easily disposed of than land not under cultivation. While some increase of wheat production has been necessary to keep up with the demand, the production has at times been in excess of the demand,⁹ especially when European harvests have been good for a number of years, and the demand for wheat for export has therefore been less than usual.¹⁰ Referring to the recent discussions as to the wheat-producing capacity of the country, Mr. Powers declares that the amount of wheat that would be produced in this country, if the Liverpool price were maintained at a dollar a bushel, could hardly be calculated.¹¹

Barley.—The decline of the barley-growing business in the East, especially in New York, is attributed chiefly to the adulteration of malt by the use of substitutes for barley. It is also claimed that large malt houses have been closed by a

¹ Brown, 60-64, 70; Lovejoy, 76, 78.

² Graham, 428.

³ Youmans, 119.

⁴ Hale, 380.

⁵ Mason, 500, 501; Stevens, 917, 918; Balch, 496.

⁶ Hammond, 820, 821.

⁷ Crowell, 334.

⁸ Redding, 446; Whitney, 875.

⁹ Norris, 323, 329.

¹⁰ Crowell, 343.

¹¹ Page 181.

trust which has bought Western and Canadian barley in preference to that grown in the East.¹

Yield of cereals per acre in the South.—Generally speaking, the yield of cereals per acre is much less in the South than in the Northwest. The normal yield of grain is said to be about one-third as great in the South as in the North. The frosty nights which occur in the Northern States at about the time the plant has attained its full growth favor the production of grain because of the botanical principle that the plant tends to form seed as soon as there is danger of destruction; while in the South there is a longer persistence of vegetable growth and less tendency to produce grain. Yet a phenomenal yield of grain has been produced in South Carolina by checking the vegetative growth by certain methods of cultivation.²

Profit and loss in wheat growing.—There is some testimony to the effect that grain is raised at a loss in the Northwest,³ but this is controverted by other evidence to the effect that when a farm is properly cultivated wheat raising is profitable.⁴ Mr. Greeley, of South Dakota, takes an intermediate position, maintaining that wheat does not pay year after year unless it is raised in connection with stock farming. Mr. Greeley knows of farmers who have turned to stock raising and yet raise more grain than before. The attention of the whole Northwest, he says, is turning to stock.⁵

Mr. Coles, of New Jersey, does not regard wheat as a paying crop in that section, but adds that it is sometimes necessary to grow it for the straw.

Prices of wheat.—It is stated on the authority of the Royal Commission on Agriculture that from 1849 to 1872 the production of wheat increased 70 per cent and the price 30 per cent, while from 1872 to 1894 the production increased 40 per cent and the price decreased 60 per cent.⁶ In contrast with this marked downward tendency in the English market, it is pointed out that the gold value of wheat at the farm in this country stands as high in recent years as for the years following the civil war.⁷

Cost of transportation.—It is estimated that the cost of carrying wheat from the wheat fields of the Northwest to the Atlantic seaboard is one-half as great as the original cost of production.⁸

Cost of producing cotton.—The cost of raising cotton is said to vary all the way from 3½ to 20 cents a pound.⁹ There is considerable testimony, however, to the effect that when the price of cotton is as low as 5 cents a pound it can not be raised profitably.¹⁰ Mr. Lovejoy states that cotton can not pay expenses when the price is less than 5½ cents, and that there is very little profit when the price falls below 7 cents.¹¹ One or two witnesses indicate that the cost of production depends very much upon the yield per acre. Thus it is said that when a bale of cotton is produced for every 3 acres the cost is about 8½ cents a pound, including expenses of delivery and interest and taxes; when one bale is raised on 2 acres the cost is said to be about 7½ cents, and when one bale is raised to the acre, about 6½ cents.¹²

Cotton manufactures.—Several witnesses express the opinion that the development of cotton manufactures in the south can not but be of material benefit to the section, perhaps by increasing the price of cotton, or at any rate by adding to the prosperity of the South as a whole.¹³ Dr. Crowell points out that agriculture has already improved to some extent in the vicinity of the manufacturing villages, and maintains that the agriculture of the future in the South must be built up on the basis of the market furnished by domestic manufactures.¹⁴ As an illustration of

¹ Norris, 325.

² Whitney, 872.

³ Moran, 706, 710.

⁴ Budge, 849, 850; Jumper, 732, 733.

⁵ Page 938.

⁶ Crowell, 341, 342.

⁷ Powers, 138.

⁸ Hanley, 230, 237.

⁹ Redding, 445; see also Hammond, 327.

¹⁰ Hill, 503; Balch, 496; Northfleet, 490; Barrett, 50.

¹¹ Page 75.

¹² Peek, 457, 458.

¹³ Holmes, 161; Hammond, 332; Lovejoy, 76; Barrett, 53.

¹⁴ Page 335.

the advantage of the nearness of cotton factories, it is stated that when cotton is low the price is nearly always higher in North Carolina than in New York.¹ Mr. Graham, of North Carolina, says he has sometimes made half a cent a pound by telephoning to the mills for the price.

In Louisiana the newer cotton factories are organized by joint stock companies—a plan which has been quite successful also in North Carolina. The shares are paid for in installments of \$1 a share weekly, each person subscribing for 10 shares at \$100 each.²

Besides increasing the profits of cotton growing, the presence of local factories, by diverting labor from the fields to the factory villages, creates an increased demand for butter, eggs, and other agricultural products.

The Southern cotton mills have the advantage of their Northern competitors in nearness to the raw material and in longer working hours; but, on the other hand, the Southern operatives have not yet become sufficiently skilled to make fine fabrics, though they are said to be making rapid progress.³

Stock raising.—The diversification of agriculture, especially by stock raising, is recommended, and it is pointed out that while stock raising may sometimes bring in somewhat less income than the growing of wheat, the profit is not so apt to be interrupted by unfavorable seasons, and the effect upon the soil is much better.⁴

Mr. Youmans, of South Carolina, testifies that he can buy Western horses more cheaply than he can raise them.⁵ In other parts of the South, also, the impression prevails that it is more economical to buy mules than to raise them, but this is denied by witnesses from Mississippi, Tennessee, and Arkansas.⁶

Truck farming.—Southern competition has been felt severely by the New Jersey truck farmers, especially when the Southern vegetables have been delayed by cold weather so that they are thrown on the market at about the same time with the New Jersey products.⁷ The Maryland truck farmers have also suffered severely from Southern competition.⁸

Dairying in New Jersey.—New Jersey truck farmers are said to be giving up that industry and going into dairying, but even in that business there is said to be no profit in supplying the New York market. In the vicinity of Elizabeth the New York trade has been discontinued. Milk which retailed in New York City for from 5 to 8 cents a quart brought the producer only 2 cents a quart.⁹

Fruit growing.—Attention is called to the advantages of fruit growing both from the standpoint of present profit and of the utilization of soils which are not well adapted to other crops. Thus, in Maryland, soils which are of no value for general farm purposes are found to be particularly well adapted to the production of late peaches.¹⁰ During the high prices of fruits which prevailed a few years ago it was not unusual for California orange growers to net \$500 an acre.¹¹ Fruit growers in West Virginia are said to have made more than twice as much money as farmers engaged in general agriculture, and a good profit is reported also from Georgia fruit farms.¹² It is suggested that the consumption of such fruits as peaches could be greatly increased by an improved system of distribution which would supply the smaller towns of the country as well as the large cities.¹³

Tobacco.—The Department of Agriculture has investigated the possibility of raising Sumatra tobacco in this country instead of importing large quantities from Sumatra. Sumatra seed has been planted in the Connecticut Valley under cheese-cloth sheds, and by a combination of the methods used in Sumatra, Florida, and

¹ Graham, 436.

² Stubbs, 777.

³ Barrett, 52, 53.

⁴ Greeley, 637.

⁵ Page 121.

⁶ Kyle, 473; Manson, 506, 507; Balch, 497.

⁷ Coles, 123, 127.

⁸ Ager, 106, 110; Whitney, 360.

⁹ Magie, 99, 103.

¹⁰ Whitney, 377.

¹¹ Turnbull, 988.

¹² Clohan, 946; Hale, 397.

¹³ Hale, 396.

Cuba, a leaf has been produced which is pronounced by experts to be fully equal to the imported Sumatra leaf. It is confidently expected that this industry will successfully compete with Sumatra tobacco.¹

Tea.—Attempts to produce tea in this country date back to the period before the civil war, but these early attempts were discontinued. Mr. Shepard, of Pinehurst, S. C., has more recently experimented with many different kinds of seed, and has succeeded in producing tea at the rate of 400 pounds to the acre, of a quality pronounced by experts to be inferior to nothing brought to this country. On one field he has produced several times as much tea to the bush as is produced in China and Japan. Mr. Shepard is confident of the possibility of building up a profitable tea industry. Congress has made an appropriation to aid in the prosecution of his experiments.²

THE SUGAR INDUSTRIES.

The cultivation of sugar beets is becoming one of the most important of the newer agricultural industries of this country. Among the advantages claimed for sugar-beet cultivation are the following:

(1) If the leaves, crown, pulp, and molasses are returned to the soil, directly or indirectly, no loss of plant food results from the removal of the sugar itself, which contains no elements of fertility. It is considered important, however, that beets be grown not oftener than once in three or four years on the same land, and they are found to be useful in preparing the soil for other crops.

(2) Sugar beets require far more intensive methods of cultivation than most other crops. It is thought that this will tend to improve agricultural methods and teach the American farmer the desirability of fertilizing the soil.

(3) The pulp remaining after the extraction of the sugar is an excellent food for cattle and other farm animals, increasing the yield of milk in milch cows, and being favorable also to the production of a choice quality of beef. It results from this circumstance that dairy industries are sometimes built up around beet-sugar factories. The residual molasses, another by-product of sugar manufacture, is also useful as a food for cattle, being sometimes mixed with dried pulp for that purpose.³

(4) The establishment of sugar factories exerts a marked influence on the labor market, giving employment to many who would otherwise be idle, and relieving to some extent the congestion of population in the cities. The hoeing, thinning, and harvesting of the beets gives employment at light work to men, women, and children, and the hoeing and thinning are done mainly in June and July, after the close of the schools. In Europe the field hand in the sugar-beet industry usually becomes an operative in the sugar factory during the manufacturing season, and so has employment nearly the year round; and a similar arrangement has been attempted in at least one case in this country, the men employed in the factory in the late fall and winter being given employment in the fields during the summer months. It is estimated that a beet-sugar factory should support a laboring population approximately to the number of tons of its daily capacity, and that it would require 400 or 500 factories of 500 tons each to supply the American demand.⁴

(5) Owing to the custom of the sugar factories of contracting for beets before they are planted, the farmers have no difficulty or uncertainty about the disposal of their crops.⁵

¹ Whitney, 870, 878.

² Shepard, 440-443.

³ Kedzie, 539, 540, 548; Wiley, 846-848, 854; Turnbull, 979;

Smith, 571, 578; Saylor, 587; Rogers, 54.

⁴ Wiley, 652, 653; Smith, 574.

⁵ Rogers, 557.

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(6) Wherever the beet-sugar industry has been established in this country the value of farm land has increased because of the profitability of the beet crop.¹

Profits of sugar-beet culture.—Under favorable conditions the profits of sugar-beet cultivation are large. Figures relating to the experience of 10 farmers in Michigan show that their profits, in a favorable season, ranged from \$18.85 to \$57.08 an acre. This was in an agricultural community composed largely of Germans and Hollanders, many of whom were accustomed to raising beets in their native homes.² It is suggested that foreigners have an advantage over Americans in the raising of sugar beets, in that they are not so averse to getting down on their knees, as is necessary in the thinning of the beets;³ yet it is said that American farmers in Illinois have grown better beets than could be grown by the Germans, who have the reputation of being the most skillful sugar-beet growers in the world.⁴

It is said to be profitable to raise even one or two acres of sugar beets.⁵

Sugar bounties.—The beet-sugar industry has been encouraged by several States by bounties on sugar manufactured from beets grown within the State. In some cases the payment of the bounty is conditioned upon the payment of at least a prescribed price for the beets, and in any case the theory is the bounty will indirectly benefit the farmer. In some cases, as in Michigan and Nebraska, the bounty has been discontinued after a few factories were started through the refusal of the legislature to make further appropriations for that purpose. All the witnesses who discuss the subject agree that while a bounty may be necessary at the very beginning, a permanent bounty is unnecessary. The exemption of beet-sugar investments from taxation for a series of years, as practiced in Iowa, is recommended as a desirable means of encouraging the industry.⁶

Climates suitable for sugar beets.—It is said that the farther north sugar beets can be brought to maturity the greater will be the sugar content of the beets, partly because of the longer days in northern latitudes. Excellent beets are grown in Canada, but the time for harvesting is so limited on account of the early winter that the industry has not proved as profitable there as farther south, where the beets are not quite so good.⁷ While attempts have been made to grow sugar beets in many parts of the South, it has been found that the beets grow too large and have a small sugar content.⁸ It costs no more to raise beets containing 18 per cent of sugar than those containing 10 per cent, except that a little more fertilizer may have to be used; and it pays the farmer and the manufacturer to get the largest percentage possible, because every additional per cent of sugar means a clear yield of 20 pounds more sugar to the ton, and the factories pay for the beets according to the amount of sugar they contain.⁹

Irrigation for sugar beets.—The arid region, where irrigation is possible, is pronounced the ideal place for sugar beet culture, because of the sunny days and the absolute control of the water supply. In the humid regions September rains followed by warm weather result in a second growth which injures the quality of the beet, and the muddy roads interfere with the marketing. It is predicted that sugar beets will be the most profitable crop that can be grown on irrigated lands, and that they will pay fixed charges on land worth \$300 an acre, on which grain could not be profitably grown.¹⁰

Transportation to factories.—In Michigan over 50 per cent of the sugar beets are hauled to the factories on cars from points within a radius of 40 miles from the factory. Beets are hauled to Binghamton, N. Y., from points as far away as 75 to 100 miles. Some of the Michigan factories pay the freight on the beets; in

¹ Wiley, 648; Smith, 573.

² Smith, 568.

³ Smith, 578, 579.

⁴ Davenport, 263, 264.

⁵ Rogers, 522.

⁶ Saylor, 589, 590; Rogers, 560; Kedzie, 542, 543.

⁷ Wiley, 644, 645.

⁸ Stubbs, 774.

⁹ Wiley, 664.

¹⁰ Wiley, 646, 647.

other cases they are unloaded free of cost.¹ The factory at Lehi, Utah, has inaugurated an interesting experiment by establishing substations, about 80 miles from the main factory, at which the juice is extracted from the beets and piped to the manufactory. This plan extends the area from which it is practicable to obtain beets, and makes it possible to locate the main factory at the most favorable point for getting fuel, water, etc.²

Manufacture of beet sugar.—There were 80 beet-sugar factories in operation in the United States in 1889, with a total maximum capacity of 19,000 tons daily. In May, 1900, 6 new factories were building, and still others were projected. The average size of the American factories is larger than of those in Europe, the largest being a California factory with a capacity of 3,000 tons of beets daily.³ It is thought that sugar can be made at the minimum cost by a factory with a capacity of 500 tons daily.⁴

It is claimed that the United States now has the best beet sugar factories in the world, and experts come from Europe to study them. While the first American factories imported all their machinery, some of the machines used are now made exclusively in America, and some of the best factories have no imported machinery.⁵ In some cases foreign machinery has been found unsatisfactory and inferior to that made in America.⁶ It was at first necessary to employ experts from abroad to operate the machinery, but as Americans have learned the processes the amount of foreign labor has diminished.⁷

The producers of about one-half of the sugar beets grown in Germany own shares in the factory in which the sugar is manufactured. The inauguration of a similar system of cooperation is recommended in this country as a means of preventing misunderstandings between the manufacturers and the beet growers.⁸ A large share of the stock of the Holland Sugar Company, Michigan, is owned by the farmers of the vicinity.⁹

Cane sugar.—It is thought that Louisiana is not far enough south for cane sugar, though it is too far south for beet sugar, and that the production of cane sugar in the United States is likely to diminish. The cost of producing sugar in Louisiana is considerably higher than farther south. Cuba, Hawaii, and Porto Rico are characterized as natural cane-producing countries.¹⁰ It is estimated that fifty years hence, under favorable conditions, Cuba may produce three million tons of sugar a year. Hawaii exceeds Cuba in the yield per acre, but nearly all the land in Hawaii capable of growing sugar is already under cultivation. Sugar cane is not thought to be susceptible of scientific improvement to the same extent as sugar beets.¹¹

The size and capacity of the Louisiana sugarhouses have been greatly increased during recent years, and it is found that sugarhouses with a capacity of 1,500 tons of cane daily produce sugar much more cheaply than those of 200 tons capacity, requiring no more expert labor. Part of the residual molasses is fed to stock, but as the amount produced is much greater than is needed for that purpose in the vicinity of the sugarhouses, the remainder is mixed with glucose and sold as Louisiana sirup.¹²

Maple sugar.—Maple sugar is produced to some extent in about half the States of the Union, but its production is greatest in Vermont, New York, and Ohio, in the order named. In Vermont the maple-sugar industry is as important as anything the farmers are engaged in, with the exception of dairying, bringing them an income of from \$1,000,000 to \$1,500,000 a year without interfering with their

¹ Smith, 577, 578; Rogers, 553.

² Saylor, 583, 588.

³ Wiley, 640, 650-652.

⁴ Rogers, 558, 559.

⁵ Wiley, 640.

⁶ Rogers, 558; Smith, 589, 570; Kedzie, 543, 544.

⁷ Smith, 570, 571, 573.

⁸ Wiley, 653, 654; Kedzie, 546.

⁹ Smith, 573.

¹⁰ Wiley, 649, 653, 654; Saylor, 589.

¹¹ Wiley, 653, 654.

¹² Stubbs, 774, 775.

other products, since the sugar season comes at a time of the year when there is not very much else to be done.¹

Consumption and production of sugar.—The annual consumption of sugar in the United States is estimated at about 2,000,000 tons, of which nearly 1,700,000 tons are imported. Three-fifths of the sugar consumed in the country is beet sugar. Of the total world's production of sugar more than half is produced from beets, nearly all the beet sugar being made on the continent of Europe. The demand for beet sugar increases at a very rapid rate, the annual increase for the past 30 years being 13 per cent. It is therefore estimated that this country will be able to consume all the sugar it can produce, including that produced in the insular possessions, for at least a long time to come. A beet-sugar factory such as that at Binghamton, N. Y., produces less than one-third enough sugar to supply a city of 50,000 inhabitants. In 1898 the production of beet sugar in the United States was about fifty or sixty thousand tons, while the imports of foreign beet-sugar amounted to 800,000 tons. Dr. Wiley goes so far as to say that the admission duty free of every pound of sugar made in Porto Rico, Cuba, and the Philippines would not affect the progress of the sugar-beet industry in this country, for there would still be a deficit to be supplied. While the cost of producing beet sugar in this country has thus far been somewhat higher than the cost of producing sugar in Germany or Porto Rico, Dr. Wiley predicts that when the industry is well established, with the advantages of superior American machinery and cheap fuel economically used, the cost of production will be almost, if not quite, as low in this country as in Europe, in spite of the greater expense for beets and for labor. He says that in the cultivation of the beet we are still far behind Europe. The low cost of labor is said to be the only great advantage of Porto Rico, Cuba, and Hawaii in sugar production, and attention is called to a tendency toward increased wages in those islands. Mr. Saylor believes that the cost of production will increase in all the islands named and constantly decrease in the United States proper.²

Some fears are expressed, however, of the effect of the admission of sugar free of duty from the insular possessions of the United States, especially before the industry is well established in this country. It is pointed out that the sugar production of Hawaii increased greatly after the reciprocity treaty of 1876, and that if the production of the Philippines should increase in anything like the same proportion they could supply the entire demand of this country.³

Cane and beet sugar compared.—While no chemical difference between cane and beet sugar has been discovered and it is impossible to distinguish between them in ordinary table use, beet sugar is said to be inferior to cane sugar for preserving, and it is predicted that that will be the chief use for cane sugar in the future. Another difference is that beet sugar must be absolutely pure before it can be used, while cane sugar is good even before it is refined.⁴

It is predicted that the United States will eventually make its own sugar, mainly, if not entirely, from beets.⁵ To produce the sugar consumed in the United States would require devoting more than a million acres to sugar beets, with the result that this area would be taken out of competition with other agricultural products, while the money now sent abroad for sugar would remain at home, and employment would be given to the unemployed.⁶

Sugar refining.—Nearly all the beet-sugar factories in the country are independent of the American Sugar Refining Company, being equipped to make refined sugar. It is apparently profitable for a factory to refine its own sugar when the difference between the prices of yellow sugar and granulated sugar is more than one-half cent, the expense of refining being slight. When the difference has

¹ Spear, 405-407.

² Wiley, 638-640, 642, 650, 653, 655; Snow, 241; Rogers, 555, 562; Saylor, 535, 538, 539.

³ Snow, 241, 242; Saylor, 539.

⁴ Wiley, 650.

⁵ Snow, 241, 242.

⁶ Rogers, 551.

fallen below that amount, as in 1899, the Binghamton Beet Sugar Company has sold its entire product to the American Sugar Refining Company.¹ Most of the Louisiana sugarhouses are also prepared to refine sugar when the price of unrefined sugar is unsatisfactory.²

OBSTACLES TO SUCCESSFUL AGRICULTURE.

Insect pests.—Dr. Howard gives a systematic account of the ravages of insect pests and the efforts of economic entomologists to abate them. Injurious insects have been a drawback to agriculture as long as men have cultivated crops, but as agriculture has become more extensive the conditions have become more favorable for the rapid multiplication of insects. It is more difficult to exterminate an insect pest in a large field than under a system of intensive culture. The annual loss to this country from injury to crops by insects is estimated at about \$300,000,000, and there is also some injury to live stock caused by insects. It has been estimated that the loss would be twice as great as it is if it were not for the work of the economic entomologists. Over against the saving effected in this manner is an expenditure of \$30,000 a year by the United States Government and of various amounts by 30 States which have State entomologists. There is now a fairly good remedy for every insect of importance, although at the time of the foundation of the Department of Agriculture not a single reliable remedy was known for any insect pest. Spraying with petroleum or an arsenical solution is often employed, especially for scale insects. For the San Jose scale a wash of lime, sulphur, and salt is used in California in dry weather, while in the East a strong solution of whale-oil soap is often used. As most injurious insects are themselves subject to the ravages of parasites, the entomologists have imported from Australia and other countries a number of these parasitic insects, and have also propagated fungous diseases with which to destroy injurious insects. The damage done by the clover-seed midge is prevented in Ohio by cutting the clover a week or two earlier than was formerly customary. Certain other pests are kept away from the crops they formerly injured by concentrating them upon "trap crops" of cow-pease, corn, etc. The banding of trees is useful in some cases, but most insects which infest shade trees are strong flyers in the moth stage, so that banding is not an effective protection against them. Birds are an important agency in keeping injurious insects in check, and the shooting of birds therefore increases the chances for the multiplication of insects, though some species of birds are much more useful than others in this respect.

It is a significant fact that a majority of the important insect pests prevailing in this country have been imported from abroad. Thus the Hessian fly is supposed to have been introduced in the straw bedding of the Hessian soldiers in the Revolutionary war; the San Jose scale is thought to have been brought to California from Japan; the gipsy moth was imported by a scientist in an attempt to improve upon the silk worm, and the hop-plant louse and other injurious insects have found their way into this country on imported plants. Twenty-one States have inspection laws for nursery stock and other plants brought from outside their borders, to prevent the introduction of injurious insects; but the lack of uniformity in these laws makes it necessary for the nurseryman who ships stock to different States to consult the provisions of the different laws. The desirability of uniform State legislation is emphasized, and the quarantine law of California is mentioned as a model law in most respects. At the port of San Francisco every incoming vessel is boarded by an officer who examines any nursery stock or other vegetables the cargo may contain, and fumigates or destroys any which are infested, if consigned to points in California. But the California law does not prevent the ship-

¹ Wiley, 655; Rogers, 553, 559.

² Stubbs, 771, 772.

ment of infested material to points outside the State; hence when the inspector finds infested plants consigned to other States he notifies the Chief Entomologist of the United States Department of Agriculture, who in turn notifies the proper officers of the State concerned; but in some important States the State officers have no authority to require inspection of the plants on their arrival.

The desirability of uniform legislation is especially urged because of the lack of any national legislation for preventing the spread of insect pests. A national quarantine bill has been before Congress at several sessions and has been favorably reported by the House Committee on Agriculture. It provides that the Secretary of Agriculture shall have power to quarantine against any country from which injurious insects are likely to come, and also to designate certain ports at which nursery stock must be imported, where it will be subjected to inspection if not accompanied by a certificate showing that it has already been inspected. The bill also provides for the regulation of interstate traffic in nursery stock, etc. The bill was at first opposed by the nurserymen, but it is strongly favored by California fruit growers, especially as a means of prevention against the Mexican orange maggot. A committee of the American Association of Nurserymen has submitted a memorial in favor of the bill, which has also been indorsed by entomologists and vegetable pathologists. It is estimated that the cost of such a quarantine service during the past 30 years would have resulted in saving to the agricultural and horticultural interests one hundred times its cost.¹

Diseases of animals.—While the animal industry in the United States has suffered from hog cholera, sheep scab, Texas fever, and other animal diseases, it has been more fortunate than in many European countries in escaping such plagues. Pleuro-pneumonia was quickly eradicated by the Bureau of Animal Industry, in cooperation with State authorities. Foot-and-mouth disease has also been eradicated each time it has been introduced, and rinderpest has never reached this country. The loss from glanders and hog cholera is as great as ever, and tuberculosis in cattle is becoming more and more common. In States lacking proper regulations herds of cattle are frequently found to contain from 80 to 90 per cent of tuberculous animals, and the general average among dairying and breeding cattle is estimated at about 5 per cent.² While it is still disputed whether tuberculosis can be transferred from cattle to human beings, cases are reported in which there was at least strong presumptive evidence of such infection.³ The cooking of meat renders infection through that source unlikely, but it seems probable that the use of unsterilized milk from a cow in which the disease has attacked the milk glands may result in disease in human beings, especially children.⁴

Trichinae are said to be found in American pork in a greater percentage of cases than in most other countries. Two per cent or more of the hogs sent to market are infected, and in some consignments 25 or 30 per cent have been found with trichinae. The prevalence of these parasites is attributed to the practice of allowing hogs to eat dead animals, such as rats, mice, and the carcasses of other hogs, which is due partly to the popular impression that the feeding of meat lessens the losses from cholera.⁵

The comparative exemption of this country from animal diseases is attributed to the newness of the country and the free access of the animals to pure air, some diseases, at least, being generally confined to animals kept in stables.⁶

Serious difficulties are met with in the enforcement of State laws for the suppression of animal diseases. It is claimed that there is scarcely a Jersey cow in the State of New York that will not respond to the tuberculin test used for the detection of tuberculosis, and when diseased cattle are condemned it is said that

¹ Howard, 753-759.

² Salmon, 748, 749, 753.

³ Spear, 409.

⁴ Snow, 226, 230.

⁵ Salmon, 747.

⁶ Davenport, 272; George, 226, 227.

their owners sometimes get more from the State than they are worth.¹ The compensation paid in such cases is sometimes limited either to one-half the value of the animal or to a fixed sum for an animal of a given class.² The suggestion is made that laws against animal diseases can be better enforced by the State agricultural departments than by the State boards of health, because veterinarians and live-stock experts know better what is needed than regular physicians.³

The State laws do not always authorize the executive officers to do all that is necessary to prevent the spread of disease. Thus the New York Department of Agriculture is authorized to suppress foul brood in bees, but has not been authorized to deal with black brood, a similar disease which has recently made its appearance. Generally speaking, the State authorities are perhaps at some disadvantage as compared with the Federal authorities in enforcing unwelcome regulations, partly because of the difference in the feeling of the people toward the two sets of officers. Dr. Salmon lays down the principle that the nearer the government is to the people the harder it is to enforce such laws.

There is much difference between the laws of the various States in the matter of compensation for destroyed animals, as well as in other respects. Veterinarians are disposed to favor the payment of compensation, because it is found to be cheaper to pay compensation and secure the cooperation of stock owners in detecting disease than to make it to the interests of the owners of animals to conceal the disease.⁴ It is suggested that when tuberculosis is far advanced no property right in the animal should be admitted to exist, but that in milder cases a payment ought to be made proportioned to the value of the animal, taking into account the stage of the disease.⁵

The State laws for the prevention of glanders in horses are considered insufficient.⁶ Attention is called to the need of better State control of such diseases as glanders, tuberculosis, and rabies, of State laws prohibiting the feeding of carcasses of dead animals to swine, and also of measures to insure the wholesomeness of the milk supply and better local inspection of meats and the proper disposition of diseased meat. At present boards of health seldom have the authority or means to inspect the stables in which dairy cows are kept, and aside from the danger of contagion through milk there is a likelihood of digestive derangements from a contaminated milk supply. It is important to insure clean stables and careful handling of the milk, as well as healthy cattle, and it is suggested that this control would be most effectively secured by uniform regulations applied to the dairies of entire States. It is said that few cities, if any, have a sufficient force of competent meat inspectors to protect their cities from disease from unwholesome meat. The natural effect of the Federal inspection has been to drive the diseased animals to abattoirs which slaughter for local consumption.⁷ It is suggested that the expense of meat inspection be made by a charge for all meat inspected. It is questioned whether it is practicable to meet the expense by fines, partly because when the prescribed fines are heavy judges hesitate to impose them.⁸

Food adulteration. (See also Vol. XI, Part VI.)—While the adulteration of food is not of recent origin, it has been greatly increased with the modern development of commerce.⁹ It is estimated that 15 per cent of all food and drug products are fraudulently adulterated, and that 2 per cent are so adulterated as to be injurious to health.¹⁰ The prevalence of adulteration is attributed to two causes: (1) the stress of competition, and (2) the need of preserving certain foods against

¹ Norris, 332.

² Spear, 408, 410; Hamilton, 373.

³ Nall, 814.

⁴ Salmon, 749.

⁵ Snow, 238.

⁶ Salmon, 750.

⁷ Salmon, 746, 747.

⁸ Salmon, 752.

⁹ Kennicott, 529.

¹⁰ Wedderburn, 624.

decay.¹ A variety of injurious effects, not only physical, but also moral and financial, are attributed to food adulteration.² Several witnesses point out that the farmer is especially injured by food adulterations, even when the materials used for adulteration are agricultural products, because of the tendency to impair confidence and so diminish the sales.³

One of the most dangerous forms of food adulteration is the sophistication of milk, which appears in its most common form in the removal of the cream. This skimming of milk takes away the greater part of its food value. This matter is sometimes regulated by law or ordinance, and it has been found in Chicago that publishing the names of those whose samples were found below grade resulted in a great improvement in the character of the milk offered.⁴

It is complained that the New York State brand for full cream cheese has been imitated by dealers in the West and placed on inferior goods; and this illegitimate use can not be prosecuted under the trade-mark laws.⁵

It is believed that the mixed-flour law has resulted in the almost complete abandonment of the mixing of corn flour with wheat flour.⁶

Carelessness in the preparation of food sometimes results in extraordinary uncleanness. One witness exhibited a piece of bread with a young rat baked in it.⁷

Complaint is made that the prepared foods sold for live stock, as well as for human beings, are sometimes so adulterated as to be of very little value.⁸

Oleomargarine.—There are differences of opinion as to the wholesomeness of oleomargarine when properly manufactured. Two witnesses regard it as a good food,⁹ but two others regard it as unwholesome. It is pointed out that while the butyric acid of butter is an aid to digestion, oleomargarine is difficult to digest because of the large percentage of stearin.¹⁰

THE MARKETING OF FARM PRODUCTS.

The securing of a market is declared to be the all-important question to the farmer, for without a market a large production represents only a loss to the extent of its cost. Attention is called to the importance of statistical information concerning production and consumption of farm products as a means of maintaining a reasonable equilibrium between supply and demand and assuring a profit to the producer. There is often an overproduction of some particular crop for lack of such knowledge.¹

Where the price of wheat is fixed.—Several witnesses agree that the price of wheat is fixed at Liverpool, the chief wheat market of the world, and that although only about 10 per cent of the wheat produced in this country is exported the export price determines the price of the whole, that remaining within the country being sold at the Liverpool price minus the expense attending transportation to Liverpool.² The price at Liverpool, however, is governed by conditions in all parts of the world,³ and is affected by the cheap labor of India, Africa, and Russia.⁴ Mr. Powers maintains that the markets of the world are dominated by the products of American farms, and are determined by the cost of production and transportation. He says the farmer who can produce large quantities of grain cheaper than the rest of the world does more than anyone else to fix the price,

¹ Gehrmann, 635.

² S. J. Jones, 525, 526.

³ Davenport, 571, 572; Aaron Jones, 35, 40; Wedderburn, 633, 634; Clohan, 601; Kennicott, 583; Hitchcock, 576; Spear, 405, 406.

⁴ Kennicott, 583, 631; Gehrmann, 635, 636.

⁵ Flanders, 905, 906; Wisting, 394.

⁶ Snow, 337.

⁷ Kennicott, 580.

⁸ M. F. Greeley, 940, 941.

⁹ Hamilton, 336; Kennicott, 583.

¹⁰ Flanders, 907; Ager, 114.

¹¹ Hyda, 841, 842; Dye, 95, 96.

¹² Brigham, 21; Crowell, 343, 344; Wedderburn, 637, 638; Moran, 712, 714, 715; Turnbull, 955.

¹³ Miller, 617.

¹⁴ Wedderburn, 637, 638.

and that the price of wheat is determined by the small farmer of the West, who with a system of diversified farming works three hundred days in the year, rather than by the farmer of Argentina or India, who works only sixty days in the year.¹

Cost of transportation.—There appears to have been a decline in the cost of distribution of agricultural products during the latter part of the century, especially where long-distance transportation was involved. It is stated that in the early seventies the cost of sending a bushel of wheat from Iowa to Liverpool was equal to the cost of producing from 1 to 2 bushels, while at present the cost has been reduced to little more than half the cost of a bushel.² The freight rates from the West to the Eastern part of this country also show a marked diminution.³ Local freight rates in the East show comparatively little change, and in some cases an increase of rates is reported. There is also complaint that farmers in the eastern part of Ohio are compelled to ship their grain west to Toledo before it can be shipped East.⁴

There are complaints of excessive freight rates in the South, both on cotton and on vegetables and fruits. A Memphis cotton broker says there would be a great outlet for cotton in the Carolinas if it were not for the prohibitive freight rates, which are higher than the rates to New York, or even to Lowell. The high cost of transportation to the North is said to be the great difficulty about going into truck industries in the South.⁵

Georgia fruit-growers say that they pay more in proportion to the distance than California shippers, but complain especially of excessive rates charged after the fruit reaches Northern roads.⁶ On the other hand, California fruit-growers say that they can not put their fruit into New York City as cheaply as Florida fruit growers can, and that in general freight rates from California to the East are excessive, being the same now as in the infancy of the traffic, except where there is effective water transportation, though the cost of operation has declined. California fruit does not get the advantage of water competition because it is necessary to send it by rail.⁷

Opinions differ as to whether reductions in freight rates accrue to the advantage of the producer or only reduce prices to the consumer.⁸

Shipment of fruit by express.—Fruit growers complain that it is necessary to have an entire carload in order to ship in refrigerator cars, and that the shipment of smaller quantities by express costs fully three times as much as shipment in refrigerator cars, the difference between the two rates being more than the profit. This is declared the greatest drawback to the small fruit grower. Several West Virginia fruit-growers, however, have arranged to make joint shipments in carload lots.⁹

Transportation facilities.—A general improvement in transportation facilities, especially a shortening of the time required for freight shipments to reach their destination, is reported both from the Northwest and from the South.¹⁰

California fruit-growers have suffered from an insufficiency of transportation facilities, which caused delays in shipments of their fruits, but ample facilities have been promised in the future.¹¹

California fruit is shipped in refrigerator cars, operated by car lines under contracts with the railroads, and complaint is made of excessive refrigerator rates. It is estimated that altogether the carriers get about one-half the gross proceeds from sales of California citrus fruits.¹²

¹ Pages 175, 176, 188.

² Powers, 181.

³ Holmes, 156; Ager, 115; Crowell, 344.

⁴ Ketchum, 136; Miller, 613, 614, 616; Nall, 813.

⁵ Barrett, 51, 52; Porter, 481, 483, 485; Lovejoy, 80-82; Stubbs, 784; Clohan, 604.

⁶ Hale, 360, 366.

⁷ Naftager, 961, 962, 964.

⁸ Powers, 181; Pratt, 737; Moran, 712.

⁹ Clohan, 596, 604.

¹⁰ Greeley, 943; Hale, 366.

¹¹ Naftager, 955, 956.

¹² Naftager, 956, 959.

Railroad pools.—There appears to be a pooling arrangement in force between the railroads which carry cotton and cotton goods from Memphis to Eastern ports, each road being allowed a certain percentage of the traffic. This pool has been attacked in the courts, but the Supreme Court of Tennessee has declined to interfere.¹

A somewhat similiar division of business is in force between the railroads which ship fruit East from California.²

Railroad discriminations (see also Vols. IV and IX).—Complaints are made of railroad discriminations both between different localities and between different classes of freight,³ and also of discriminations between shippers in the form of special rates and rebates.⁴ The interstate-commerce law is said to have been hailed with pleasure by the railroads because it simplified their business; they prefer to give a rebate to one man rather than to 100 or 500.⁵

There are numerous complaints of the inefficiency of the interstate-commerce law, especially in preventing discriminations.⁶

The farmers and the middlemen.—Mr. Holmes points out that farmers are so numerous that they are subjected to severe competition with one another in disposing of their products, and hence are at the mercy of the middlemen, being compelled to accept whatever price is offered. The position of the farmer is thus economically weak. Mr. Holmes recognizes the necessity of the middlemen, but would like to see the farmer become his own middleman.⁷ It is suggested, however, that even if farmers were to choose men of their own class to buy and sell for them these agents might be no better than the original commission men.⁸

The introduction of organization and business methods in the marketing of crops is thought to be an important means of improving the condition of the farmer, and the success of the truck industry at Norfolk is attributed to the organization of the growers through which they place their crops in certain markets according to the demand, as shown by daily market returns from different cities.⁹ Another instance of cooperative distribution is the Milk Producers' Union which supplies Boston with milk. Representatives of this organization meet every year with representatives of the Boston Milk Dealers' Union and agree upon prices.¹⁰ An attempt has also been made to organize the dairymen supplying New York city with milk. A similar effort in Philadelphia is reported to have been a failure.¹¹

Some of the most successful instances of cooperative distribution are found among the fruit growers, especially in California, though cooperative marketing of fruit has also been developed along the Atlantic coast. The Southern California Fruit Exchange is a cooperative organization receiving citrus fruits from local exchanges at various points and marketing them through its own salaried agents throughout the country. While the prices to the consumer have probably not increased, the prices received by the producers are better and the losses smaller than under the commission system formerly prevailing, which was found to be unsatisfactory. California cured fruits, such as prunes and raisins, are marketed by other cooperative organizations somewhat similar to the Southern California Fruit Exchange, except that they attempt to sell at a certain price *f. o. b.* California, instead of selling through agents at the prices prevailing in different markets.¹²

Local markets.—The importance of home markets to American farmers is emphasized by a number of witnesses. It is pointed out that the prices of articles

¹ Gage, 496; Porter, 484; Mosely, 517.

² Naftzger, 946, 947.

³ Dye, 96; Norris, 328; Clohan, 604; Jumper, 739, 740.

⁴ Richards, 206, 210, 211; Crowell, 345, 346; Norris, 328; George, 226.

⁵ Richards, 204, 206.

⁶ Richards, 207, 208; George, 226; Stubbs, 784. See also vols. 4 and 9.

⁷ Pages 158, 162.

⁸ Ketchum, 137.

⁹ Whitney, 578.

¹⁰ Holmes, 156.

¹¹ Ager, 11; Dye, 90.

¹² Naftzger, 945-948.

which are not exported, such as eggs, butter, and vegetables, are fixed in this country—not in Liverpool, as the price of wheat is, in competition with the cheap labor of other countries—and that by reason of the development of manufacturing, mining, and transportation, and the increasing city population, the farmers, especially those who produce vegetables, poultry, dairy products, fruits, etc., have an increasingly valuable home market. It is suggested that the relief of agriculture must come partly through an increased consumption of luxuries, such as fruits, which represent a relatively large amount of labor, and that the increased demand for these luxuries in the United States is of as much importance to the farmer as increased exports. In Minneapolis fruit sales are said to have doubled once in three years, or eight times as fast as the population.¹

Speculation.—It is explained that speculation in grain has a legitimate function, and is a good thing if the buyers are on an equal footing with the sellers, because when the price gets too low some one will take the grain as an investment, and this will tend to check the fall in price.² Several witnesses are of the opinion that corners in wheat, such as that of 1898, are an advantage to some of the farmers.³ The sale of fictitious grain, however, is considered an injury to the farmer. When large quantities of grain which do not really exist are offered for sale, it is thought that foreign markets may be influenced by creating an impression that there is actually a large supply, so that grain may be sold at prices lower than the supply would warrant. It is said that warehouse and insurance charges are often paid on fictitious grain, and that the burden must ultimately fall on the farmer. The fact that the prices of oats, corn, and barley are more satisfactory than the prices of wheat is explained by their comparative immunity from fictitious sales. It is pointed out that the sale of great quantities of wheat for delivery at future dates makes it necessary for those who have to deliver the wheat to attempt to keep the price down. Mr. Dye expresses the opinion that grain and cotton gambling is injurious both to the producer and to the consumer.⁴ Some witnesses condemn dealing in futures generally, without distinguishing between bona fide and fictitious sales.⁵ In particular, it is charged against speculators that their activities tend to depress prices at and after the time of harvest, from September to about January, when most of the farmers are compelled to sell their grain.⁶ Another charge against speculation is that though it may have a steadying effect on prices, it demoralizes cotton planters by leading them to speculate, and that the people of the South lose large sums of money by betting on cotton.⁷

Seasonal fluctuations of prices.—Statistics appear to show that the price of wheat is usually lower for three or four months after harvest than at other times, but in considering the advisability of holding wheat for higher prices allowance must be made for interest on its value, damage by mice and rats, shrinkage, etc. It has been calculated that by buying cash wheat September 1 and holding it until May one would lose, on the average, 2 cents a bushel, the boards of trade in the Northwest usually having their prices in the fall a little higher than the situation really justifies. The Minneapolis millers seem to realize that the fluctuations in the price of wheat would, in the long run, cause them more loss than gain, and so protect themselves against loss by selling a future against grain when they buy it. The best time to sell grain appears to be immediately after thrashing, at least for the farmers who get to market first, though it is suggested that there is a better

¹ Ketchum, 135, 136; Powers, 186, 189; Wedderburn, 629, 630.

² S. H. Greeley, 235.

³ Jumper, 737; George, 225; Budge, 856, 857.

⁴ Brigham, 24-28; Dye, 97; Norris, 331; Wilson, 253, 254; Moran, 723, 727; Wedderburn, 632; Lovejoy, 75, 76; Prom, 794.

⁵ Peek, 461; Stevens, 916; Graham, 435.

⁶ Dye, 97; George, 225.

⁷ Hammond, 831.

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chance of gain by holding grain until the following summer than by holding it for a shorter time. One witness, however, remarks that farmers generally will not sell while prices are going up, but wait until they go down.¹

In the case of cotton, also, the average price is lowest between cotton-picking time and the 1st of January, when the bulk of the crop is marketed. The Southern practice of giving crop mortgages forces the greater part of the cotton into the market within a short time in the fall. It is estimated that 90 per cent of the farmers of Georgia are compelled to sell their cotton at that time. There is evidence, however, that even planters who are not pressed for money market their cotton in the fall rather than take the risk of storing and holding it.² One witness thinks the prices are as good at the beginning of the season as later.³ Another expresses the opinion that speculation on the exchanges has no effect on the price of cotton.⁴

ELEVATORS.

In the Northwest.—Bitter complaints are made of combinations among the grain warehousemen, not only at such important transfer points as Chicago and Buffalo, but also throughout the wheat-growing region of the Northwest. Some witnesses claim that there is no monopoly among the Northwestern elevators, since more than one company is usually represented in each town of importance; but it is not denied that the elevators along a given railroad often form a system or "line" owned by one company, and there is abundant evidence of an understanding between the different elevator companies regarding the prices to be paid for grain.⁵ It seems that the price of wheat for the territory tributary to Minneapolis is fixed by a board or committee in which the Minneapolis Chamber of Commerce, the elevator men, and the commission men are represented. Any increase or diminution in the price of wheat is telegraphed to the representatives of the elevator companies at the principal towns, who in turn send out postal cards to the smaller places, or in some cases send the prices by telegraph or telephone, if so instructed from Minneapolis. It is alleged by one witness that when the price goes up the notice is sent out from Minneapolis by mail instead of by wire. The elevators endeavor to keep the price of wheat to farmers about 3 cents (plus the freight) lower than the cash price of wheat on track in Minneapolis.⁶ It is explained, however, that neither the elevator companies nor their buyers are bound by the card prices, but that they pay more than the card price for wheat of especially good quality, or when it is necessary in order to get the wheat.⁷

It is alleged that the elevator companies have discriminated between localities in buying wheat by grading the wheat too low at a given place.⁸ There is said to be a community of interest between the railroads and the elevators, though their operation is entirely distinct. The northwestern elevators were originally built either by the railroads or railroad officials, or by large shippers of grain; but they are not thought to be owned at present to any great extent by those who control the railroads.⁹ The system of railroad rebates to the elevators, which is said to have been general at one time, is thought to have been discontinued, at least on the Great Northern Railroad, at noncompetitive points, but is believed to be still in existence where there is competition; but even those who are closely connected with the shipping of grain are unable to ascertain definitely what the facts are.¹⁰ One instance is reported in which the proprietor of an inde-

¹ Jumper, 736, 739; Davenport, 273; Powers, 190; Prom, 800, 801; Pratt, 726, 729; Budge, 866.

² Mosley, 515, 516; White, 419; Barrett, 50; Nunnally, 455; Prom, 458, 461; Godwin, 476.

³ Kyle, 470, 474.

⁴ Barrett, 56.

⁵ M. F. Greeley, 939; Moran, 717.

⁶ Pratt, 724; Prom, 795; Jumper, 730, 735.

⁷ Jumper, 735, 736; Pratt, 725.

⁸ Prom, 798.

⁹ Prom, 799, 800; Jumper, 737; Moran, 721.

¹⁰ Prom, 800, 801; Jumper, 737.

pendent elevator is said to have received a rebate in the form of a check for labor which he had not performed.¹

Independent shipments.—In order to avoid the alleged oppression of the elevator combination the farmers of the Northwest sometimes ship their grain independently, consigning it to commission merchants in Minneapolis or Duluth, who sell it for what it will bring. There is said to be a decided advantage in doing this, at least with wheat of unusually good quality. In some cases, where shipments have happened to be made on rising markets, farmers have made \$50 or \$60 a car by shipping independently. Difficulty is sometimes experienced in getting cars for these independent shipments, but this is, perhaps, because the elevator companies have ordered cars in advance of the private shippers. Shippers are said to be more apt to get cars at competitive points than elsewhere.²

Farmers' elevators.—As another means of securing independence from the line elevator companies the farmers of the Northwest have organized stock companies and built a large number of independent elevators in Minnesota and the Dakotas. These elevators are under some disadvantage in having no connection with a terminal elevator at Minneapolis or Duluth, but they ship to commission merchants. The farmers' elevators allow a margin of only 2 cents for operating charges. These independent elevators have sometimes had difficulty in securing sites on the railroad right of way, especially at noncompetitive points, but the Great Northern Railroad now allows them sites, and other roads have been obliged to do the same.³ South Dakota has a law compelling the railroads to give these facilities to independent elevators on the same terms for ground rent as to line elevators.⁴ It is charged that the line elevators actively oppose the independent elevators by outbidding them for wheat until they are driven out of business, after which the loss is made up by lower prices.⁵

Grain inspection in Minnesota.—There is some complaint about the grain inspection at terminal points in Minnesota. This is said by one witness to be the greatest evil from which the farmers of North Dakota suffer. It is alleged that the grades given North Dakota wheat are too low, and that the grain inspectors are unduly influenced by the elevator men.⁶ Mr. Prom suggests that the appointment of inspectors should be taken out of the hands of the Governor of the State, and that the inspectors should be appointed for their fitness and allowed to appoint their own deputies. As a still more thoroughgoing remedy it is proposed that a system of interstate inspection be established by the States of North and South Dakota, Minnesota, and Wisconsin.⁷

The Chicago elevator system.—Even more definite charges are brought against the Chicago elevators than against those in Minnesota and the Dakotas. There appears to have been little difficulty in the handling of grain in Chicago between the enactment of the Illinois railroad and warehouse law of 1871 and about 1887. It is said that prior to the passage of the interstate-commerce law rebates were given to individual shippers to bring grain to the Chicago market, but that the

¹ Moran, 722.

² Prom, 795, 796, 799, 800; Jumper, 737-739; Budge, 853-855.

³ Hanley, 279, 280; M. F. Greeley, 939, 940.

⁴ Jumper, 736.

⁵ Moran, 717; Prom., 798, 799.

⁶ Mr. Teisberg, secretary of the Minnesota Railroad and Warehouse Commission, expresses the opinion (Vol. IX, p. 371) that there is no combination among the Minneapolis elevators, and that the price of wheat sent out daily is merely the closing quotation for the day. Many independent elevators have been established in Minnesota under a State law providing for the condemnation of sites on railroad rights of way for elevator purposes; and farmers can often load their grain directly into the cars. Mr. Teisberg also discusses the Minnesota system of grain inspection, and denies that inspectors are unduly influenced by the warehousemen. (Ibid., pp. 368-371.)

⁷ Prom, 799, 801.

passage of that act made it necessary for the railroads to give rebates more cautiously, and that they chose the public warehousemen as the ones to be favored. Within a few years the system of handling grain in the Chicago elevators changed, and the elevators passed into the hands of persons who at once embarked in the business of dealing in grain, the proprietors of the warehouses being now the most extensive grain dealers, and owning a large part and in some cases all the grain stored in their elevators. The chief advantages of the warehouseman in competition with the public are said to be (1) that he pays no storage on the grain, or pays storage to himself, so that the possession of the elevator operates as a rebate; and (2) that he is able to select the best grain of a given grade and keep it for himself as merchant, giving the public the "line" grade, or grain just good enough to pass inspection. The result has been that the public is unable to compete with the elevator managers, so that grain going to Chicago elevators finds but one buyer—the elevator proprietor.¹ It is declared that there is a grain monopoly in Chicago, the elevators acting together and demanding premiums on the wheat they sell. Most Chicago elevators are said to be owned by the railroads and leased to the warehousemen under an agreement that the lessees are to pay so much a car for all grain going through the elevators.² The accumulation of grain in Chicago for the purpose of earning storage charges is said to have resulted in such a congestion as to depress prices. It is explained that when a warehouseman gets possession of grain he sells it ahead for future delivery, so that some one else pays storage charges on it, then waits for the buyer to sell out, and stands ready to take the grain back and sell it ahead again. This is said to have produced an endless chain of forced liquidation on the part of the buyers.³ It is charged that in 1894 the elevator proprietors sent buyers into the country and brought large amounts of grain to Chicago, solely for the purpose of making it earn storage. This swelled the visible supply to such a great extent as to depress prices in the markets of the world, besides throwing the grain into the control of the elevator interests.⁴

These practices on the part of the warehousemen,⁵ while they are said to result

¹ Hill, 295-297, 313; S. H. Greeley, 227, 228.

² Hill, 312-317; Richards, 213, 214, 215, 216; S. H. Greeley, 227-235.

³ S. H. Greeley, 227-229, 233, 234.

⁴ Hill, 316.

⁵ A large amount of testimony concerning the Chicago elevators appears in the first volume on Transportation (Vol. IV.). The evidence is clear that the great terminal elevators at Chicago, and to a less degree in other grain markets, are owned by comparatively few men or firms; that the owners of public elevators, where grain may be stored at fixed charges by any holder, also control great private elevators; that they themselves buy a very large proportion of the grain which comes into the public elevators; and that the business of handling grain on commission has been very greatly reduced by this practice. The elevator owners admit that they are very large buyers of grain. It is claimed by their opponents also, although the evidence is less definite, that these same owners of terminal elevators own or control most of the country elevators and warehouses; that in fact practically all the elevators along the lines and at the terminals of each railway system are in the hands of a single organization.

The opponents of these large dealers admit that the elevator owners pay more for grain to the local dealers and farmers than the commission merchants and small dealers can pay, but they declare that this is due to various unfair advantages. Thus, the elevator owners themselves are exempt from the terminal storage and transfer charges which must be paid by other persons—three-fourths of a cent for transfer and the first 10 days' storage—which is alleged to be much more than the actual cost. It is further declared that the elevator owners receive great advantages from the railways in the forms of allowances for handling grain and of direct freight discriminations. In fact, it is held by many witnesses that the railway companies or their officers are largely interested in the elevators and in grain buying. The evidence as to discriminations in favor of the elevators is chiefly indirect, based either on general belief or on the known fact that the elevator owners often pay more for grain at country stations than the price at Chicago, Kansas City, or Milwaukee, minus the full freight rate, would warrant. The excess in the price offered was shown to be sometimes as high as 2 or 2½ cents on both wheat

in the greatest damage to the farmers by the depression of prices,¹ are complained of most bitterly by Chicago grain dealers, who say that Chicago has been greatly injured as a grain market, and that the grain is now going to other points, the amount shipped from Chicago growing less year by year.²

It is pointed out that when a man is custodian both of his own grain and of other people's at the same time, he is subjected to great temptation to manipulate the grades and weights.³ It is said that the warehouseman can by mixing two cars of No. 2 wheat with three cars of No. 3 make five cars of No. 2 wheat.⁴ The mixing of grain has become so important a matter that nearly every terminal elevator in Chicago has a mixing house connected with it, in which grain of high quality is mixed with that of a lower grade to bring it down to the lowest point at which it will pass in the same grade as before. One case is mentioned in which a warehouseman called for reinspection of 50 cars of corn, in order to have it sent into his elevator at a lower grade and have it inspected out at the original grade.⁵

Complaint is made that elevator proprietors are able to exercise espionage over the business of other dealers in grain and flaxseed.⁶ Complaint is also made of

and corn. It is also stated that in 1890 a rebate of 5 cents per hundred was proved before the Interstate Commerce Commission to have been granted to certain elevator owners.

It is also alleged that the Eastern railways have largely leased their transfer elevators to private companies which also deal in grain, and that the charges made by these companies are excessive, so that they have an advantage over competitors.

The elevator owners deny that the charge of three-fourths of a cent for handling grain is excessive; the law permits 14 cents to be charged, while the actual charge is the lowest known anywhere. They deny also that the railways operate elevators directly, or, in the cases where they own them, have given special favors in leasing them to the present operators; though no very detailed evidence is presented. Mr. Webster, of the Armour Elevator Company, claims that that company actually owns most of its numerous elevators and pays high rentals for the remainder, while Mr. Counselman declares that the elevators on the Rock Island were built and paid for by his own firm. Mr. Webster also denies that the elevator owners receive discriminating rates from the railways.

In view of the quite general acknowledgment among railway men that discriminations in favor of large shippers are still conspicuous, there seems to be a considerable probability that the claim that these large elevators receive favors from the railways, in one way or another, has some basis.

The elevator men explain further the reason for their buying grain and for their advantages over competitors. They claim that the establishment of through rates on grain from the Mississippi River and other Western points to the seaboard lower than the sum of the local rates from those points to Chicago and from Chicago east gave an advantage to Eastern commission merchants and buyers, so that Chicago elevator owners found it necessary to buy grain on a large scale and handle it in the same way, on through rates, in order to keep their warehouses from standing idle. Moreover, the competition of the newer markets of the West forced these men to buy grain to protect Chicago as a market. The advantages which have made it possible for them to compete successfully with other markets, and largely to take business away from commission merchants, arise from their large capital, which enables them to carry large quantities of grain in anticipation of favorable markets, from the elimination of commission and other intermediate charges, and from the ability to forego a part or all of the normal charge for actual elevator service. The elevator owners have the same advantage over commission merchants that any business man who furnishes himself with all accessory materials and facilities, instead of obtaining them from others, especially from his competitors.⁷ One or two witnesses, however, claim that, as regards local buying, the small dealer, who has perhaps other business during the season when there is little grain buying, can handle the grain business more cheaply than a great concern.

Effect on prices.—The opponents of the elevator owners declare that there is a growing monopoly of the local elevators; and that while there is still competition at times, and while in such cases the large buyers pay the higher prices, sooner or later all competitors will be driven out and the farmer will be at the mercy of the great elevator owners. It is maintained, moreover, that where different elevator owners operate along the same line of railway they do not actively

¹ S. H. Greeley, 234.

² Richards, 202, 211.

³ S. H. Greeley, 232, 233.

⁴ Richards, 202-206.

⁵ Hill, 318, 319.

⁶ Hill, 304-308; Richards, 204.

fraud in the dating of warehouse receipts. In 1896 the Chicago Board of Trade investigated a case of this kind in which charges were filed against four persons, and the one who assumed the responsibility was suspended from the board.¹

Abuses in the Chicago grain market.—Various other abuses are complained of in connection with the Chicago grain market. Thus it is said that bills of lading issued by transportation lines do not comply with the statute of Illinois requiring that grain received for transportation shall be correctly weighed and a bill of lading issued stating the true weight, and requiring the company to deliver the amount of grain without deduction for leakage, shrinkage, etc. In practice the weight column is headed "Weight, subject to correction," or some equivalent expression, and the final weights are determined in Chicago. The shipper is thus obliged to accept the railroad's statement as final. There is said to be an average shortage of three or four bushels to a car, and in some cases the shortage has been as high as 20, 25, or even 100 bushels. The shippers do not institute legal proceedings to protect their rights for fear of aggravating the railroads, and so getting into further trouble.²

The growing system of the ownership of private cars by individuals and corporations is severely condemned.³

compete, but meet daily on the Chicago Board of Trade and agree as to the prices which they will pay, at least as to certain territory. No evidence is presented to show specific cases where prices have been depressed by elevator owners.

To these charges the elevator owners reply that, at least along many railroads, they do not control any large proportion of the local elevators. They buy largely from the local dealers, who compete among themselves; and there is nothing to check the competition of the different elevator concerns. There are few railroad stations which do not have two or more buyers. No agreement exists for limiting competition or fixing prices, except that certain leading Chicago elevator men do discuss daily the prices which they will pay in Kansas and other parts of the West, where the Chicago market comes into severe competition with other grain markets. The purpose is to agree upon a price high enough to bring the grain to Chicago. At practically all stations local dealers receive daily bids for their grain from a large number of buyers—often from 5 to 20. The existence of these competing bids is admitted by some of the opponents of the elevators.

Two country grain dealers from Iowa and Nebraska also testify that in their towns there are competing grain buyers, and that each of the local dealers receives bids directly from various elevator owners at Chicago and also from other markets, there being often a considerable range in the prices offered.

The elevator owners maintain that the farmers are not only not injured by the existence of these large buyers, but that they are benefited by the elimination of various commissions and profits which were formerly paid by grain in its progress from the producer to the consumer, and by the many economies which elevator owners are able to effect. The elevator owner is satisfied with a little profit on a large business.

The two local grain dealers referred to above also declare that the farmer benefits by the elimination of middlemen under the present practice. Moreover the reduction of the risk borne by the local dealer, from the fact that he receives bids for his grain on track every day, enables him to work on a narrower margin.

Apropos of the claim that certain warehouses have taken advantage of other grain dealers by delivering the poorest quality of grain which will meet the official grade and keeping the better qualities, it is declared by a representative of a prominent milling company that millers are forced to disregard official inspections in order to prevent the warehousemen from giving them inferior qualities. The elevator owners, on the other hand, declare that their practice of mixing and cleaning grain for the purpose of improving the grades is beneficial to all concerned, that there are no instances proved where unjust discriminations as to the quality of grain have been made, and that it is absurd to expect them to furnish to the public grain better than the official inspection requires. There seems little doubt, however, that opportunities do exist for the warehousemen who store grain for the public and who are also grain owners to get an advantage in the way suggested. This seems the more probable from the fact, brought out in the testimony of one or two witnesses who are especially familiar with grain inspection, that the official grading of grain is necessarily imperfect.

¹ Hill, 317, 318.

² Richards, 212-214.

³ S. H. Greeley, 231.

The bucket shops and the professional bear speculators are complained of as serious menaces to grain producers.¹

A committee of the Chicago Board of Trade reported in 1894 that the spirit of the Illinois warehouse law was against the practice of dealing in grain by warehousemen, and that grain was being held in Chicago too long for the good of the trade. The committee recommended that proprietors of public warehouses be prohibited from engaging in the grain business, and that certain improvements be made in the system of grain inspection.²

In nine cases brought by the Attorney-General of Illinois against the public warehousemen of Chicago the evidence appears to show that the warehousemen did not generally commence to deal in grain until about 1885, when the railroads made arrangements by which grain could easily be sold on track. The practice of selling by sample then became quite general. A system of through billing also arose during the eighties which operated against Chicago, and the railroads made rates discriminating against Chicago, thus diverting the grain to St. Louis and other points. One result was that much of the grain failed to go to the elevators in Chicago, the best grain being sold by sample, while "line-grade" grain went to the elevators. Cleaning houses and private warehouses were also established and diverted grain from the public warehouses, and the public warehousemen soon perceived that their business would cease to be profitable unless they dealt in grain. Their dealings in grain then grew so rapidly that they became the principal buyers and sellers in the Chicago market.

Judge Tuley, of Chicago, decided in the Chicago elevator cases that the warehouse law should not be so construed as to give the warehousemen the right to use their privileges to crush out competition, and that their dealing in grain was ultra vires and against public policy. This decision was affirmed by the Supreme Court of the State.

A bill was introduced into the Illinois legislature in 1897, soon after Judge Tuley's decision, giving the elevators the right to deal in grain, which is said to have been pushed by the elevator interest, and was strongly opposed by other grain dealers.³ It is said to be generally accepted by those who were present that the passage of the act was secured by the use of money.⁴

The Illinois law requiring grain to be weighed in hopper scales instead of track scales is said to be complied with only by part of the railroads.⁵ The charge of three-fourths of a cent a bushel for the transfer of grain from cars to vessels in Chicago is greater than the average freight rate by water during 1895 from Chicago to Buffalo.⁶

It is maintained that the present system of handling grain in Chicago, which consolidates the business on a given railroad into the hands of one buyer, is a detriment to the country through which the road runs, not only by depressing the price of grain, but also by displacing the former grain dealers in country towns by employees of the elevator companies.⁷

Western Elevating Association.—The tendency toward combination among the elevators is seen in the formation of the Western Elevating Association of Buffalo, the purpose of which is said to be to centralize the elevator business, to prevent cutting of rates, etc.⁸ While there has been an agreement among the Buffalo elevators for some time, it is charged that this has recently developed into a boycott of elevators outside of the association. Railroads agree to pay the association half a cent a bushel on all grain that passes through Buffalo and is shipped by rail. If they were to ship through an independent elevator they would be obliged

¹ S. H. Greeley, 230, 231.

² Hill, 311, 312.

³ Hill, 301-317.

⁴ S. H. Greeley, 233.

⁵ Richards, 214, 215.

⁶ Hill, 314.

⁷ Hill, 318; S. H. Greeley, 233.

⁸ Cook, 1017, 1019.

to pay charges both to the elevator and to the association, and charge the shipper half a cent more. The result is that the independent elevator gets practically no grain.¹ The association benefits the canal forwarders by giving free elevator service to grain shipped by the canal, but the elevators shipping by canal only have been driven out of business because the railroads own the majority of elevators.²

FOREIGN MARKETS.

Agricultural products amount to more than 60 per cent of the exports from the United States, cotton alone making nearly half the total.³ The primary and secondary products of agriculture, including flour, meat, etc., make up 80 or 90 per cent of all the exports.⁴ It is estimated that about one-fourth of the total agricultural production of the country is exported.

More than half of the agricultural exports go to the United Kingdom, and Europe as a whole takes about 80 per cent. In recent years, however, there has been a remarkable development of the Pacific trade.⁵ Most of the South American trade, however, is with Europe, and this is attributed to the fact that European nations have shipping facilities and have made a study of the export trade.⁶

There are said to be certain prejudices against American products in European countries, due to the fact that Americans have not always been careful to export their best goods.⁷ Thus complaints have been made that American grain sometimes reaches foreign ports in a moldy condition, the "tramp" steamers on which it is shipped not having proper facilities or sufficiently large crews to attend to proper ventilation. There have also been complaints about the grade of the grain, the rule for grading differing slightly at the different ports of shipment. Complaints have also been made of the flimsy baling of cotton.⁸ The importation of American live cattle was some time ago prohibited by Germany, France, Belgium, and the Netherlands on the ground that there was danger of introducing infectious diseases, though it is generally believed that the prohibition was really due to the agrarian movement in Germany, the object being to protect German products against competition. Belgium has removed the prohibition.⁹ A serious decline in the export trade in butter and cheese is attributed to the exportation of process butter and filled cheese.¹⁰

Foreign competition.—Several foreign countries have taken active measures to develop their export trade. Thus the Danish export butter is carefully inspected before shipment, and brings a high price in the English market. The Danes have also made a careful study of the British demand for bacon. Canada has developed a large export trade in cheese and butter by supervising the manufacture and indorsing the goods. It is said that some of the best American dairy products now find their way to Great Britain by way of Canada, branded as Canadian products.¹¹ The Australasian colonies have provided cold storage on trains to the ports of shipment, have sent agents to other countries to study methods, have furnished producers with careful instructions as to the products and style of packing desired by the foreign trade, and have followed the example of Denmark in offering prizes for the products best fulfilling the requirements.¹²

Exportation of grain.—Professor Davenport doubts the practicability and desirability of introducing American corn into Europe as a food product. He

¹ Kellogg, 1015, 1016.

² Knapp, 1016, 1017.

³ Wedderburn, 629.

⁴ Powers, 175.

⁵ Hitchcock, 664, 668, 671; Hanley, 294; Turnbull, 982, 989-993.

⁶ Davenport, 339, 270.

⁷ Snow, 239.

⁸ Hitchcock, 679-685.

⁹ Hitchcock, 686, 670.

¹⁰ Snow, 236; Hitchcock, 672.

¹¹ Hitchcock, 673-677; Salmon, 748.

¹² Hitchcock, 688, 689.

says that in no country is it customary to use the same grain for human consumption that is fed to animals, unless it is raised in that country. He believes that we should at some time cease to export grain, but should export corn in the condensed form of meal.¹ It is also suggested that wheat should not be sent abroad except in the form of flour.²

The further development of Oriental markets is considered desirable, especially to increase the demand for wheat, which might perhaps be sent from the wheat belt to the Pacific for about what it costs to send it to the Atlantic seaboard. It is estimated that 40,000,000 bushels of wheat would be less than half a peck for each inhabitant of China, and it is pointed out that wheat flour has displaced rice wherever the two products have come into competition.³ On the other hand, it is suggested that if the Trans-Siberian Railroad should handle wheat more cheaply than American railroads are willing to handle it, it might become possible for Siberian farmers to send wheat to this country.⁴

ROAD IMPROVEMENT.

The poor character of American country roads is attributed to the early development of railroads in many parts of the country, which has made the need of country roads less imperative, and also to the scarcity of good road materials in many regions.⁵ The average cost of transportation on wagon roads has been estimated at about 25 cents per ton per mile, and on the best improved roads in this country between 10 and 15 cents, as compared with 8 cents on some European roads, one-half of 1 cent by railroad, and 1 mill by steamship on the Great Lakes. It is thought that four-fifths of the present cost could be saved, which would still leave the cost of transportation on roads ten times as great as on steam cars.⁶ The importance of road improvement is emphasized by several witnesses, who point out that where roads are good there are the most people and the greatest wealth.⁷ Good roads virtually bring the farmer nearer to market and save the necessity of disposing of products immediately or storing them in elevators, making it feasible to store grain in farm granaries, where the cost of insurance is less than in city elevators.⁸ (On the other hand, it is pointed out that the building of roads may in some cases entail more expense than the adjoining property is worth, and that, in view of the fact that in many agricultural sections the roads are in any case good during a large part of the year, the importance of road improvement may be overemphasized;⁹ but for farmers adjacent to large cities, especially dairymen who go to town every day, good roads are very important.¹⁰

The benefits of road improvement are illustrated by the experience of Mecklenberg County, N. C., where it is the policy to build a mile or more of macadam road at a time in various directions out from Charlotte, thus showing everyone coming to town the advantages of at least a little road improvement. Farming lands on macadamized roads within from 2 to 10 miles of town have increased from 50 to 100 per cent in value, suburban property having appreciated more than city property. Rural mail delivery has been made possible; larger loads of wood than formerly are hauled greater distances, with two horses instead of four, and hence may be sold at a lower price; products such as milk and butter, which formerly were not marketed, are now sent to town; and though there was opposition to the road tax at first, no complaints are now heard, and many counties in the State have adopted a system of road improvement.¹¹ There is also testimony from other

¹ Page 260.

² Brigham, 21.

³ Hanley, 287-289.

⁴ Crowell, 343.

⁵ Bailey, 1012.

⁶ Dodge, 690, 691, 693, 700.

⁷ Dodge, 698, 703.

Hamilton, 370; Jones, 39.

Bailey, 1012; Davenport, 273.

⁸ Ketchum, 136.

¹¹ Hutchinson, 1039-1041, 1044-1048.

localities—e. g. Alabama—to the effect that where good roads have been built lands have increased in value.¹

Road-improvement laws.—In many of the recent road-improvement laws provision is made for initiating improvements either by resolution of the county commissioners or by application of the abutting property owners. The New York law of 1898 is commended as, on the whole, the most satisfactory law. It provides that one-half the expense of road construction shall be paid by the State, 35 per cent by the county, and 15 per cent by the owners of the abutting land in proportion to benefits if the road is built on their petition, and otherwise by the town.²

In Illinois a measure similar to the New York law has been defeated by the farmers on the ground that under the present system of taxation the share paid by the State and county would come largely out of their pockets, as well as the share assessed directly upon their property.³ In the New Jersey law, which was the first of the State aid laws passed, one-third of the cost of construction is met by the State, one-third by the county, and one-third by the property owners benefited, and the roads are maintained at the expense of the counties.⁴

In Massachusetts, where the State undertakes road improvement, it bears the entire expense except the cost of reducing grades. The Highway Commission builds a mile of road here and there, partly as an incentive to the localities to improve their roads; and the intention is to bring these detached roads into communication, making a continuous highway through the State from east to west.⁵ In Ohio the cost of road improvement has usually been borne in the immediate locality, but roads are now being built in the counties containing large cities, and the cities are assessed for their share of the expense. Mr. Dodge proposes that the locality should contribute one-third, the State one-third, and the United States Government one-third, road improvement having become a matter of general concern through the increase in the distance traveled since the introduction of bicycles, automobiles, etc.⁶ Others who discuss the distribution of the cost agree that the entire expense should not fall upon the farming communities, but that State taxes at least may properly be used for road improvement;⁷ and Mr. Powers argues that the trend of population and wealth from country to city has created a moral obligation on the part of the cities toward the country, and that the cities should bear a part of the expense of rural roads and schools.⁸

It is estimated that 99 per cent of the entire road mileage of the country is still practically unimproved, and hence it is deemed advisable to diminish the necessary mileage and the cost per mile. The necessary mileage is likely to be reduced by the use of electric and other mechanical traction, and by the concentration of population in larger centers. It is estimated that by these means the average haul for wagons will be reduced to 2½ miles, and the maximum to about 5 miles.⁹ The cost of construction is diminished in some cases by utilizing convict labor,¹⁰ and road-building is considered one of the best forms of work for convicts, notwithstanding the care which must be taken to prevent their escape, because there is no competition with private enterprise.

Electric railways.—Attention is called to the importance of electric railways, both as an agency in relieving the isolation of farm life and for the transportation of farm products to market. The law of Ohio authorizing the use of electric railway tracks for the carriage of farm products is reported to have succeeded very well. The shipment of farm products on electric railways has been agitated in other localities.¹¹

¹ Poole, 922.

² Dodge, 697, 704-706.

³ Burke, 187.

⁴ Dye, 94-97.

⁵ Dodge, 700, 702, 703; Stockwell, 696.

⁶ Pages 697, 698, 700, 701.

⁷ Hamilton, 370.

⁸ Page 185.

⁹ Dodge, 685, 699.

¹⁰ Dodge, 683, 696; Hamilton, 369; Hutchison, 1038, 1039, 1042, 1046.

¹¹ Spear, 402; Dodge, 701, 702; Magie, 101.

ORGANIZATIONS AND COOPERATION AMONG FARMERS.

The organization of farmers is said to have been brought about as a result of the combinations in other lines of industry, which have forced farmers to combine for protection. Of late, however, the emphasis has been put less upon protection to the financial interests of the farmers and more upon education and improvement of social conditions in agricultural communities. The organizations have become somewhat more conservative than formerly as regards political action, and discuss a measure thoroughly before attempting to secure legislation.¹

While there is a general agreement that organizations of farmers are beneficial in various ways, one witness maintains that they tend to eliminate individuality and independence, and that they are apt to have too many rules and regulations.²

Farmers' organizations have sometimes succeeded in preventing attempted reductions in the prices of agricultural products and increases in the prices of goods bought by farmers.³ Some of them have succeeded in securing legislation in the interest of agriculture. Some have gone to pieces on the rock of politics, but the Grange has for many years avoided partisanship, and has become perhaps the most influential of the farmers' organizations.⁴

Agricultural cooperation.—There are in the United States in the neighborhood of 5,000 cooperative organizations maintained entirely or mainly by farmers, exclusive of irrigation companies. They are organized for a variety of purposes, such as cooperative buying and selling of goods, cooperative insurance, maintenance of small factories and shops, especially butter and cheese factories, mills and cotton gins, elevators, telephone lines, etc. These associations have often suffered from incompetent or even dishonest management and from lack of capital.⁵ The best instance of cooperation in the working up of agricultural products is perhaps afforded by the cooperative creameries.⁶ The Grange and, at least in North Carolina, the Farmers' Alliance have bought supplies cooperatively,⁷ but it is laid down as a general rule that this form of cooperation has been less successful than cooperative marketing of farm products; it has, in many cases at least, resulted in failure. It is suggested that farmers who attempt cooperation are not always true to their interests, and apparently do not trust each other enough to cooperate successfully.⁸

GOVERNMENTAL ACTION.

Department of Agriculture.—Secretary Wilson is quoted to the effect that the United States Government has interested itself in agriculture not only through the establishment of agricultural colleges in the States, but also in investigating the principles of agriculture and in collecting information about agriculture as a commercial enterprise.⁹ Dr. True compares the United States Department of Agriculture to a great experiment station.¹⁰ The work of several, but not all, of the bureaus and divisions of the Department is described in greater or less detail in the testimony. The Bureau of Animal Industry and the Division of Entomology not only have charge of practical work for preventing the spread of animal diseases and insect pests, to some extent in cooperation with the State authorities, but also conduct extensive scientific investigations having a practical bearing upon their work.¹¹ The Bureau of Forestry makes a study of the problems of reforestation, economical methods of lumbering, and protection against forest fires.¹² The Division of Chemistry has undertaken investigations of

¹ Brigham, 8, 18, 19; Davenport, 208.

² M. F. Greeley, 637, 638.

³ Brigham, 18-20.

⁴ George, 222; Miller, 613.

⁵ Holmes, 159, 160.

⁶ Bailey, 1011.

⁷ Ager, 111; Graham, 437.

⁸ Hale, 391, 399; George, 222.

⁹ Davenport, 259.

¹⁰ Page 139.

¹¹ Salmon, 742-753; Howard, 761-763.

¹² Whitney, 878.

various kinds which private individuals would not be likely to conduct, such as the quality of wheat needed for making macaroni, and the possibility of developing sugar-beet seeds.¹ The Office of Experiment Stations acts as a clearing house for information about agricultural education and research, and under its auspices independent investigations are made in certain lines, as in irrigation.² The Division of Statistics issues, among other reports, monthly statements concerning the condition of crops throughout the country, based upon data supplied by a large corps of voluntary correspondents and by salaried State agents, and supplemented by the reports of special traveling field agents. Printed cards summarizing this information are mailed to every postmaster in the United States monthly to be posted for the information of the public.³ The Department compiles statistics relating to exports of agricultural products, and has taken some steps towards developing the demand for American products abroad.⁴

State departments, bureaus, or boards of agriculture exist in most of the States, and are engaged in a great variety of activities.⁵ (See also Vol. XI, Part IV.)

Representation of farmers.—There is some complaint that agriculture is not as well represented in the National and State legislatures as it should be.⁶ On the other hand, it is pointed out that where farmers control the legislature, as in West Virginia, they divide on political lines.⁷

The tariff and the farmer.—Several witnesses agree that while farmers may be helped indirectly by the establishment of factories and the general prosperity due to the tariff, they receive little, if any, direct protection.⁸ Some go so far as to say that the tariff is injurious to the farmer on the whole, because it increases the prices of the articles he buys.⁹ Several specific cases are mentioned, however, in which farmers are thought to be benefited directly by the tariff. Thus, the farmers of New England are said to gain something from the protective tariff on agricultural products imported from Canada, especially hay and potatoes, and also from the duty on tobacco.¹⁰ The influence of the tobacco tariff is, of course, not confined to New England, but particular emphasis is laid upon the importance and the favorable opportunity of developing the cultivation of high-grade tobacco in the Connecticut Valley, and so keeping at home the money now expended for imported tobacco, especially from Sumatra, while at the same time diminishing the price to the consumer.¹¹ The tariff is also considered of great value to nurserymen and to producers of both sugar and rice,¹² and the duty on hides is said to help the cattle raisers materially.¹³ The duty on Mediterranean fruits very nearly offsets the higher fruit rate which California fruit growers have to pay in shipping their product to Eastern markets. Californians therefore oppose any reduction.¹⁴

Free wool.—During the free wool period many flocks of sheep were slaughtered, but since the reestablishment of the duty on wool there has been some increase in the number of sheep kept. There is some evidence to the effect that there is a tendency to overdo the business when the tariff is enforced. One result of free wool was that while the sheep were being slaughtered mutton was so cheap that the public acquired the taste for it, which it still retains. Under favorable conditions it is said to be possible to produce mutton as cheaply as beef, pound for pound, leaving the wool as so much clear gain. Sheep raisers favor the duty on wool, but are injured by agitation for changes in the tariff.¹⁵

Tariff on sugar.—Professor Kedzie believes that the sugar tariff should continue for the present, because it would be disastrous to the sugar industry of this

¹ Wiley, 642-644.

² True, 138; Mead, 1040, 1060.

³ Hyde, 840-842.

⁴ Hitchcock, 686; Snow, 236.

⁵ Flanders, 997, 998; Hamilton, 347, 349; Miller, 605, 607, 615, 616; Poole, 919, 920; Stubbs, 792.

⁶ Hanley, 280; Ager, 114.

⁷ Clohan, 604.

⁸ Bailey, 1011; Nail, 800; Powers, 176.

⁹ Stockwell, 901; Wedderburn, 624, 627.

¹⁰ Stockwell, 501.

¹¹ Whitney, 876.

¹² Hale, 306; Stubbs, 773.

¹³ M. F. Greeley, 942.

¹⁴ Naftzger, 960, 965; Turnbull, 987.

¹⁵ M. F. Greeley, 930, 941, 943; Spear, 410, 411.

country to cut the price of sugar down below the cost of production here. He believes that ultimately, however, when the industry is thoroughly established, the tariff will be unnecessary.¹

Commercial effects of expansion.—Fears are expressed that free trade with Porto Rico and the Philippines will result in a new and severe competition, especially in tobacco and sugar. On the other hand, it is suggested that the annexation of territory will enlarge the market for American goods, and benefit farmers together with the rest of the country.²

STATE AND LOCAL TAXATION.

A large number of witnesses, representing nearly every section of the country, discuss the relative burden of State and local taxation upon agricultural and other interests, and nearly all agree that farmers are overtaxed as compared with residents of cities, mainly because all farm property is tangible and visible to the assessor, while many of the forms of personal property owned in cities are easily concealed.³ Only four witnesses express the opinion that agricultural and other property in their respective States are equally taxed, though one other thinks that farm land in North Dakota is taxed lower than other property.⁴ The farmer is accused of being chiefly to blame for the personal-property tax, however, always demanding it on the mistaken hypothesis that business men would escape if personal property were not taxed.⁵

Farmers and others whose land is mortgaged suffer an additional disadvantage because of the taxation both of mortgages and of the mortgaged real estate. This results in the farmer paying the tax on the whole of the property, and also an increased rate of interest to his creditor.⁶

Proposed reforms.—Several devices are proposed for improving the administration of the existing general-property tax.⁷ For example, it is urged that assessors be appointed where they are now elected,⁸ and that taxes be equalized between localities on the basis of the amount of the taxes locally raised instead of the assessment.⁹ On the other hand, fundamental objections are urged against the general-property tax, and it is held that the systems of taxation in most of the States need complete remodeling, conditions having changed radically since they were adopted.¹⁰ Several witnesses advocate State income, inheritance, and corporation taxes.¹¹ Two witnesses favor a graduated income tax.¹² Others, while not advocating an income tax as such, favor the taxation of property according to its income-producing capacity rather than its selling value.¹³

Taxation of land values.—Three witnesses advocate the adoption of the single tax on land values.¹⁴ The editor of the *Farmers' Voice* speaks for it with particular reference to the interests of the farmers. Mr. Ralston makes a more general argu-

¹ Page 543.

² Flanders, 905.

³ Powers, 185; George, 221; Burke, 193, 194, 195, 200; Davenport, 220; Norfleet, 489; Bailey, 1011; Bachelder, 43; Crowell, 341; Stockwell, 888-890, 898; Deyo, 639, 1000; Norris, 326, 329, 331; Wieting, 904; Bailey, 1007; Dey, 90, 91; Coles, 126; Ketchum, 134; Hamilton, 354-356; Miller, 611; Brigham, 14, 17; Jones, 34, 36; Wilson, 247, 248; Hanley, 278; Greeley, 635; Ager, 111; Wedderburn, 621; Nall, 811; Hammond, 827, 828; Hale, 387; Peek, 400; Redding, 452, 453; Barrett, 54, 55.

⁴ Budge, 849; Prou, 791; White, 432; Poole, 924; Stubbs, 782.

⁵ Burke, 195.

⁶ Spear, 407; Clohan, 508, 590.

⁷ Stockwell, 890; Brigham, 16; Ager, 112; Hale, 387; Norris, 326; Hanley, 278; Miller, 613; Norfleet, 489; Burke, 200.

⁸ Stockwell, 889; Miller, 611.

⁹ Ralston, 1023.

¹⁰ Ralston, 1034-1038; Powers, 184.

¹¹ Powers, 184; Ager, 112; George, 221; Stockwell, 888-900.

¹² Jones, 36, 37; Hale, 386, 388.

¹³ Hamilton, 359; Brigham, 16.

¹⁴ Burke, 195-200; Redding, 452; Ralston, 1019-1038.

ment in favor of it. Several legislative attempts to introduce it in the United States are spoken of, including a constitutional amendment pending in Colorado. Two actual trials of it in local taxation are mentioned, both of which, however, were ended by the courts on the ground that they were unconstitutional. The approach to the system in New Zealand is also referred to.

PROPOSED NATIONAL LEGISLATION.

Education.—More generous aid to agricultural colleges and experiment stations is considered desirable,¹ though one witness proposes that the proceeds of the land-grant funds be used in the South for the support of farmer's institutes.² It is suggested that a national appropriation in aid of the common-school systems of the Southern States would be of great benefit.³ (See also Vol. XV.)

Investigation of conditions in the South.—There is a demand in the South for an official Governmental inquiry into the economic and general condition of the negroes and of the white tenant farmers, under expert supervision; and it is suggested that the expert preparing the schedule for the inquiry should himself take testimony on the ground. It is urged that there is great need for the collection of statistics showing the conditions existing in that part of the country. It is especially urged that the conditions of agricultural labor in the Black Belt and other typical sections of the cotton region be investigated by the Industrial Commission or otherwise.⁴

Fertilizers.—Mr. Whitney mentions the desirability of national legislation governing interstate commerce in fertilizers.⁵

Irrigation.—Mr. Mead expresses the opinion that reservoirs located in the channels of streams, and especially on the headwaters of streams in the mountains, should be built as public works. He also calls attention to the fact that a number of bills have been introduced in Congress to give to the arid States the proceeds of the sales of public lands within their borders as a fund with which to construct irrigation works, and suggests that the revenues derived from the public domain could be largely increased by collecting rent from the public grazing lands, over which flocks and herds now roam gratis and without restriction, to the great damage of the grasses, if not also to the injury of Eastern farmers by unfair competition.⁶ Mr. Greeley, of South Dakota, also urges governmental action to supplement the natural water supply of the West by the creation of artificial lakes and streams, and suggests that large sums now expended in river improvement might well be diverted to this use.⁷ Among Eastern farmers there is some opposition to Governmental aid to irrigation enterprises, chiefly on the grounds that it would constitute an undue assistance to their Western competitors and that the additional land is not yet needed for the production of crops.⁸

Seepage.—Mr. Whitney points out the desirability of either State or national legislation to stop the injury done in the West by seepage waters. He says that canal companies should either be compelled to protect their canals against percolation or pay damages to those injured by the accumulation of water and alkali on their land as a result of the seepage.⁹

Protection of grazing lands.—Quite apart from the suggested desirability of securing a revenue from the grazing lands of the public domain, it is considered necessary for the Government to exercise some control over them in order to prevent the injury caused by too close grazing.¹⁰ A system of leases is proposed, in connection with such a disposition of irrigable lands as would enable each irrigator to lease some contiguous pasture land, the leased land, however, to remain

¹ Moran, 708.

² Hale, 396.

³ Nunnally, 455.

⁴ Dillingham, 163, 164, 167.

⁵ Page, 874.

⁶ Pages 1061-1063.

⁷ Page 823.

⁸ Jones, 31; Brigham, 28.

⁹ Pages 862, 863, 880.

¹⁰ Whitney, 861; Mead, 1063, 1064.

subject to entry under the existing land laws, in order that there should be no obstacle to the permanent settlement of areas suitable for cultivation.

Diversification of crops.—Mr. Powers maintains that the State ought to take the lead in ascertaining what new agricultural industries should be established in each locality, and that the Nation should ascertain the crops and methods suited to the older sections of the country under the changed conditions now prevailing.¹

Forestry.—There is a strong desire for legislation to preserve the evergreen forests of the Northwest, and it is proposed that great parks of these trees be maintained, especially at the heads of great rivers and on poor nonagricultural lands. Mr. M. F. Greeley declares that the greatest thing Congress can do for the nation is to set aside such parks, and that the expenditure will more than pay for itself in doing away with the necessity of building dikes to protect the lower valleys against floods.² The beneficent influence of forests in preventing both floods and droughts is also pointed out by Mr. Hamilton and Mr. Naftzger; and the latter, besides urging the preservation especially of the forests on the Pacific slope, proposes the transfer of the forest reservations from the Interior to the Agricultural Department, in order to secure a more efficient protection against fire.³

River improvements.—Mr. Budge suggests that the channel of the Missouri River be dredged and provided with pile bars to narrow the stream and extend navigation, and to prevent destructive floods. He also suggests a series of bars and locks on the Red and Red Lake rivers.⁴

Insect pests.—There is a demand from various sources for a national quarantine law against insect pests, such as that provided for in the bill (S. 5615, Fifty-sixth Congress, second session), which has already been favorably reported to the House of Representatives.⁵ While there was at first some opposition to this measure among the nurserymen, a memorial strongly urging its passage has been submitted to Congress by a committee of the American Association of Nurserymen, and the opposition seems to have subsided. At any rate, the need of more uniform legislation against insect pests is generally recognized, and Dr. Howard proposes a second national convention to agree upon details. There is a demand from Massachusetts for continuation by the National Government of the work for the extermination of the gipsy moth, which has been suspended by the State government.⁶ Dr. Howard suggests as a rule for dividing such work between the State and national governments that the State affected ought to do the work except where the insect may be reasonably expected to spread over a number of States.⁷

Diseases of animals.—There is a general demand for national legislation to prevent the spread of disease among animals.⁸ It is argued that the Bureau of Animal Industry, having done such excellent work in the eradication of pleuropneumonia, could do equally well with tuberculosis and glanders,⁹ and that local laws are never effective against such a disease as sheep scab.¹⁰ The desirability of uniform legislation is conceded even when Federal legislation is not advocated.¹¹

Dr. Salmon proposes that the Secretary of Agriculture be given authority to require the cleaning and disinfection of stock cars and stock yards and the proper disposition of diseased meat; also to make regulations prohibiting the shipment of uninspected meat from State to State or to foreign countries, so far as necessary to guard against the use of diseased products. He also suggests a more comprehensive penalty clause for shipping condemned meat, in order to prevent certain ingenious evasions of the law, and adds that the penalty for shipping diseased animals from one State to another should be made to apply to railroads which are in the hands of receivers, as well as to other railroads.¹²

¹ Page 177.

² M. V. Greeley, 944; Hamilton, 383, 394; Naftzger, 906.

³ Page 906.

⁴ Pages 844, 845.

⁵ Howard, 756, 763, 765-768; Naftzger, 905; Hale, 400.

⁶ Stockwell, 902, 903.

⁷ Page 764.

⁸ Nail, 814; Clohan, 601.

⁹ Snow, 238, 239; Stubbs, 784.

¹⁰ Greeley, 941.

¹¹ Budge, 859.

¹² Pages 745, 746.

LXII THE INDUSTRIAL COMMISSION:—AGRICULTURE.

Food adulteration.—There is a very general demand for national pure food legislation, in view of the difficulties of State regulation and the need of uniformity. Several witnesses propose that the enforcement of the proposed law should be entrusted to the Department of Agriculture. Specific proposals as to the nature of the proposed legislation are (1) that all food products should be required to be labeled so as to show their true constituents; (2) that food products brought into a State should immediately become subject to the State law, even if in original packages, and (3) that food products entering into interstate commerce should not be permitted to be falsely branded as to the State in which they are made. Dr. Gehrman, besides emphasizing the importance of uniform legislation, lays down the general principles that pure-food laws should be very explicit; that the inspectors should be interested in their work and sufficiently numerous to secure an efficient enforcement of the law; that the chief officer in charge of the administration of the law should be a man of executive ability, having also scientific qualifications; and that every case of adulteration should be fully tried, political and personal considerations being strictly excluded. He also suggests publishing the names of violators of the law as a most effective punishment, and adds that the public should be educated regarding the requirements of the law.¹

Oleomargarine.—Many witnesses especially urge national legislation to restrict or regulate the sale of oleomargarine, either by requiring it to be distinguished from butter by coloring or labeling, or by a decided increase of the tax, e. g. to 10 cents a pound. Mr. Hamilton points out that at present the oleomargarine business is so profitable that the temptation to fraudulent substitution is very great, and he advocates an increase of the tax to 10 cents so that the manufacturers could not undersell the dairymen.²

Speculation.—Several witnesses favor national legislation to prevent local dealing in options and futures, especially in bucket shops.³

Inspection and grading of grain—Regulation of elevators.—In order to prevent manipulation of grades by warehousemen and other dealers in grain it is proposed that a national grade be established as a basis, all grain grading above or below that grade to be sold at a premium or discount. It is believed that this would result in saving to the farmer some part of the profits which now go to middlemen.⁴ Other proposals are that the terminal elevators should be placed under the control of the General Government, and that inspectors should be appointed at public warehouses to prevent the warehousemen from trafficking in or mixing grain or from keeping the better qualities of their customers' grain and delivering the poorest quality.⁵

Railroad discriminations, etc. (See also Vols. IV and IX.)—One of the measures proposed in connection with the railroads is that all discriminations, special rates, and rebates should be prohibited.⁶ One witness advocates the legalization of pooling under such supervision as would give the public the benefit of whatever advantage the railroads would derive from it,⁷ but this proposal does not appear to be popular, among either farmers or grain merchants.⁸

Interstate Commerce Commission.—There seems to be a general feeling that the powers of the Interstate Commerce Commission should be increased.⁹ It is pro-

¹ Gehrman, 637; Davenport, 272; Norris, 332; Spear, 408, 409; Wieting, 994; Flanders, 990, 998; Dye, 98; Coles, 123; Miller, 617; Wedderburn, 633; Hanley, 282; Hamilton, 371; Nall, 814; Stubbs, 784; Greeley, 940, 941; McKay, 534; Wilson, 254; Clohan, 600, 601; Snow, 237; George, 226; Powers, 192.
² Bachelder, 45; Greeley, 945; Stockwell, 93; Brigham, 22-27; Hamilton, 370, 371; Ager, 116, 117; Norris, 332.

³ S. H. Greeley, 236; Moran, 723; Graham, 435; Stevens, 916; Peek, 461.

⁴ Hanley, 280.

⁵ Moran, 718, 719.

⁶ Richards, 206, 210; Moran, 719, 710.

⁷ George, 224.

⁸ Richards, 210; S. H. Greeley, 231, 232; Wilson, 254; Barrett, 55.

⁹ Jones, 21; Brigham, 27; Miller, 618, 619; Wilson, 254; Porter, 484; George, 226.

posed, for example, that the commission be given the authority to enforce its rules and regulations;¹ that it should have power to determine what are reasonable rates, and to classify rates;² and that it should have supervisory power to control various matters connected with the interstate commerce, including the weighing, storage, inspection, and transfer of grain.³ It is also suggested that one member of the commission should be an agriculturist, while one should represent manufactures and one commercial interests.⁴

Government ownership of railroads.—The necessity of Government control over railroads leads three witnesses to suggest Government ownership, but it is pointed out that this should not be undertaken without a satisfactory civil-service system.⁵

Regulation of corporations and trusts.—In view of the ill success of State legislation to regulate industrial combinations, it is proposed that Federal legislation be enacted for the purpose, at least where interstate business is concerned.⁶ It is suggested that protective duties be removed in the case of industries which are in the hands of great combinations.⁷

Cooperation.—Mr. Holmes suggests that incorporated cooperative companies should be subject to the supervision of State officers, and that those engaged in interstate commerce might preferably be provided for by national legislation.⁸

Department of Agriculture.—It is suggested that the annual appropriation for the Department of Agriculture should be increased to at least \$10,000,000, to enable it to keep pace with the importance of the industry. A specific extension of the Department's work is asked for in the collection of statistics relating to the cost of raising important agricultural products.⁹ It is also suggested that the Department continue its experiments in the growth of high-grade sugar-beet seed, as it is considered desirable and necessary that the seed should be grown in this country.¹⁰ Mr. Hammond urges the establishment of a division of mechanics to give information of mechanical improvements, in order that the mechanical progress of agriculture may keep pace with that of other occupations.¹¹

Banking.—Southern planters urge that the national banks be permitted to loan money on real estate security, in order that loans may be negotiated more readily and at reasonable rates of interest, and that the 10 per cent tax on the circulation of State banks be removed.¹²

Postal savings banks.—Several witnesses recommend the establishment of postal savings banks. The National Grange is said to be in favor of such banks.¹³

Direct election of Senators.—The National Grange also favors the direct election of Senators.¹⁴

Tariff.—There is some demand for increased tariff protection to agricultural interests. It is stated that between three and four hundred million dollars' worth of agricultural products are imported which should be produced in this country, and that the encouragement of their production at home would help to diversify agriculture. In particular, higher duties on wool and hides are called for;¹⁵ and a reimposition of the duty on foreign-grown hemp is especially urged as a means of needed encouragement to the hemp-growing industry of Kentucky.¹⁶ Mr. Wedderburn, though not in favor of protective duties in general, suggests that the cultivation of long-staple cotton might well be encouraged by a tax on imports.¹⁷ California interests are opposed to any reduction of the tariff, especially on fruits,

¹ Wedderburn, 633.

² Naftzger, 962, 963.

³ Richards, 206, 207, 211, 218, 219.

⁴ Richards, 220.

⁵ S. H. Greeley, 231, 232; Wilson, 254; Peck, 462, 463.

⁶ Brigham, 26, 27; M. F. Greeley, 941.

⁷ Stockwell, 897.

⁸ Pages 160, 161.

⁹ Moran, 720.

¹⁰ Wiley, 641, 644.

¹¹ Hammond, 816, 819, 830.

¹² Brown, 61, 65, 67, 73-75; Barrett, 47, 49, 54, 58.

¹³ Greeley, 944; Brigham, 27, 28; Stockwell, 904; Hammond, 839.

¹⁴ Jones, 32.

¹⁵ Coles, 123, 131.

¹⁶ Nail, 810, 811, 815, 816.

¹⁷ Pages 620, 627.

even by means of reciprocity treaties;¹ and Mr. Saylor favors a continuance of the duty on sugar, even from Porto Rico.²

Extension of foreign markets.—Comparatively little effort has been made to develop the agricultural export trade of the United States, and attention is called to the desirability of Government action for that purpose, and also to the need of a careful study of the tastes and requirements of foreign countries. It is considered especially desirable to secure new customers for the cotton crop, two-thirds of which is exported.³

It is generally agreed that a system of Government inspection of export products should be provided for, especially in the case of dairy products. Mr. Hitchcock proposes a system of optional inspection for grain, believing that a Government certificate would enhance the value of the grain in Europe.⁴ Other proposals for extending the foreign trade are a continuation of the experimental shipments of butter already inaugurated by the Department of Agriculture;⁵ an improvement of the consular service;⁶ the employment of traveling special agents and agricultural attachés to American embassies in foreign countries;⁷ exhibits at expositions, permanent exhibits in foreign countries, and advertisements in foreign newspapers and magazines;⁸ the appointment of an export commission;⁹ the encouragement of cold-storage facilities at the ports, and of improved cold-storage transportation facilities;¹⁰ the opening of an Isthmian canal, which is especially desired by the people of the Pacific coast and the South,¹¹ but is said to be opposed by some Northern farmers;¹² the development of American shipping by means of subsidies,¹³ and export bounties on staple agricultural products.¹⁴

Export bounties.—Mr. Wedderburn argues that an export bounty on staple agricultural export products, by making it profitable to raise and export grain, cotton, and tobacco, would stop the Southern and Western competition with the Eastern truck farmer, and so benefit New England as well as the parts of the country producing the staples.¹⁵ Mr. Powers opposes the export bounty; he says the result would be the same as in the case of the German sugar bounty, which has made sugar so cheap in England that farmers feed raw German sugar to their hogs, at the expense of the German taxpayer, while the bounty has raised the price of sugar to the German consumer and thus lessened the amount consumed. Mr. Powers maintains that if the bounty were removed the increased consumption in Germany would in time create a market for as much sugar as the export bounty has.¹⁶

Rural mail delivery.—All the witnesses who discuss this subject are emphatically in favor of rural mail delivery as a great convenience and benefit to farmers. It is argued that those who live in the country are as much entitled to free mail delivery as those who live in cities, and that it would be a great economy to do away with the necessity of daily trips to town. It is also believed that the use of the mails would increase.¹⁷

Road improvement.—It is proposed that the United States Government bear some part, e. g. one-third, of the expense of road improvements.¹⁸

¹ Turnbull, 987.

² Page 589.

³ Davenport, 270; Hitchcock, 685, 687; Hanley, 289.

⁴ Hamilton, 367; Salmon, 748; Snow, 236; Hitchcock, 673, 676, 680, 681.

⁵ Hitchcock, 677, 678.

⁶ Snow, 240.

⁷ Hitchcock, 686-689.

⁸ Hanley, 282; Hitchcock, 689.

⁹ Snow, 239, 240; Moran, 719.

¹⁰ Hitchcock, 678.

¹¹ Naftzger, 966, 967; Turnbull, 987; Stubbs, 783.

¹² Moran, 720, 721.

¹³ Hanley, 276, 293, 294; Moran, 716, 717; Prom, 793, 794; Stubbs, 783.

¹⁴ Wedderburn, 627, 628, 630-632; Peek, 463.

¹⁵ Pages 627, 628, 630-632.

¹⁶ Pages 176, 177.

¹⁷ Brigham, 27; Stockwell, 904; M. F. Greeley, 944; Wilson, 250.

¹⁸ Dodge, 667, 700, 701.

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² Naftzger, 902, 903.

³ Richards, 206, 207, 211, 218, 219.

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⁶ Brigham, 26, 27; M. F. Greeley, 941.

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⁸ Pages 160, 161.

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¹⁴ Jones, 32.

¹⁵ Coles, 123, 131.

¹⁶ Nail, 810, 811, 815, 816.

¹⁷ Pages 620, 627.

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TOPICAL DIGEST OF EVIDENCE.

I. PROGRESS OF AGRICULTURE DURING THE NINETEENTH CENTURY.

A. Numerical importance of the agricultural industries.—1. **Number of farmers.**—Mr. POWERS, of the Census Office, says that from 1850 to 1890 the population of the United States engaged in agriculture increased from 13,500,000 to 27,000,000. The farm owners, who in 1850 were a little more than 50 per cent of the farm families, increased to a little more than 60 per cent in 1890, laborers and tenants decreasing to about 40 per cent. The slaves represented in 1850 about 19 per cent of the farm families, and wage laborers about 16 per cent. Although the number of wage laborers was increased by the emancipation of the slaves, it has relatively decreased since that time, while tenancy has increased in a very marked degree. (170.)

Mr. HOLMES, of the United States Department of Agriculture, says the agricultural element is the largest one in our population. In 1890 out of 22,750,000 persons employed in all gainful occupations, 8,500,000 were employed in agricultural occupations of all sorts. Of these 3,000,000 were agricultural laborers working for wages, and 5,500,000 were farmers of the proprietor class, including owners and tenants. The farming element constitutes one-third of the population, and while the capital employed in agriculture is small compared with that invested in manufacturing and mechanical industries, it is numbers of people rather than dollars of wealth that are entitled to primary consideration. (152, 157.)

Mr. STOCKWELL, secretary of the Massachusetts State Board of Agriculture, states the number employed in agriculture in Massachusetts as follows: 1875, 74,500; 1885, 77,661; 1895, exclusive of agricultural laborers, 37,556. Mr. Stockwell apparently believes that the percentage of increase of the previous decade held good from 1885 to 1895. (884.)

2. **Number and value of farms.**—Mr. A. J. WEDDERBURN, master of the Virginia State Grange, quotes the report of Hon. William H. Hatch as chairman of the House Committee on Agriculture (Report No. 1999, Fifty-third Congress, second session, March 2, 1895) as showing that the number of farms in the United States increased between 1880 and 1890 from 4,008,907 to 4,564,641, or 16.25 per cent, while the number of farms in New York, Pennsylvania, and New England decreased 5.4 per cent, and their acreage decreased 7.70 per cent. In 1860 the farmers' wealth was nearly one-half the wealth of the entire country, but in 1890 it had decreased to one-fourth, notwithstanding the vast increase in acreage, capital, and production. (628.)

Mr. STOCKWELL also calls attention to a decline in farm values. In 1850 the farmers owned one-half the wealth of the country; in 1890, only one-fourth. (891.)

Mr. POWERS says the value of farms at the Eleventh Census was a little over \$13,000,000,000, that of live stock and farming implements a little less than \$3,000,000,000; making a total of about \$16,000,000,000. (184.)

Mr. STOCKWELL shows by a comparison of the census figures of 1880 and 1890 a considerable diminution in the number, acreage, and valuation of Massachusetts farms. The total capital employed in agricultural pursuits in Massachusetts in 1895 was \$219,557,214. (887, 888.)

Mr. POOLE, Commissioner of Agriculture of Alabama, says there has been a small but steady increase for years in the amount of land cultivated in that State. (924.)

Dr. CROWELL explains the small increase in the value of farming property by the

fact that the rewards of capital and labor are much lower in agriculture than in other lines of activity, and that inequality tends to throw capital out of agriculture. (339.)

3. Productivity of agriculture.—Professor BAILEY, of the College of Agriculture of Cornell University, illustrates the increase of agricultural production by certain statements relating to average crops toward the close of the eighteenth century. It was said in 1791 by an observer living within 6 miles of Philadelphia that 8 bushels of wheat to the acre was a fair allowance for the better kind of farms in those parts; that some did not yield 6, and that eight out of ten did not come up to 8. Mr. Bailey says that the yield of wheat in Pennsylvania and the adjoining regions now averages at least twice these figures, and the best farms do much better. The same observer said in 1791 that dairy cows averaged 2 pounds of butter a week, or 104 pounds a year. An ordinary farm dairy to-day in that region, says Mr. Bailey, should average 250 pounds of butter to the cow, and the best herds will produce more. Mr. Bailey also quotes an extended estimate of the average production of a good farm in Bucks County in 1791. His conclusion is that the average productivity of a farm is four to six times greater to-day than it was in the same section 100 years ago. (1004-1006.)

Among the reasons for increased productivity of farm land Mr. Bailey enumerates the use of better tools, the use of commercial fertilizers, and the more general appreciation of the value of tillage and of the rotation of crops. The better markets and the greater competition stimulate activity and energy. A greater range of products is in demand. Diseases and insects are under better control. Elsewhere, however, Mr. Bailey says that insects and diseases have grown more numerous and more serious because of the introduction of new pests by commerce and because of the greater variety of crops, the greater extent of crops of one kind, etc. He adds, however, in this connection, that in many cases the farmer has a recourse for the destruction of pests, and that his resources in such directions are greater to-day than they were 100 years ago. (1006, 1013.)

According to the census returns the aggregate value of farm products remained nearly stationary from 1870 to 1890, while the value of manufactures nearly doubled between 1880 and 1890. Mr. HAMMOND, of South Carolina, criticises the census figures, however, as being subject to important corrections. The census of 1890 reported as manufactures many small industries which had not previously been included under that head. The census returns make no allowance for the value of raw material consumed, which is estimated in the census returns as considerably more than half the gross value of manufactured products. Moreover, many manufactured products are used as material for other manufactures, and the values of them are counted again and again. (835, 836.)

Mr. HOLMES thinks it very doubtful whether the product per acre has increased on the whole. The statistics of agriculture do not indicate any distinct movement toward intensive agriculture, though it is well known that such a movement is taking place in special directions. (156.)

Mr. WEDDERBURN says that between 1880 and 1894 there was an increase in production and in the yield per acre, but a loss of \$248,299,825 in the money value of the product. (628.)

Mr. BRIGHAM, Assistant Secretary of Agriculture, believes that the farmers made a larger profit on a given investment 40 years ago than to-day. The valuation of land and of cattle was lower, so that a man could get more from the same investment. Nevertheless, a dollar will now buy a good deal more of most kinds of goods than formerly, agricultural implements especially being cheaper and better. (13.)

Mr. NALL, Commissioner of Agriculture of Kentucky, says that the agricultural products of to-day are more valuable in the aggregate than 50 years ago, because there is a larger capital employed; but he doubts whether, acre for acre, more wealth is produced now than before. (809.)

Mr. STOCKWELL declares that the United States as a farming nation is equaled by none in the amount of its agricultural productions. "The grain is finer, the fruit more luscious, the flower more beautiful than ever before." The farmer each year adds to the wealth of the country far more than all other industries combined. The total value of agricultural products for 1898 was \$4,000,000,000, and the relative value as shown by the exports has averaged nearly 80 per cent for the last 50 years. (891.)

4. Agriculture the fundamental industry.—Mr. STOCKWELL says the prosperity of agriculture is the foundation of National wealth, and is a matter for Congress to consider very carefully. (892.)

B. Prevalence and limitations of agricultural prosperity.—*In the East generally.*—Dr. CROWELL says the localities in the East with which he is most familiar have rapidly advanced in the last decade, both in the condition of agricultural labor, in the earnings of agriculture, and in the ability of farmers to send their children to higher institutions of learning. (337.)

Mr. NORRIS, master of the New York State Grange, thinks that farmers in the older sections of the country are in a worse condition on the average than they were 30 years ago. He adds that where the farmers of the Eastern States have depended entirely upon growing cereals, they have run behind and had to mortgage their farms. (326, 327.)

New England.—Mr. BACHELDER says the farmers of New England have suffered greatly from western competition, but are to-day more prosperous than ever before. Owing especially to the efforts of the Grange, which is exceedingly active in New Hampshire, the social conditions and opportunities for enjoyment among the farming classes have been greatly improved. (40, 41.)

Mr. STOCKWELL says that the Massachusetts farmer, after being in a bad condition for 4 or 5 years, has become prosperous. There is a marked improvement; he has turned his attention from the old lines to the new, and prices and conditions are better.

Mr. Stockwell considers the prosperity of Massachusetts farmers in 1899 and 1900, in spite of the drought, a wonderful illustration of what can be done by intelligent culture and of the strength of the Massachusetts soils. (893, 901.)

Mr. Stockwell says the progress of agriculture, the influence of the State board and its institutes, the work of the Grange, and the increase in all other lines are reflected in better conditions in the farmers' homes all over Massachusetts and in a higher plane of living. The laborers on the farms enjoy better conditions of life than formerly. The surroundings of the home are more neat and more beautiful than formerly. (884.)

New York.—Mr. POWERS questions whether the New York farmer is doing as well as 20 years ago. He turns off as much money, but is spending more in connection with his farm. New York farm owners and tenants live better, however, than 15 years ago. (178.)

Mr. STOCKWELL says the New York Society for Improving the Condition of the Poor recently made an exhaustive inquiry into the agricultural depression in New York State. Mr. Kjelgaard, an intelligent Pennsylvania farmer, was employed to travel through the agricultural districts, and Mr. George T. Powell investigated the subject by correspondence. Mr. Stockwell quotes from the report made to the society, showing that farming land had depreciated; that 30 per cent of the farmers were anxious to leave their homes, that 86 per cent reported that their children could not be influenced to remain on the farms, that tenant farming was on the increase, that 35 per cent of the New York farmers were losing money, 50 per cent were dangerously near doing so, and 14 per cent making a profit, while 20 per cent did not know whether they were or not. (888, 892.)

Professor BAILEY quotes 20 replies from representative New York farmers to questions as to the existence and the causes of agricultural decline. Only 6 out of the 20 seem to Mr. Bailey to indicate that there is a general depression in agriculture, and even in these cases the decline does not seem to make the respondents hopeless. Several of the correspondents point out that the question may be differently answered according to one's understanding of it. Some of them regard the decline of the value of farm land as an evidence of agricultural depression. Others, looking at the matter from the standpoint of the worker and possible buyer of land, take a different view. One says: "I think that there has never been a more favorable time to buy a farm and pay for it from the soil than now." Others point out that while land values have declined, farm products bring prices that are profitable, if intelligence is applied to raising them, and that farm wages are higher than they were years ago. (1006-1010.)

New Jersey.—Mr. COLES, a farmer and dairyman, of Woodstown, N. J., says the condition of agriculture in his section is not very prosperous. Prices are generally lower than formerly, though perhaps agricultural products are no more affected than the products of other industries. There is some feeling among New Jersey farmers that they suffer from the low freight rates for long hauls from the West. Real estate has been reduced in value. The profits of many farmers are reduced by the interest on land bought at higher prices. (122, 123.)

Mr. Coles adds, however, that the home comforts and enjoyments of the New Jersey farm are greater than formerly. Most of the farmers in his section have fairly good homes, horses, and carriages, and live about as well as other people. Where there is any talent for music, they try to have a musical instrument in the house; generally an organ, but often a piano. The children are better educated than formerly; some go away to school or college. (125, 129.)

Mr. KETCHUM, of Pennington, N. J., says that the farms in that vicinity are generally devoted to mixed agriculture—potato farming and dairying. South of Trenton there is some truck farming. He thinks the condition of agriculture and the profits on the capital employed compare favorably with the period preceding the civil

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war, but not with the period immediately following it. Farms in that section are all occupied, and new lands have been cleared and wet lands reclaimed by underdrainage. (132.)

Ohio.—Mr. MILLER, secretary of the Ohio State Board of Agriculture, thinks the Ohio farmer is in a much better condition now than he was before the war. He complains because he feels that he is not as prosperous as he was at a given period after the war, when the increased demand for agricultural products greatly affected their prices. Mr. Miller knows of no abandoned farms in Ohio. (614.)

Illinois.—Mr. GEORGE, of Chicago, says the condition of agriculture in Illinois is vastly improved, as compared with 40 years ago, though it might be still better. The farmers live in more comfort, and have much better educational and social privileges. Mr. George remembers the time, from 1840 to 1844, when farmers could not find a market for corn in Illinois, even at 10 cents a bushel in exchange for merchandise, and when pork could not be sold at any price. (223, 224.)

Minnesota.—Mr. HANLEY says that all the farmers within 30 miles of St. Paul are wealthy; "probably none of them is worth less than \$20,000." They have the benefit of the terminal market at St. Paul. (274.)

Mr. MORAN, of Minnesota, thinks the tendency is for the farmers to live a little better than 25 or 30 years ago, but that they still can not afford to live as well as they ought to. (711.)

The Northwest.—Mr. PRATT, of Aberdeen, S. Dak., thinks the farmers of the Northwest are doing better and feeling better than formerly. They farm better and are diversifying and raising stock. (727.)

Mr. JUMPER, also of Aberdeen, says the farmers of South Dakota have learned by experience and understand the soil a good deal better than formerly. The condition of the farmer has advanced every year for 4, 5, or 6 years; it is now very good and is still advancing. (734.)

Mr. POWERS says that on the frontier of to-day, in the semiarid regions of the West, a greater percentage of those who try to make homes succeed than did so in central New York at the beginning of the century. In the early settlement of central New York a great deal of land was taken up under contract, and not one-fourth of the men who thus took land ever perfected the title. The chances of a man paying off a debt on a western farm are at least ten times what they were in central New York at the beginning of the century. (171.)

Maryland.—Mr. AGER, master of the Maryland State Grange, says there was a great deal more land under cultivation in Maryland 40 years ago than at the present time. A great deal has grown up in timber, and along the railroads many farms have been subdivided into small town sites. The average condition of agriculture is not as good as it was 40 years ago, though in every locality there are industrious farmers who are making money. (104, 109.)

Virginia.—Mr. WEDDERBURN says there is a decided improvement among the farmers of northern Virginia, but as a rule the farmers have not made much money, and have had to be very economical. The cost of production and of everything used in production is too high for profit. (623, 624.)

West Virginia.—Mr. CLOHAN says there has been a steady improvement in the condition of the farmers of West Virginia, and is very hopeful for the future. (603.)

North Carolina.—Mr. GRAHAM, member of the North Carolina Board of Agriculture and president of the State Farmers' Alliance, says there were some exceptionally fine farmers in North Carolina before the war, but he thinks the farmers as a class have improved in their methods since that time. They are more intelligent and live better than 30, 40, or 50 years ago. Agriculture has not been remunerative in North Carolina for several years past, however. (433, 434.)

South Carolina.—Mr. YOUNG, a farmer and merchant of Fairfax, S. C., testifies that in his section agriculture is in a deplorable condition; in spite of the fertility of the soil, the propitiousness of the seasons, the industry of the people, and abundant harvests, there is hardship and distress, which must be due to an artificial cause. Small landholders are being forced to give up their land, and it will be only a question of time until the large landholders must do the same. The proceeds of the crops will not pay the expense of production. Scarcely any crop is profitable. The tendency of prices is downward, though there are temporary reactions in certain lines. Mr. Young says he can not get \$5 for what he could sell 20 years ago for \$20. He believes that in the matter of prices history repeats itself, and refers to the decline in the twenties and forties, the rise in the fifties, and the decline since 1872. Mr. Young says he made money steadily as a cotton planter until 1890. (117, 118.)

Georgia.—Mr. STEVENS, Commissioner of Agriculture of Georgia, testifies that the progress of Georgia in all lines of industry has been very marked during the last decade, and especially so in agriculture in the last two years. Mr. Stevens regards

the increase of urban population as an evidence of gratifying growth in the diversity of industrial pursuits, arguing greatly increased prosperity. There is a larger percentage of attractive homes among the agricultural population than at any previous time.

The present condition of the agriculturists of Georgia is much better in every way than for many years past. The country banks hold a much smaller number of farmers' notes, and for smaller amounts, but have much larger deposits from the farmers than ever before. (905, 906, 915.)

Mr. BROWN, president of the Georgia State Agricultural Society, testifies that the landholders and the laborers of his State alike have lost ground materially during the past few years. The small farmer, who works his own land and does not hire labor, is more prosperous than the large farmer and landowner, although he has few luxuries and lives mostly on what he can himself raise. (60.)

Mr. REDDING, director of the Georgia Agricultural Experiment Station, thinks the Georgia farmer is a little harder up than he was before the war. He has known of a good many cases where men have been sold out to pay their creditors. (443, 445.)

Mr. BARRETT, of Augusta, Ga., testifies that Georgia is not prosperous. The tax returns have decreased within the last few years. (51.)

Alabama.—Mr. POOLE, commissioner of agriculture of Alabama, says the condition of agriculture in Alabama is better by 50 per cent than it was 15 or 20 years ago. Since about 1890 there has been a steady increase of prosperity every year. (924, 925.)

Southern agriculture before the war.—Mr. NUNNALLY, a cotton planter of Georgia, testifies that even in the old days of luxury and ease in the South a man who did not inherit anything, but was obliged to face poverty from the beginning, usually remained poor. The implements of husbandry were few and primitive. The practice was to work out the soil and move on to more productive fields. That day of devastation is over. The land has been reclaimed, and produces far richer crops than in its early freshness. (454.)

Agricultural depression in the South.—Mr. DILLINGHAM says the whole agricultural industry of the South is depressed. The small white farmers are in the same condition as the colored farmers. He believes that the Southern farmers must fertilize the soil and raise their food. (168.)

Recent Southern prosperity.—Dr. STUBBS, director of the Louisiana experiment stations, says all the Southern States are in first-class condition at present. Money is abundant; farmers are cheerful, and are improving their farms and diversifying their agriculture. Among the whites there is less moving about, less disposition to sell, more endeavor to improve and embellish the home than Dr. Stubbs has ever seen before. There are fewer mortgages, less dissatisfaction, more home comforts, more education, more live stock, more fertilizers used, and better attention paid to farming. In the nature of things, this condition is not permanent, because if the bottom should drop out of either of the staple crops—cotton, sugar, or rice—the South would suffer. These interests are prosperous because prices are fairly good. Six or 8 years ago the cotton planters found it difficult to make both ends meet, selling the crop at 4 cents a pound and having to buy things at higher prices than now, and they passed through very desperate straits. Rice and sugar are liable to these fluctuations, as well as cotton. (782.)

Mr. STEVENS, Commissioner of Agriculture of Georgia, says the condition of the farmers of Georgia is not what it ought to be, but has improved of late. The short cotton crop of 1899, and the fact that Southern mills used more cotton than ever before, combined to raise the price of cotton; the South fixed the price for the first time. In addition to that, the farmers of to-day are raising their own supplies of food, not only of vegetables, but of meats, and harvested more wheat in 1900 than in any other 3 years since the civil war. Mr. Stevens believes that Georgia has unsurpassed agricultural possibilities. (916, 917.)

Mr. BALCH, of Little Rock, Ark., testifies that the cotton farmers have prospered more for 2 or 3 years preceding the date of his testimony (March, 1900) than for many years before, and that the South is in better condition than ever before. Large amounts of capital are being invested in mills, giving employment to labor between laying-by time and cotton-picking time, and between cotton picking-time and planting time. Mr. Balch attributes much of the improved condition of the planters to success in inducing the colored people to buy less in the way of supplies than formerly. (496, 497.)

Mr. HILL, of Memphis, thinks the condition of the farmers and planters in that vicinity has improved somewhat in the past few years, but is not as good as for a short time after the war, when labor was more to be relied upon and the price of cotton was high. (503.)

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Mr. NORFLEET, a cotton factor of Memphis, testifies that there was less demand for loans in the spring of 1900 than for 15 years before, on account of the higher prices of cotton. (488.)

Mr. MOSELEY, a cotton dealer of Memphis, testifies that the year 1899-1900 was a remarkable year, and that the country is in better condition (March, 1900) than for a number of years. A great many mortgages have been paid off. (515.)

Mr. KYLE, of Mississippi, also considers the condition of the cotton planters better (March, 1900) than for several years. More people have money to loan, prices for cotton and other products having been better. Cattle and sheep have realized good prices. (470.)

C. Causes of agricultural depression.—Professor BAILEY thus summarizes the causes generally assigned by his farmer correspondents for the so-called agricultural depression:

"First, economic conditions, comprising depreciation of farm values, inequalities of taxation, the high charges between the producer and consumer, the drifting of population toward the cities, the competition due to the opening of the West, overproduction, the increase of governmental expenses, and the fact that the farmer reacts slowly to economic changes; second, poor roads, whereby the farmer is at a disadvantage in the market and is socially ostracised; third, the lack of good farming and of the ability to take hold of the new knowledge and inspiration of the day, as seen in the need of education and of business method, in the tendency to follow old lines of effort, in the lack of specialization; fourth, social conditions, comprising the relative isolation of the farmer and the consequent unattractiveness of his life, the fact that he does not appreciate his business, the great increase of expenses due to his effort to provide what may be called the luxuries of life." (1010.)

1. **Foreign and Western competition.**—Mr. WILSON, master of the Illinois State Grange, says the farmers have come into competition with the great fields opened up in the West during the past 20 years, and that the competition of foreign countries, such as Argentina and Russia, has also had quite an effect. (250.)

Mr. WEDDERBURN thinks the farmer is brought into unjust competition at home and abroad; he is compelled to compete in the open markets of the world with men who pay from 6 to 20 cents a day for labor on cheap land, and in some cases with American agricultural implements and government bounties, while at home he has to pay on a protective basis for everything he uses. Mr. Wedderburn understands that in the Danubian provinces the railroads carry export grain for very much less than any other commodity. He implies that the low rate practically amounts to a bounty affecting American farmers disadvantageously. (628, 629.)

Mr. BRIGHAM thinks the land laws of the United States have been unduly liberal, and have led to the opening of Western farms before they were needed. This has injured the farmers in the East, and those in the West themselves are now suffering from the overproduction of farm products. The grants to railways, also, have had an undesirable effect. The competition of Western lands has forced Eastern farmers to change their methods greatly, and where, on account of the distance from cities, this has been less possible, the farmers have suffered especially. (10, 11.)

Mr. SNOW, statistician of the Orange Judd Farmer, says that for the last 25 years the owners of farms in the older communities have been brought into competition with the homesteads practically given away by the Government. There has been a good deal of opposition on the part of farmers in the older sections to the Government's land policy. The public land is now generally taken up, and that competition is over. The result is a rise in the value of farm lands, and a corresponding improvement in the position of the American farmer. (240.)

Professor DAVENPORT says there has never been in the history of the world the sudden opening up of anything like such an agricultural tract as Western America. The farmers of the Mississippi Valley and the West have aimed to get maximum crops regardless of the consequence to the soil, and have thrown upon the markets of the world an immense quantity of food products raised at a minimum cost, so that it has been very hard for foreigners to compete with them, and our own Eastern farmers have been crowded to the wall. (266.)

Mr. WHITNEY, chief of the Bureau (formerly Division) of Soils in the Department of Agriculture, says that while cheap transportation has opened up new and extensive markets, it has also been the cause of the development of extensive areas of new and very fertile country, and the effect of this upon the New England States and the South has been very great. When wheat brought \$1.25 and \$1.50 a bushel, and hay was correspondingly valuable, the New England farms were profitable, and the farmers made a comfortable living, but with low prices and cheap transportation they are unable to compete on their small areas of rough land with the fertile and easily cultivated lands of the West. (865, 866.)

Mr. POWERS has no doubt that the surplus products of the West, with cheap transportation, have unfavorably affected Eastern farmers, who are suffering very much

from the competition of the West in the production of certain great staples. He predicts that this competition will be felt even more severely in the future. (175, 181.)

Mr. STOCKWELL says overproduction of wheat and corn in the West, lack of a European market, the ranches on the plains, and the beef combine left New England no profit in the old lines of farm work. The progressive farmer is now working along new lines which are more profitable. (901.)

Mr. AGER ascribes the decadence of Maryland agriculture partly to the low prices for farm products, which farm machinery has had a tendency to bring about, and to the opening up of the West. (109.)

Mr. HAMILTON says the rapid development of the West has increased the aggregate production of the country very greatly, and has changed to some extent the agriculture of different sections. It has been found that certain districts in the Far West are especially adapted to certain crops. The Eastern States have found it necessary to vary the character of their crops and raise a greater variety, taking up the culture of articles which are not easily transported for long distances. Mr. Hamilton supposes that one effect has been to bring down the prices of certain crops, such as wheat. He thinks it has not affected hay, because of the bulk, and perhaps it has not greatly affected corn. (366, 367.)

Mr. DYE testifies that the competition of other States, especially fostered by discriminations in railway rates making the cost of freight relatively cheaper from greater distances, has greatly injured all classes of farming in New Jersey. The truck farming, which superseded grain production largely, now suffers from the competition of Southern States, although this varies greatly from season to season. The peach and pear growers are in many cases finding themselves unable to make a profit and are tearing out their orchards. New Jersey farmers are no longer able, in most cases, to get the very high prices for early vegetables and fruits which they formerly received. Milk also is being carried from long distances to the cities by means of refrigerator cars, so that dairymen in New Jersey are now getting scarcely 2 cents a quart for their milk. (95, 96.)

2. **Poor farming.**—Professor BAILEY considers that the lack of good farming is undoubtedly the fundamental cause of most of the agricultural unrest. The farmer's expenses are almost necessarily increasing with the new demands of civilization, and it is increasingly more important that he intensify his methods, in order to produce the greatest possible product from a given amount of land. The farmer is not usually skilled in making money from hired labor. Various natural agencies are against him. There is a general tendency toward the depletion of available plant food in the soil rather than toward its augmentation. Insects and diseases are more serious than formerly, though the resources for combating them have also increased. (1013.)

3. **Conservatism of the farmer.**—Mr. WHITNEY speaks of a lack of business planning and management among Eastern farmers that would enable them to fit their agriculture to new conditions. Farmers are a conservative class and have not changed their methods. They have persisted in attempting to compete with the West when they should have specialized to meet the changed conditions. (867.)

Mr. AGER, master of the Maryland State Grange, says the farmers as a class have raised the same crops year after year, and have not applied business principles to farming. He thinks if the farmers understood their business as thoroughly as most other classes do their business and applied business principles to farming, they would be a great deal more prosperous. The farmers as a class have not kept up with the times. Hardly any of the butter made by Maryland farmers brings a first-class price, as it would if they made a good article. The tendency of the American farmer is to work along certain lines without regard to changed conditions. As a result, he thinks there is an overproduction of a good many things, while other things, which should be produced at home, are imported. Mr. Ager believes in the diversification of farming and the rotation of crops. (113, 115.)

Professor BAILEY thinks that the remedy for the so-called agricultural decline lies largely with the farmer himself. The farmer reacts so slowly to changing conditions that he suffers after all other businesses have become accommodated to them. This lack of quick adjustment is due partly to the natural separation of the people on the farms and partly to their diversity of interests. Farming is not one occupation, but many occupations. (1010.)

Mr. HAMMOND, a cotton planter of South Carolina, says that a low type of manhood and a slow, unprogressive condition of life are regarded as indispensable to agriculture. The active young men turn to manufactures and commerce. It is true that few industries have remained in a more rudimentary condition than the tilling of the soil; but this very state of things offers greater opportunities to intelligence, industry, and enterprise than can easily be found in more crowded pursuits. (834, 835.)

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Southern conservatism and lack of managing ability.—Dr. TRUE, director of the office of Experiment Stations in the Department of Agriculture, believes that the greatest difficulty connected with agriculture in the South arises out of the conservatism of the farmer, which increases in proportion to his ignorance. The colored man is imbued with the idea that it is no use to try to raise anything but cotton, which is the only crop on which he can get money advanced. He is unwilling to venture beyond that with which he is familiar. Dr. True predicts that he will be compelled to try other things, and will find that he can live without having money advanced, and that when he is no longer at the mercy of those who make advances on crops he will be much better off, if he does not grow so much cotton. At present there are thousands of farms where the profit of the better part of the land is more than eaten up by the loss on the poorer land, where cotton is grown under present methods. (145, 146.)

Dr. CROWELL says the generation of able farmers in the South has disappeared, and a new generation has not arisen. After a man is 40 years old he can not be expected to change his agricultural ideas. Agriculture lacks directive genius and managing ability, hence capital does not go in that direction. (335.)

4. Scarcity of money, etc., in the South.—Mr. HALE, a fruit grower of Georgia and Connecticut, says there is not enough money in the South to do the business of the section. The majority of the bankers who loan money there have to get it from the North. It is difficult to borrow on real estate security because of the uncertainty of the income and of the landowner's ability to pay the interest when due, and the difficulty of realizing quickly on the land in case of foreclosure. More and more money is being offered in the South on real estate security, however, at continually lower rates of interest. From 8 to 12 per cent is usually paid on loans, and sometimes a bonus besides, but money has recently been offered at Fort Valley, Ga., at 7 per cent, on real estate security. Mr. Hale thinks it possible that the high rates of interest are due in some degree to the concentration of the demand for money into a few months of the year, during the movement of the cotton crop, from September to March. (381, 382.)

Mr. BROWN, of Georgia, complains of the high rates of interest, the impossibility of borrowing money on land, the almost exclusive cultivation of cotton, and the inefficiency of negro labor. The tariff favors manufacturers, but it is not to be considered the main source of Southern depression. (60-62.)

Mr. LOVEJOY, who is a merchant as well as a planter, believes that the condition of farmers in the South is steadily getting worse, and that this is largely due to the exclusive production of cotton and the decline in its price, and to the excessive rates of interest which farmers are obliged to pay. (75-77.)

Mr. HALE says there is too much good and cheap labor in the South. An abundance of cheap labor is rather against the success of agriculture; it results in planting too large an acreage, and in neglect of personal attention by the farmer or planter. (78.)

5. Disregard of natural conditions and markets.—Mr. HANLEY, of Minnesota, says the farmer turns from one crop to another without regard to climate, soil, markets, and other conditions, and must depend upon luck or the crop failures of other sections. When the harvest is generous its very volume assists in breaking down the price. (286.)

D. Diminution of the rate of agricultural profit.—Mr. NORRIS, master of the New York State Grange, thinks there is less money made on the capital employed in agricultural pursuits now than 30 or 40 years ago, the prices of agricultural lands and products having declined. (325.)

Mr. COLES, of New Jersey, thinks the profit on the capital employed in agriculture less than formerly. Labor costs more, for while wages are not much higher, if any, the labor is not of the same quality. (126.)

Mr. AGER, of Maryland, thinks the capital employed in agriculture in Maryland is as profitable as it was 30 or 40 years ago, because of the lower price of farm products and increased taxation. (110.)

Mr. WILSON, master of the Illinois State Grange, thinks the earnings of capital in agriculture are less than 30 or 40 years ago, because there is so much more capital vested in the same area. Land has doubled in value over a great part of Illinois in the last 20 or 25 years, but rents are very little higher. When land was worth from \$15 to \$25 an acre in central Illinois the tenant gave one-third of the crop for rent; now it is worth from \$75 to \$125 an acre, and most tenants do not give more than two-fifths. (247.)

Mr. BROCKWELL, of Massachusetts, thinks the earnings of capital in agriculture are perhaps equal to those of 40 years ago, but says they should be more; it costs more to keep abreast of the times than it did, and the farmer can not afford to fall behind. (87, 888.)

Mr. POWERS says the number of men who are seeking and obtaining farms of their own is greater to-day than ever before; this is evidence that there is relatively greater profit in farming than ever before. The percentage of profit on the capital invested may be smaller than 30 years ago, just as the rate of profit and interest has been lessened in all other industries, but the farm is, to those who understand farming, the best place to make money. (184.)

Professor DAVENPORT, dean of the College of Agriculture of the University of Illinois, says much depends upon the way capital is calculated. Forty years ago land was bought from the Government at \$1.25 an acre. The same land to-day, if good land, is perhaps worth \$100 per acre. If the farmer considers that he has \$10,000 invested in a farm of 100 acres, the returns are smaller reckoned on that capital than were the returns of 25, 30, or 40 years ago reckoned on the investment of \$1.25 an acre. Professor Davenport does not think that is the fair way to figure the amount invested unless a man has had to purchase the land at that price. The income from farming is great enough so that men are willing to pay \$60, \$75, \$80, and in some cases \$100 an acre for land. (265.)

E. Price movements.—1. Advance of the prices of manufactured articles.—Mr. MILLER, secretary of the Ohio State Board of Agriculture, replying to a question concerning articles manufactured by large industrial combinations, testifies that articles manufactured from iron and steel, and merchandise generally which farmers are under the necessity of buying, including lumber and other building material, have greatly appreciated. The prices of nails and wire fencing were increased 100 per cent; at the date of his testimony (June, 1900) the increase was perhaps 75 per cent. In some cases iron and steel articles had increased in price more than 100 per cent.

Mr. Miller attributes the recent great increase in the prices of manufactured articles both to natural and to artificial causes. The trusts, he says, have much to do with the increase of prices of some merchandise, and the conditions prevailing in the country have had much to do with it. The stocks had been exhausted during the industrial depression, and the demand being greater than the mills could furnish, the prices rose. Mr. Miller believes the prices were too low during the period of depression, and that they afterwards went too high, but were settling back to normal conditions in 1900. (615.)

Mr. BURKE says the rise in steel is not entirely a result of the trust, but results partly from the splendid crops which have made the farmers buyers and increased the demand for manufactured products. (201.)

Mr. WEDDERBURN testifies that the price of glass has increased at least 30 per cent in 2 years. Barbed wire and plain wire for fencing, which he purchased at about \$2 a hundred before the steel trust was formed, advanced to \$4, afterwards falling to \$3. Mr. Wedderburn thinks it is cheaper to split rails and put them up than to buy wire at \$4 a hundred pounds. (624.)

Mr. CLOHAN, of West Virginia, testifies that the farmers found in the 18 months preceding the date of his testimony (June, 1900) that the wire trust was very much to their disadvantage. Wire fences were largely used on account of the scarcity of timber, but the American Wire Company advanced the price from 2 cents to 4½ cents a pound, and fence building almost stopped. The price afterwards dropped to 3½ cents, but people were not buying at that price. Nails had also advanced, but not as much as wire. There was also some advance in farm implements. (602.)

Generally speaking, Professor DAVENPORT thinks the same principles have operated in all lines of production to cheapen products, although some things have increased in price within a few years. (267.)

2. Decline in the prices of agricultural products.—Mr. HOLMES says that for years the farm prices of most agricultural products, except meat, poultry, and dairy products, have been declining. (155, 156.)

Mr. BURKE, editor of the Farmers' Voice, testifying in 1899, said the farmers were paying higher prices for what they bought than four years before, but were not getting proportionately higher prices for their products, and hence were dissatisfied. (201.)

Mr. WILSON thinks there was a serious decline in the price of all grain products between 1889 and 1899. Prices were as low in 1895 as in 1899, but before that they were higher. In live stock there was not much difference. (248, 249.)

Mr. YOUNG, of South Carolina, says it takes twice as much of the products of labor to pay taxes, debts, and fixed charges as it did in 1873. He has paid 9 and 10 cents a pound for meat which he can now buy for 5 cents. (118.)

Mr. HALE, of Georgia and Connecticut, questions whether the decline in prices of agricultural products, other than cotton, has been any greater than in manufactured goods and supplies. He thinks one offsets the other. (388, 389.)

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Mr. COLES, of New Jersey, says that while the selling prices of agricultural products are somewhat lower than 15, 20, or 25 years ago, the depreciation has not been as great as in the prices of land, and has not amounted to 50 per cent. (127.)

Mr. HAMILTON says the value of farm products formerly made farming a very profitable business. Owing partly to the inflated condition of the currency, the prices of farm products were good, so far as debt-paying capacity was concerned. (366.)

8. *Causes of low prices.*—Mr. BRIGHAM, Assistant Secretary of Agriculture, states that on a gold basis the prices of agricultural products have, on the whole, declined somewhat during the past 30 years. This has been largely caused by the great increase in the acreage open for production in the Western States. There has been little increase in acreage in the East. The great increase of production naturally tends to lower prices. In fact, the demand for agricultural products being so uniform, an increase of production for 1 year or for a short period of years tends to depress the price so greatly that a good crop is less profitable, taking farmers as a whole, than a poor one. The four largest crops of corn during the last 20 years were sold for \$233,000,000 less than the four smallest crops. (17.)

Mr. SPEAR, of Vermont, attributes the decline in the prices of agricultural products and in the value of farm lands to the development of the West and the largely increased and cheapened production. (407.)

Mr. WIERING, Commissioner of Agriculture of New York, says that from 1860 to 1873 all farm products brought very high prices. He attributes the shrinkage in their value since 1873 partly to the dissolution of the Army in 1865, and partly to the rapid development of new lands in the West and the decrease of the cost of transportation from them. In 1870 the freight on a bushel of wheat from Chicago to New York was 30 cents; in 1890 it was 14½ cents. In 1870 the freight on corn from Chicago to New York by rail was 28 cents; in 1890 it was 11½ cents. No such decrease has been made on the products of the New York farmer. Similar conditions in other countries seem likely to injure not only the farmers of New York, but all those of the United States. All feel and will feel the competition of the great wheat fields of South America and Australia and those that are likely to be opened in Siberia. (993, 994.)

Mr. NORRIS, master of the New York State Grange, says prices of wheat, barley, and meats declined fully 15 per cent in the 20 years previous to 1899, though in that year there was a tendency for meats to increase in price, owing to a shortage of cattle and sheep. He attributes the decline in prices to overproduction, the country producing more than it consumes. (326.)

Mr. KETCHUM also attributes the decline in the prices of agricultural products during the last 20 years to overproduction. The high price of farm products 30 or 40 years ago led to the opening up of the West and to the development of production in Russia and England, until after a while there was an oversupply. (134, 135.)

Mr. POWERS says there has been but a small decline in the prices of agricultural products which have not been overproduced, but an enormous decline where the production has increased faster than the population. The law governing prices was set forth by an English economist 200 years ago. When the product per capita is doubled, the price falls to one-fourth its former figure; if the quantity per capita is increased three times, the price will be decreased to one-ninth; doubling the per capita demand or reducing the supply one-half will quadruple the price. The capacity to consume is a factor slowly modifying prices. (186.)

Mr. HANLEY does not believe that the increase of acreage under cultivation has anything to do with the decline in prices. (279.)

Professor DAVENPORT thinks there has been no greater decline in the price of agricultural products than is covered by the improved and cheapened system of production. (267.)

4. *The recent reaction in prices* (see also IX B 9, p. CCXXII).—Mr. STOCKWELL, of Massachusetts, says there is at the present time (February, 1901) an improvement in the prices of agricultural products, and the outlook is good. (891.)

Mr. GREELEY, of South Dakota, testifying in April, 1901, says there is an increase in the price of agricultural products compared with 2 or 3 years ago, especially in beef, mutton, etc. The meat market used to fluctuate violently, but there now seems to be a steadier demand and an upward tendency in prices. Mr. Greeley attributes this to the advance in the value of land. Where land is high meat is high, for it takes land to grow meat. (936.)

Mr. MILLER says some lines of farm products, notably wool and meat products, are higher, but comparatively few farmers in Ohio have wool and beef to sell. (615.)

5. *Prices of land—Eastern States.*—Mr. HALE says there was a general decline in the price of land some time ago, both on the Atlantic coast and along the Mississippi River. There is now land within 20 miles of Washington which is cheaper than on

the plains of Kansas, and better for people to buy. There is wonderfully fine land in the immediate vicinity of Washington, with a good market; but the people have not readily adjusted themselves to new conditions. (389.)

Mr. WHITNEY says that land values in New England and the Central States have generally fallen, though in specific cases they have risen or maintained their level. (867.)

Mr. SPEAR testifies that there has been a decline of one-half in the price of Vermont farm lands in the past 25 years. The prices range from \$5 to \$50 an acre. Good meadow farms near large towns can be bought for \$30 or \$40 an acre. Very productive farms can be bought for \$5 an acre, but they are usually some distance from town and rather rough and ill adapted to the use of machinery. Mr. Spear is satisfied that there is no farm land in the West at once so productive and cheap as the land that can be bought in the East, especially in Vermont. (404, 407.)

Mr. FLANDERS, Assistant Commissioner of Agriculture, New York, thinks that since the nineties there has been a slight increase in the value of farm lands in New York, and that at least values are not declining. (999.)

Mr. POWERS says that in central New York the average price of farm land is a little less than half what it was in 1870. (178.)

Mr. DRYO, secretary of the New York Board of Tax Commissioners, thinks that the values of farm lands in New York are still declining. (1000.)

Mr. KETCHUM, of Pennington, N. J., says there has been a decline of from one-half to nearly two-thirds in the value of agricultural lands in that vicinity, except in the case of choice locations near the city. A farm within 4 or 5 miles of Trenton will bring almost double what it would be worth 10 or 15 miles away, because the farmer can retail his own milk in Trenton at 6 or 8 cents a quart, and at the same time dispose of potatoes, eggs, etc., which he takes along in the milk wagon. (135.)

Mr. COLES testifies that the price of tillable land in Salem County, N. J., runs from \$40 to as high as \$80. There are a great many farms which will not sell for much more than their buildings cost at the time of high prices. The price of farms is about 50 per cent less than when prices were highest. (124, 125.)

Mr. HAMILTON testifies that the price of farm lands in Pennsylvania in 1859 averaged \$63.27 per acre; in 1869, with an inflated currency, the average was \$90.61; in 1879 the average was \$72.68, and in 1889 it was \$53.37. (366.)

Reasons for the decline in value of Eastern lands.—Mr. AARON JONES, master of the National Grange, assigns two causes for the decline in value of Eastern lands: (1) The decline in fertility through bad management, and (2) the unnatural development of the West by land grants to railroads and by discriminating freight rates. (37.)

Mr. HAMILTON says the extension of railroads seems to have had a good deal to do with the decline in the prices of Eastern farm lands. As the railroads extended and the free fertile land of the Far West was developed the price of farm lands in the East dropped. The price was also reduced by placing on the market very nearly at the same time many thousands of acres of agricultural land appropriated by Congress to the States, and so glutting the market. Young men refused to pay \$90 an acre for land when by going West they could buy better land for from 50 cents to \$1.50 an acre, and when cheap railroad rates were offered to shippers in the Far West. (366.)

Dr. CROWELL says the depreciation of lands in the Middle and Eastern States since the continental railroads were built has been greater than is due to the opening up of the West. It is due also to the growth of manufacturing and commercial interests in the East, in which capital finds a much more remunerative field of investment than in agriculture in the same locality. Again, a young man who has inherited a farm in the East may not stay on it, because he sees that if he sells out his capital will enable him to get land in another State that is likely to increase in value with the growth of population. (340.)

Mr. DYK attributes the marked decrease in the value of agricultural land in New Jersey primarily to the decreased profits of agriculture, resulting especially from the competition of the West. This country, he says, has unduly encouraged foreign immigration and been unduly liberal in the disposal of public lands. The consequent increase in the number of agricultural workers and in the acreage devoted to agricultural products has naturally lowered prices. The low freight rates from the West to the seaboard have often compelled Eastern farmers to market their products at a loss. Bonanza farming also has an injurious effect. On all small Eastern farms machinery of the most advanced type can not be so economically used. A large proportion of farmers' sons have been brought up to a dislike of agriculture. (86, 92.)

Mr. GREELEY, of South Dakota, says that because the Western prairies were free from stones and stumps, and because of business openings, "the people got into the

habit of coming West, and they can't stop." It seems to be an instinct to go West for less inducements than would take people East. Again, careless farming made many Eastern farmers poor, and the young men preferred to go on the rich lands rather than to improve poor ones. Mr. Greeley predicts that prices of Eastern land will soon be higher, and stay high. (944.)

Mr. POWERS says the money value of lands in the West has increased because of greater profits, and that of lands in the East has decreased since 1870 because all they have been accustomed to produce has come into sharp and direct competition with the West. (187.)

Advantage to purchasers.—Professor BAILEY, of Cornell University, points out that while the decline of land values works a hardship to the farm owners, especially when they are burdened with debts that were contracted when values were high, it is not a disadvantage to those who want to buy. When farm values are low is the time to buy farms, if one desires to make a living from the proceeds. (1011.)

Mr. KETCHUM thinks the outlook for agriculture in New Jersey is favorable. Land is cheap, and a man buying a farm now is in a very different condition from the man who bought a farm when prices were high and gave a mortgage for half or two-thirds of the price. (136.)

Central States.—Mr. MILLER testifies that in the last 25 years there has been a marked decline in the price of farm land in Ohio, but confidence is being restored, and there are fewer forced sales than some years ago. Mr. Miller attributes the decline in land values to the appreciation of money and the competition of the West; the actual productive quality of the soil is greater than it was 25 years ago. Farm values in New England and New York have suffered more from competition than Ohio values have. Mr. Miller thinks that Ohio land is worth more than before the war, in the same state of improvement. There was a very considerable advance during and immediately after the war, but prices began to be more settled after the return to specie payments. The increased demand for agricultural products immediately after the war undoubtedly affected the price of farm land as well as of farm products. (614.)

Mr. BRIGHAM says the value of agricultural land in Ohio has declined materially in the older sections, where its fertility has been partly exhausted and where buildings and improvements have been allowed to run down. In northwestern Ohio there has not been much decline. The value of good farming land ranges from \$50 to \$80 per acre. (17.)

Mr. WILSON testifies that agricultural land in Illinois was higher in price in 1899 than 10 years before, but that there had been no rise within 3 or 4 years, and that land was not quite as high as it was in 1896. Land in central Illinois was worth from \$75 to \$125 an acre. (247, 249.)

Advancing prices in the Northwest.—Mr. GREELEY testifies that the money value of farm land in Minnesota and the eastern part of the Dakotas has been increasing very rapidly for the last 2 years. He attributes the increase of value principally to the fact that the population has caught up with the land and continues to increase, while the land does not, and secondarily to the ease with which money has been obtainable. He says that if men have money they can not make a mistake in buying good lands in competition with those who want to make homes. (937.)

Mr. POWERS says the price of farm lands in southern Minnesota began to advance quite markedly about 1890 and continued to advance until 1893, when the movement was checked. In northwestern Minnesota there was no advance at that time, but a checking of the movement which had been felt before that during the rapid settlement of the section. It was a period of discouragement among the farmers. Land did not show any decline, but its sale practically ceased. The panic checked for a time the sale of lands in southern Minnesota, but prices continued firm. Of late there have been many inquiries for lands and a very marked upward tendency in price throughout the State. (187.)

Mr. BUDGE testifies that farm lands in the Red River Valley have increased in value from \$5 or \$10 to \$20 to \$40 an acre. (846.)

Mr. PHOM testifies that the price of land in Cavalier County, N. Dak., ranges from \$12 to \$15 an acre, a great increase from a few years ago. The average for the State is lowered considerably by the low prices farther west, and even for the district along the Red River Valley is not as high as the figures given. (789.)

Mr. JUMPER says the average South Dakota farm will sell for from \$600 to \$1,000. If it has been well taken care of it will sell for twice that much. There has been an appreciation of 60 per cent in 3 years. In September, 1900, Mr. Jumper sold a farm of 300 acres, near Aberdeen, for \$3,500, which he had tried to sell 2 years before for \$2,000. The farms are being bought chiefly by farmers for their sons, and now and then by a farmer from another State. (740.)

Southern States.—Mr. WHITE says it would be difficult to make a comparison between the prices of land in the South to-day and before the war, because lands were not generally for sale before the war; the owner did not need money and would not sell at any price. After his death the family moved away, and the land has been cut up and sold off. Mr. White supposes that land would bring a greater price in money before the war than now. (423.)

Mr. HALE testifies that land values have been steadily diminishing everywhere east of the Mississippi for the past 25 years, but he thinks no more so in the South than in other sections. Many plantations that were once worth \$40 or \$50 an acre have declined to \$5 and \$8 an acre. Cotton lands suffered very materially after the war; then there was something of an increase in the price, followed by a decrease in the last few years. Mr. Hale says, however, that in his section of Georgia there has been a rather steady but slight appreciation in agricultural values during the past decade, which he attributes to the diversification of crops, and especially the development of peach culture. (382.)

Mr. WEDDERBURN says the value of agricultural property is not kept up in Virginia except under exceptional circumstances. In counties adjoining Washington, valley counties, and some sections where mining industries have been established and many people have come, land has increased in value; but as a rule, outside of these special localities, the value has diminished. Mr. Wedderburn attributes the decline to two causes: (1) the decline in prices of agricultural products, and (2) an insufficient population, white labor being kept away to a certain extent by the negro labor. (622.)

Mr. Wedderburn says the price of land between Washington and Leesburg, Va., generally ranges from \$100 to \$125 an acre. In the tobacco portion of the State thousands of acres were for sale a few years ago at less than the cost of the improvements. Mr. Wedderburn bought land there at from \$2 to \$10 an acre, and thinks the same could still be done. Around Danville, where they have gone into the bright tobacco culture, he supposes lands have gone up materially. The valley lands have always been high, running from \$25 to \$100 an acre, according to the distance from the railroad. Loudoun County land runs from \$40 to \$50, and perhaps \$60 around villages and towns. Lands in Prince William County, within 30 miles of Washington, have sold at auction in the last few years for less than \$1 an acre. (623.)

Mr. Wedderburn says timber land near Bristow and Nokesville, Prince William County, lying 5 or 6 miles from a station, was bought for \$2 and \$3 an acre, and after the heavy timber was cut off, was sold for \$1 an acre or anything it would bring. (623.)

Mr. CLOHAN, of Martinsburg, W. Va., testifies that land in that locality is worth fully as much as it was in 1880. The prices are not as high as they were in 1868 in inflated currency, but it is worth as much for farming. Old men in Berkeley County say that land in that section has been of a certain fixed value for nearly 100 years. The best land would now bring \$50 or \$60 an acre. The farms that are on the market are the heavy limestone soils not particularly adapted to the growing of fruit, but splendidly adapted to grain and grass. Before the war this class of land was sold at \$40 and \$50, about the present prices. (600.)

Mr. NALL testifies that agricultural lands in Kentucky are not as valuable—that is, not as salable—as they were some years ago. He attributes the decline, however, largely to the improved purchasing power of money; going back 25 years, he thinks that the land would bring less in gold than now. (811.)

Mr. Nall testifies that in the blue-grass section of Kentucky the prices of good farm lands range from \$30 to \$60 an acre, or near the towns \$40 to \$80 an acre. Fancy places will sell from those prices up to \$150, according to improvements. There are a few sections in the western part of the State where the values would nearly equal those of the blue-grass section, but in most counties improved agricultural lands can be had at from \$10 to \$20 an acre. In the mountain section the amount of timber and the mineral prospects contribute largely to the selling value of land. (811.)

Mr. WHITE testifies that land in North Carolina in a state of cultivation will sell for from \$5 to \$30 an acre; \$25 is called a very good price. Plenty of land can be bought for from 50 cents to \$3. Good farm land will rent for \$3 or \$4 an acre per annum. Six years' rental will buy arable land; woodland can be bought for what it would rent for. (422, 423.)

Mr. HAMMOND, a cotton planter of South Carolina, says that before the war the usual price of average land was about \$10 an acre. Near the towns it has risen recently to \$30 or \$40 an acre, but remote from the towns it has fallen to \$2 or \$3. (828.)

Mr. PEEK, of Conyers, Ga., testifies that there has been a fall in the price of real estate for a number of years, but during the 12 months preceding the date of his testimony (March, 1900) prices had been steady, owing to a demand for real estate. The average value of land in his county was \$20 an acre. (460.)

Mr. STEVENS testifies that the value of agricultural lands in Georgia has greatly advanced since 1897. (915.)

Mr. NUNNALLY testifies that improved lands in Georgia are worth from \$10 to \$20 an acre. (457.)

Mr. REDDING testifies that improved farms can be bought in Georgia for from \$5 to \$10 an acre. Near the towns the prices are \$20 and \$30, but there would be no difficulty in buying a very fair farm, with a good house and in a good location, at \$10 an acre almost anywhere in Georgia. The gullies are generally filled up, and people are making fair crops. Mr. Redding does not know a single place in the State that can be called abandoned, though there are some old farm estates locked up in some way. (450.)

Mr. POOLE testifies that before the war land in Alabama was worth from \$25 to \$100 an acre, but after the war the value diminished very rapidly, and for a number of years there was no demand. The citizens were very poor. Mr. Poole estimates that the lands fell to an average of \$10 an acre, but says that within the past decade they have more than doubled in value; lands worth \$10 ten years ago are now worth from \$20 to \$25. (922.)

Mr. Poole says that in the southern part of Alabama there are large virgin pine forests, and the increase in the price of labor has stimulated the building of saw-mills all over southern Alabama. The pine lands have increased in value 100 per cent in the past decade. The timber is generally transported by rail, but there are several rivers. Mr. Poole says Alabama has some of the finest pine lands in the United States. Lumber is shipped all over the world from Mobile and Pensacola. Where there are ordinary facilities for the transportation of timber, the lands bring from \$3 to \$10 an acre. (922, 923.)

Mr. GAGE testifies that the value of land in the Memphis district, particularly in Arkansas and Mississippi and the rich bottom land of the hills, has increased in value a great deal within a few years. (492.)

Mr. KYLE, of Panola County, Miss., testifies that there has been an increase in the value of land in his county in the past decade, the price of cotton having improved. (465.)

Mr. BALCH, of Little Rock, Ark., testifies that prices of Southern farm lands were very low in 1893, 1894, and 1895, but have advanced very materially since the return of normal conditions. Mr. Balch represents the owners of timber lands which have advanced from \$1.25 in 1896 to \$6 and \$7 early in 1900, the area on the market having diminished. (495, 496.)

Mr. NORFLEET, of Tennessee, testifies that unimproved Mississippi bottom lands are bought at about \$6 or \$8 an acre. A railroad acquired about 600,000 acres of land and fixed a uniform price of about \$6 an acre, giving 5 years' time for payment in installments, at 6 per cent interest; and private citizens sold at about the same price. Usually 10 or 20 per cent is paid down. Sometimes there has been a disposition to sell this land without any payment down, because everything done upon it improves its condition. (486.)

California.—A statement by the president of the State Board of Trade of California, presented by Mr. TURNBULL, sets forth that in 1890, when the prices of fruits were very high, it was not unusual for orange growers to net \$500 an acre, and fruit growers generally could show good interest on orchards valued at \$1,000 an acre. Fruit growing gave a fictitious value to the available fruit lands. Land devoted to general farming went to enormous figures—\$100 or \$200 an acre. Land can now be bought at one-third, or even less, of the prices of those boom days. In those days large tracts were held by individual owners who would neither sell nor subdivide. Now the great ranches are being broken up and offered in small tracts at reasonable prices. There never was a more favorable time to secure homes in California at fair prices than at present. (988.)

Mr. NAFTZGER says that probably nowhere else on the continent are the prices of land so divergent as in California. There are vast areas of broken mountain lands and desert lands that are practically worthless. Grazing lands are worth from about \$2.50 to \$10 an acre. Lands upon which cereals can be grown are worth from \$15 to \$50 an acre. Fruit lands with water are worth \$100 to \$400 an acre, depending upon the reliability of the water supply, the nearness to markets, the quality of the soil, the character of the fruit they will produce, the freedom from frosts, etc. (961, 962.)

F. The industrial revolution in agriculture.—1. Beneficial effects of improved machinery.—Mr. KETCHUM, of New Jersey, says that improved agricultural machinery has been of great benefit to farmers. He does not know how they could continue farming without it. (135.)

Mr. DYE says improved machinery has had very great influence both in the East and in the West upon the conditions of farming. It has especially enabled the opening of enormous territories in the West which could not have been economically worked otherwise. (96.)

Mr. PROM, of North Dakota, says machinery has facilitated the raising of crops and to some extent compensated for the decline in the price of wheat. (793.)

Mr. STROCKWELL says improved agricultural machinery does away with a great deal of labor and makes possible the production of larger crops at a smaller cost, thus giving a margin of profit. (895.)

Mr. GEORGE says that improved machinery has made possible the thorough cultivation of the soil, increased the yield, and lessened the cost of production. (223.)

Mr. HALE, of Georgia and Connecticut, says there is no question that machinery has increased production and reduced the cost of production, and will result in the using of less land, more intensive cultivation, and better results. (396.)

Cheapening of production.—Mr. MILLER, secretary of the Ohio State Board of Agriculture, says the farmer can produce more cheaply than 25 or 30 years ago, by reason of improved machinery and appliances. (617.)

Mr. GEORGE says the cost of production in agriculture has greatly decreased with the development of modern facilities. He estimates that it costs not more than one-fourth as much to produce a bushel of wheat as it did 40 years ago when wheat was cut with a cradle. (220.)

Mr. AGER says that improved agricultural machinery enables the farmer to produce a great deal more at less expense than formerly. He thinks that with the amount and class of labor available in Maryland it would not be possible to carry on agriculture without the assistance of machinery. (115.)

Mr. CLOHAN, of West Virginia, thinks there has been a decrease in the cost of production of farm products within the past 20 years by the use of labor-saving machinery. (600.)

Mr. HOLMES says the farmer is using better and more labor-saving machines and implements than ever before, and the human labor element in agricultural production is probably diminishing relatively to the amount of the product. In the case of corn, in 1855 the shovel plow was used for marking rows and for cultivating, and the hoe for planting. The stalks were cut with knives, and the corn was husked and shelled by hand. In 1894, plowing was done with the gang plow and corn planter, a machine was used for cutting and binding the stalks, and a combined husking and fodder-cutting machine and a steam corn sheller were used. The investigations of the Department of Labor show that machines and improved implements have reduced the human labor cost per bushel from 35.77 to 10.57 cents, or 70.5 per cent, and the time of human labor from 274 to 41.3 minutes, or 84.9 per cent. Striking reductions in the time and cost of human and animal labor in the production of other crops are also shown. Mr. Holmes calls attention to the great difference between the time when 20 minutes of human labor were required to husk a bushel of corn with a husking peg, and 102 minutes to haul the stalks to a barn and cut them into fodder, and the present, when 17½ minutes are sufficient to haul the same stalks to a husker and husk the corn and at the same time cut the stalks into fodder by steam; "and there was a transition from one agricultural age to another when a man ceased to expend 100 minutes of labor in shelling a bushel of corn by hand, and employed a steam sheller by which a bushel of corn is shelled in a minute and a half. When farmers reaped their wheat with sickles and bound the straw by hand, hauled the sheaves to the barn and thrashed the grain with flails, these operations, applied to 1 bushel of wheat, required the labor of 1 man for 160 minutes, whereas this work is now done, by the use of a combined reaper and thrasher operated by steam, with 4 minutes of human labor." (157.)

Professor DAVENPORT testifies that the 8-foot-cut mowing machine not only reduces the cost of mowing by more than half in comparison with the 4-foot-cut machine, but the life of the machine is doubled, because it is no harder on the machine to cut 8 feet of grass than 4. The cost of producing the hay crop has been greatly reduced by the invention of a rake that delivers the hay in a continuous stream at the side, so that it can be followed immediately by a hay loader. Professor Davenport says the same is true of the other crops. The Breed weeder not only cultivates corn four times as fast as it was formerly done, but cultivates it better and replaces several cultivations by the old method, thus cheapening production. (267.)

Saving of labor.—Mr. AGER, of Maryland, testifies that with improved machinery farmers do not require the amount of labor they formerly needed. Where 5 or 6 men were formerly employed during harvest, 1 or 2 are now sufficient. The machinery also makes the work lighter. (104.)

Mr. CLOHAN, of Martinsburg, W. Va., estimates that there has been a diminution of one-fourth in the number employed in agricultural labor in his section of that State within 15, 20, or 30 years, due to the introduction of such improved machinery as self-binders, mowers, hayrakes, hayforks, etc. Fifteen years ago a good deal of meadow was cut by the scythe, and grain was all cut by the cradle within the limits of time mentioned. Another effect of improved machinery is that the farm laborers do not have as regular work as they did 15 or 20 years ago; the work is hurried through as rapidly as possible. The drudgery of farm labor has been diminished by the present methods, however. (591.)

Mr. HAMMOND, of South Carolina, says that the reaper, the mower, and the cotton planter have displaced a great deal of labor. The more skilled and reliable laborers get perhaps 25 per cent more than the common laborers; but this advance does not make up for the wages formerly paid to cradlers, hay cutters, and cotton-seed sowers. Cradlers were paid more than double what is now paid for the same work done by machine. (816.)

Mr. NUNNALLY estimates that there has been a diminution of one-third in the number of farm laborers in Georgia, although the population has steadily increased. The work is now done mostly by men, the females being employed only in light work, such as chopping corn, hoeing, and picking cotton, while a large majority remain in the house the year round. Work is so facilitated by machinery that there is less necessity for manual labor. The work of 6 or 8 men is now accomplished by 1. The reaping hook is a dream of the past, and the McCormick reaper and 2 mules do the work of 8 good men. (454.)

Dr. CROWELL says improved machinery has reduced the farmers' wage bill very considerably, and increased the size of farms. (344.)

Mr. SPEAR, of Vermont, says farming has become less drudgery and more of a business in consequence of improved machinery and improved methods. (402.)

Mr. WILSON, of Illinois, says improved machinery has done away with the drudgery of the farm, though there is still hard work to be done. (243.)

Mr. MORAN, president of the National Grain Growers' Cooperative Association, estimates that 1 man driving a self-binder with 3 or 4 horses can accomplish as much in a day as he could do with a cradle in 5 days. (711.)

Mr. M. F. GREELEY, secretary of the Board of Regents of Education of South Dakota, says that when he first worked on a farm it took 5 binders to follow a machine, 1 man to rake off, and 1 to carry the bundles together; now a hired girl frequently drives a machine that does it all. (938.)

Mr. BRIDGE, of North Dakota, says it would be impracticable to settle up the country and raise wheat without machinery. Machinery has removed the drudgery from farm life to some extent and farming is now about as easy as anything one can do. The only drudgery about the farm is taking care of the barn. (852.)

Mr. BRIGHAM, Assistant Secretary of Agriculture, and Mr. AARON JONES, Master of the National Grange, agree that the introduction of improved agricultural machinery has not decreased the price of farm labor, although it has somewhat decreased employment during harvesting and haying. The work has been rendered much less severe by the use of machinery. (5, 33.)

Intensive culture.—Mr. KETCHUM, of New Jersey, thinks the cost of production of a crop is about the same now as it was in 1860, notwithstanding the use of improved machinery. Farm labor costs a great deal more and it is necessary to use commercial fertilizers. Machinery has brought about a more intensive farming in New Jersey, so that about the same amount of labor is employed as 30 or 40 years ago. (132, 136.)

Professor DAVENPORT thinks the impression that agriculturists would be crowded out of employment by improved machinery was entirely groundless. The introduction of machinery has vastly extended agricultural operations. It has extended the acreage under cultivation, and has increased the amount of labor per acre bestowed upon the land. He does not think it has decreased the total number of men employed on the land. The cheapness of machine production has enabled farmers to intensify their agriculture; they employ about as many men as they ever did, and do more things. (256, 267.)

Diversification.—Mr. COLES, of New Jersey, says that improvements in agricultural machinery have been the cause of more diversified crops. (125.)

Mr. NORRIS, master of the New York State Grange, thinks machinery has not decreased the demand for labor on the farm, but has opened up new avenues of industry that have given employment to those formerly engaged in hand labor, and so improved the condition of labor. (320.)

Educational effect of improved agricultural implements.—Mr. POWERS regards improved farm machinery as an educational factor—one of the great factors in the elevation of agricultural labor; it has stimulated greater intelligence on the part of laborers and otherwise improved the intellectual status of the American farmer. He regards the comparatively slight use of machinery in the South as one explanation of the lack of agricultural progress in that section. (171, 183.)

Mr. STOCKWELL, of Massachusetts, says the natural effect of improved machinery is to raise the quality of labor, more intelligence and skill being required for its profitable use. Yet this is offset somewhat by the different quality of labor seeking our shores. (884.)

Professor DAVENPORT says the use of improved machinery necessitates a higher grade of agricultural labor; at least some of the labor employed on a farm should be of higher grade, though not necessarily all of it. On the other hand, there is perhaps less manual skill on the part of farm laborers than formerly. There is no call for expert cradlers, expert binders, etc. (256.)

2. Disadvantages of machine production.—Mr. M. F. GREELEY, of South Dakota, says the use of improved machinery, with the opening up of so much easily tilled prairie land, has tended to reduce the price of grain, and it has ruined many a man to buy machinery when he could not pay for it and did not need it. (938.)

Mr. MORAN concedes that machinery has reduced the cost of production to some extent, yet in the days of the cradle it appeared to be easier for the farmer to pay his debts than now; the hours of labor also are longer than in the old days. (711.)

3. Agricultural implements in the South.—Mr. POWERS says machinery is not used to so large an extent in the South as in the North, chiefly because the negro laborer has not been educated up to its use, and also because corn is raised less in the South than in the North. (171.)

Mr. NUNNALLY says the Southern farmers can not trust their tenants with machinery, except one or two simple things like cotton-seed planters. Where machinery is used the owner of the farm operates it with the assistance of his family and one or two hired hands. (456, 457.)

Mr. WEDDERBURN says the farms of Virginia are not large. The farmers use the mower, reaper, thrashing machine, and grain drill, and buy the latest improved plows and cultivators. In the larger wheat-growing sections, where a man raises 300 or 400 bushels, the binder is used. (625.)

Mr. LOVEJOY says there is very little improved machinery used on the farms of Georgia. Not even sulky plows or reapers and binders are employed. The whites are somewhat better able to adapt themselves to machinery than the negroes, but even among them there is so little mechanical skill that they scarcely know how to put together and repair machines. Moreover, where labor costs only from \$6 to \$8 per month, it is cheaper than machinery for many kinds of work. (79, 80.)

Mr. STEVENS testifies that almost every kind of improved machinery has been introduced in Georgia, and within 2 years the increase in the use of machinery has been particularly marked. The management of improved machinery requires a more intelligent class of laborers than formerly, and has been accompanied with an improvement in methods of cultivation as great as in other sections of the Union. The introduction of improved machinery has made it possible to produce all crops at very much less expense, and therefore at greatly increased profits. (906, 915.)

Mr. REDDING testifies that 2-horse cultivators that will plow out a row of cotton at one trip have been introduced to some extent, but are not used largely in Georgia. He thinks improved machinery will come into use with the increased cultivation of cereals. He believes that machinery benefits the farmer, but not the laborer. (453.)

Mr. POOLE, of Alabama, says it is hard to teach the colored laborer the use of improved methods of agriculture; consequently the large farmers of Alabama often pursue very much the old system employed by their fathers and grandfathers. New machinery is being brought into Alabama very generally, however. Some years ago all the cotton was sown by hand; now cotton planters are always used. The oats and the wheat grown in the Tennessee Valley were formerly cut with the old-fashioned cradle; now the McCormick binder and reaper are generally used. There are numerous labor-saving machines, such as cultivators, stalk cutters, etc. The planters have dreamed of a cotton picker, but have not been able to obtain anything successful. The departure of the young laborers to the mines forces the farmers to resort to these labor-saving machines to supply the deficiency, but so far there has been an abundance of labor to meet all demands. (921.)

Dr. STRUBBS, director of the Louisiana experiment stations, while admitting that very little improved machinery has been introduced in cotton culture, declares that in cane and rice culture Louisiana is up to date. During the past decade the rice growers of Louisiana have adopted the most improved machinery that has ever been used in growing rice. It is the process used for wheat raising in the West, with

made modifications. The land is broken with gang plows and harrowed with enormous 4-horse harrows, and the rice is seeded with grain drills or broadcast seeders, and harvested with self-binders and steam thrashers. The result is a very low cost. Dr. Stubbs cannot see how there can be a profit, as is claimed, in rice culture in Hawaii, where the Chinese transplant it by hand in water. • (770, 772.)

Mr. HALS testifies that where improved machinery is used in the South it increases the wages of those who are able to handle it. (376.)

Mr. POWERS believes that machinery will ultimately be applied to the staples of the South. When the Southern negro has acquired a mechanical education, and when the cotton grower has the same grade of intelligence and knowledge of mechanical principles as the wheat raiser of the North, there will be the same progress in machinery and with it the same general advancement. (172.)

4. Cessation of mechanical progress.—Mr. HAMMOND, of South Carolina, while declaring that the inventors of agricultural machinery have created a new agriculture that has filled the earth with plenty undreamed of before, continues:

"But interest and progress in the mechanics of agriculture seem to belong to a period that is past. The gin is more than a century old. Cultivators, horse hoes, and seed drills were used in this country before the Revolution. Steel hoes were manufactured and sold cheaper in 1831 than they can be sought for to-day. It is more than a generation since the American reapers, mowers, and thrashers took the first prizes at the Paris International Exposition of 1855, and since 144 bushels of wheat per acre was cut and thrashed daily on the Huffman ranch in California, a performance which could not be excelled, even if equaled, by the implements and machinery now in use. The period of greatest prosperity and development in agriculture was during the golden decade of 1850-1860. The increase in the value of farm implements and machinery in those 10 years was 62 per cent. In the two succeeding decades, notwithstanding the growth of the population, the vast areas of fresh lands brought under cultivation, and the enormous additions to the agricultural products of the country, the increase in the value of the implements and machinery employed on farms barely equaled the increase of the single decade preceding. The value of agricultural implements manufactured in the United States increased 150 per cent between 1850 and 1860 (we were supplying the trade of the world), between 1860 and 1870 the increase was only 122 per cent, and between 1870 and 1880 it fell to 5 per cent. The manufacture of farm implements has fallen more and more into the hands of large concerns, which have bought out smaller ones, and hold a monopoly of the business. One company, a harrow trust, has in recent years bought up 21 other companies and advanced the price of their products as much as 31 per cent. These trusts possess themselves of every new patent, holding it for their exclusive use, or what is worse, suppressing it, to avoid the additional expense of new and improved models. Experts declare that it would pay many manufacturers to give away their machines for the profit to be found in selling duplicates of parts that break or wear out from faulty construction."

Mr. Hammond does not know of any improvement that has been introduced in the last 30 years except the corn harvester and shredder. The lack of advance is not for lack of effort, as is shown by the records of the patent office. In the list of patents for the 3 months ending June 30, 1893, 25 improvements in plows and 21 in planters are entered. But the advances that are made are not brought to the notice of the farmers. The dealers in agricultural machinery prefer to go on in the old ruts. The Department of Agriculture gives no attention to agricultural machinery, and the agricultural colleges and experiment stations imitate it. Among the 491 officials employed in 1892 in the 61 colleges and 52 experiment stations of the United States, only 5 persons were concerned with the mechanics and engineering of agriculture. Only about 6 per cent of the courses of instruction had to do with agricultural mechanics. If the Department of Agriculture would establish a division of mechanics, and would in its bulletins give information of mechanical improvements, the mechanical progress of agriculture would be more like that of other occupations. (816-819, 830.)

5. Prices of agricultural implements.—Mr. MORAN says a self-binder costs the farmer from \$125 to \$135, bought of course on time, with interest at 7 per cent. The first self-binder Mr. Moran purchased cost \$300, and \$15 for freight, with 7 per cent interest added. In the early days, on the other hand, the farmer used a cradle which cost only a trifle. (710.)

Mr. POWERS says a reaper which was not a self-binder cost in 1870 about \$350 or \$400; a self-binder is now bought for \$125. A better plow can now be bought for \$12 than for \$28 in 1870, and so on with other machines and all other articles purchased by the farmer. When a reaper cost \$400 a man had to go with each machine to teach the people to use it—a high-priced mechanic who had to spend, on an average, 10 days with every purchaser. That added at least \$100 to the price of a first-class reaper. When a great many farmers have been educated in this way they, in turn, teach the other farmers, and that expense is eliminated. (183, 187.)

Mr. WOODMAN testifies that plows and most steel implements are higher than they were 3 to 6 years before the date of his testimony (June, 1900). He states, on the authority of a Congressional report, made probably during the Fifty-second Congress, that some machines were at that time selling in Europe and Canada at considerably lower prices than in this country. (625.)

6. Farm implements for the South American trade.—Professor DAVENPORT says American manufacturers of farm implements cater to the South American trade by making the kind of machines wanted there. Some of the regular designs can not be used in South America because the laborers are not able to operate them. The machinery must be comparatively simple. (270.)

G. The new agriculture.—1. Recent improvements.—Professor DAVENPORT declares that farm life and farm labor have taken on a new aspect within the last decade. The drudgery of the farm has been wonderfully lessened, and more skilled methods introduced. Only within the last few years have farmers commenced to take daily papers and concern themselves with public questions, or to feel that other occupations are interested in agriculture. Even yet the average farmer has no conception of the light in which agriculture and agricultural people are esteemed by the leading men of the country. (258.)

Professor Davenport remarks a rising grade of intelligence among farmers. Typical American agriculture is a profession as truly as law, medicine, or the ministry. The agriculture of America is represented especially by the great section west of the Allegheny Mountains and east of the Rockies, where the population is made up of the New England type, the Dutch from Pennsylvania, the old English aristocracy from Virginia, some of the Southern element, and, in the north, Scandinavian immigrants. This mixed population has no parallel in the world. (259.)

Professor Davenport sums up by saying that the condition of the farmer is better than he has ever known it before and is steadily improving. The general tendency has been upward all the time. (267.)

2. The passing of agricultural discontent.—Mr. AARON JONES, master of the National Grange, testifies that the period of discontent among farmers is passing away, owing to the increased comforts of farm life and the better knowledge of the farmers as to the relative advantages which they enjoy. The farmers' organizations have taught their members to understand the value of their homes, their food, their horses and carriages, etc. (34.)

3. The future of agriculture.—Mr. KETCHUM's opinion is that supply and demand will equalize themselves, perhaps within the present generation, and that when they are brought nearly to a balance farming will be as good as any other business. (135, 136.)

Mr. STOCKWELL says the agriculture of New England is improving. Wealth sees the coming change and invests for future profit. The farmer is not discouraged, but looks forward to the coming prosperity. He realizes the dignity and importance of his calling, and sees that through cooperation and united effort much can be accomplished to improve and advance his position. (904, 905.)

II. FARM OWNERSHIP, TENANCY, AND INDEBTEDNESS.

A. Acquisition and ownership of farms.—1. By farmers (see also, as regards negroes, IV C 4, p. cxxxiv).—Mr. POWERS says that while only a small proportion of the earlier immigrants to this country were able to become farm owners, a large proportion of the later immigration has risen to ownership, assisted by liberal land laws. (171.)

New Jersey.—Mr. COLES, of New Jersey, says there are a number of instances in his vicinity of persons whose parents were farm laborers acquiring farms of their own. (124.)

Minnesota.—Mr. MORAN, of Graceville, Minn., declares it almost impossible for a young man to purchase a home at the present prices of land, go in debt for the land, and also for the necessary implements, horses, and cattle, and get out of debt within his natural life. In his opinion a young man who starts with nothing as a farm laborer can not generally acquire a farm of his own. Mr. Moran admits that there are some instances, however, where wheat land can be bought and paid for during the purchaser's lifetime. (710.)

North Carolina.—Mr. WHITE says a surprisingly large number of colored people in North Carolina have purchased little plots of ground. Mr. White thinks this is true also of the people in the western part of the State, who are largely white. These mountaineers, as a rule, are poor people, but possibly are not as poor as the colored people in the eastern part of the State. The wealth of the State consists in small possessions. (420, 421.)

Mr. GRAHAM, of North Carolina, who has been engaged in selling property as an agent for 20 years, testifies that men who contract to pay for property in 3 years frequently have to be carried 10 years. The home is lost only in a few instances; public sentiment condemns it, and the poor returns from farming do not make the sellers

anxious to get possession of the land. In his experience 2 men out of about 40 surrendered their purchases. (436.)

Georgia.—Mr. REDDING thinks the white farmers of Georgia generally own the land they farm. (448.)

Mr. STEVENS says that by the census of 1890, out of 352,059 families in Georgia, 110,639 were reported as owning their farms and homes, and the proportion owning free of encumbrances was nearly 97 per cent. There were 241,400 families hiring homes and farms.

A good many of the tenant farmers of Georgia are buying land at from \$3 to \$7 an acre. They have from 5 to 7 years in which to pay for it, and so long as a man keeps up his improvements and pays the interest (8 per cent by special agreement) there is no tendency to force him to pay the principal. (912, 914.)

Mr. NUNNALLY testifies that the young men of his section of Georgia are very anxious to procure farms, and work hard to that end. (457.)

Mississippi and Tennessee.—Mr. KYLE is of the opinion that the white farmers of Mississippi generally own their homes. (469, 470.)

Mr. HILL, of Memphis, estimates that 80 or 90 per cent of the white farmers in that vicinity own their farms. The mortgages have been greatly reduced owing to the advance in cotton. (503.)

2. *As investments.*—Mr. GEORGE says that in Illinois many of the best farms have been purchased as investments by bankers, merchants, and the more successful farmers. The large farms are going into the hands of men who have money, who hold them for a rise in price or rent them for \$5 or \$6 an acre. (221.)

B. Farm mortgages.—Professor BAILEY, of Cornell University, remarks that in many cases the mortgage represents the purchase money of the farm. Where it does not, it is rather an indication of unfortunate local conditions or of poor individual management than a fundamental cause of general depression. (1012.)

Mr. POWERS says there are three times as many mortgages foreclosed in the East as in the West, and that the question of debt is ten times as great in certain parts of New York and New England as in the Western and Southwestern States. (175.)

Mr. WETTING, Commissioner of Agriculture of New York, says that as a result of the high prices of farm products from 1860 to 1873 farm lands in New York were very highly valued. Many farms were bought on time at high prices and mortgaged, and when prices fell and the value of land shrank many farmers lost what they had invested. (993.)

Mr. COLES, of Salem County, N. J., testifies that farmers in that section are occasionally sold out by the sheriff. In the great majority of cases they have been dragged down by buying at high prices years ago. (129.)

Mr. FROM, of Milton, N. Dak., testifies that the majority of farms in that section are mortgaged, though not heavily. The mortgages are being paid off, however, and many that could pay them off prefer to keep a mortgage on the farm and keep the money to buy extra land. The average interest on farm mortgages is 8 per cent. Many mortgages were made to acquire more land. Mr. From thinks it was wise for the farmers to borrow for that purpose. He does not look upon the great number of mortgages as an indication of adversity; they aid the development of the country, which could not have developed on a cash basis.

Mr. From says most of the farms in his section are bought on credit. Lands can be bought on crop payments, or for so many thousand bushels of wheat. In the crop-payment plan the purchaser binds himself to pay one-half the grain he raises every year, retaining the other half for seed and expenses; thus he can gradually pay for the farm. Mr. From pronounces this an excellent plan. (790.)

Mr. JUMPER, of Aberdeen, S. Dak., estimates that two-thirds of the land in the northern half of South Dakota has gone into the hands of mortgage companies. Many of the original farmers have become tenant farmers by that process. A good many farmers who had filed on a quarter section and had perhaps taken up a preemption undertook to extend their farms and purchased other lands by giving a mortgage on all they had, and during the time of the droughts and the low prices of wheat they had to lose some of their farms. A good many of them still rent these farms. At the time of the early settlement of that part of the country, from 1883 to 1886, many young men and young women took up claims and lived, or pretended to live, on them 6 months, got mortgages on them, and then left and never came back. All the land owned by the mortgage companies is on the market at reasonable prices, and farms are often bought back by those who lose them. The mortgage companies are largely located in New England, New York, and New Jersey. (733, 734.)

Mr. JUMPER says that 10 years ago it was easy to get a 10 per cent farm mortgage in his section; now it is hard to get a 6 per cent farm mortgage. Practically no mortgages are being foreclosed. (740.)

Mr. MORAN estimates that 50 per cent or more of the homesteads taken up in his section (western Minnesota) are already mortgaged. (710.)

Mr. M. F. GREELEY says there is too great a tendency in the West to run into debt. A man who would not go in debt in the East will unhesitatingly do so in Dakota. In a good many cases enterprising young men who have a few hundred dollars can get a piece of land, going in debt for the balance, and make a home and pay for it; but that is the only case in which Mr. Greeley approves of mortgaging a farm.

Mr. Greeley says that in many sections formerly heavily mortgaged the mortgage has nearly disappeared. (935.)

Mr. STOCKWELL says there is hardly a town in New England that has not many reminders of the hard times experienced by the West, that rest as a nightmare on the farm-mortgage companies of New England. (892.)

Mr. CLOHAN, of West Virginia, testifies that there are a great many men in his locality who were badly involved after the war, or had bought at war prices, who kept on struggling and paying their interest up to about 1893, when the panic forced a great many into liquidation. That, together with the settling up of old estates already in liquidation, has caused many changes in real-estate ownership within a few years. (593, 599.)

Mr. YOUNG says the original landholders of South Carolina got in debt soon after the war. They all became involved when cotton dropped suddenly in 1866. Their land has nearly all been transferred to other hands, and is now being lost by the second parties. The small farmers of South Carolina are being crowded out; their farms are being mortgaged more and more each year, until finally they have to give up the deeds. They borrow usually of the country merchant or cotton factor, who in turn borrows from the North. Mr. Young thinks it is only a question of time until most of them will be drawn into the towns. (120.)

Mr. PEEK, of Georgia, testifies that a great many people in that part of the country have had to mortgage their land and lose it. He says the majority of farmers are now homeless, because of the loss in raising cotton. (458, 460.)

Mr. LOVEJOY estimates (June, 1899) that half the planters in Georgia have mules and lands mortgaged as a result of the low price of cotton. (75.)

Mr. POOLE says that 10 years ago the plantations of Alabama were largely mortgaged, but the mortgages have been rapidly paid off. He estimates that not over 15 or 20 per cent, or 25 per cent at the very outside, of the lands of Alabama are now mortgaged. He characterizes the past decade as an era of prosperity in Alabama. (922.)

Mr. NORFLEET, of Memphis, thinks the greater part of land owners in that vicinity are mortgaged for a smaller or larger amount. The mortgage loan companies very frequently find that they have loaned too much on a tract of land. Quite a number of loan and mortgage companies with agencies in Tennessee have thus acquired the ownership of land and are renting it. (492.)

C. Tenancy.—1. **Extent.**—Mr. POWERS says the tenancy that involves large holding of land by capitalists of great wealth and a permanent tenant class practically never existed in this country, except in New York and some other parts of the East. In New York, farms were formerly leased for long periods of time, as 100 years, and tenants could not become farm owners. The system bred discontent and the question became an issue in politics. The new State constitution adopted in 1846 forbade the leasing of farm lands for more than 12 years. In certain parts of Illinois and some other sections there are a few large tracts of land operated by tenants and owned by capitalists who will not sell it, but these places are few in number. (173.)

Mr. GREELEY, of South Dakota, says capitalists, seeing that land is going to be valuable—that population will increase, while land will not—are buying up small farms wherever the owners are so shortsighted as to part with them, or are getting them through mortgages, and putting on tenants. This practice is growing with alarming rapidity in the richer portions of Minnesota, the Dakotas, and other States, in place of the bonanza farms. It is better than bonanza farming, but it is a bad thing and ought to be circumvented. (934, 935.)

Mr. WEDDERBURN says a great many who have owned farms have become tenant farmers, and predicts that the Twelfth Census will show more tenant farmers in this country than ever before. (628.)

Mr. STEVENS cites the census of 1890 as showing that the farms in Georgia cultivated by the owners were about 46½ per cent of the whole, those rented for a money value 17½ per cent, and those rented for a share of the product 36½ per cent. (907.)

Mr. WHITE testifies that the farmers who own their land in North Carolina are, as a rule, more responsible and respectable than the tenants; though there are some very respectable men who do not undertake to buy land, but, taking into consideration taxes, purchase price, etc., prefer to share crops. (421.)

Mr. POOLE says that in the Black Belt of Alabama the lands are owned in large tracts of 320 to 2,000 acres generally, and frequently a man will work from 50 to 150 tenants on his place. (919.)

Mr. KYLE testifies that the tenant system is almost universal in Mississippi. A tenant can cultivate on an average 15 acres for each hand in the family who works in the fields. (467.)

Dr. STUBBS says Louisiana has two distinct classes of cotton planters: (1) Those located in the Mississippi bottom, from Baton Rouge to the Arkansas line, constituting the Jensas bottom, with an area of 4,000 or 5,000 square miles, and in the Red River bottom, running down from the northwest to below Alexandria, from 2 to 10 miles in width, "a most magnificent cotton section." In the alluvial bottom lands are large estates, many of them owned by absentees and worked by tenants. (2) Between these is "the hill country," consisting of land covered with oak and hickory and short-leaf pine. In these hills are a large number of small planters who grow cotton, corn, oats, and forage crops and raise small quantities of stock and poultry, make their own butter and meat, and live well, doing much of their own labor and hiring the help they need during the season. In the alluvial section the negro is a tenant; in the hills renting or sharing is the exception. (775.)

Mr. NORFLEET, of Memphis, testifies that the lands in the Yazoo Basin are largely operated by persons who rent land and, in some cases at least, subrent to other tenants. Some who have plenty of money and own as many as 50 mules still rent land. Some have paid as high as \$6,500 rent a year. Hill land in the Memphis district is worth from \$2 to \$4 an acre, cash rent, and arable lands of the Mississippi bottom from \$3 to \$6 an acre. (487, 488.)

Mr. HILL, of Memphis, Tenn, says most of the plantations in that vicinity are run on the tenant system. (504.)

Mr. PEEK says the South is rapidly going into industrial slavery, and the lands are all getting into the hands of a few men. According to the Eleventh Census, 65 per cent of the citizens of the country are homeless, and in Georgia 80 per cent are in that condition. We are a nation of tenants. Mr. Peek attributes this condition of things to the following causes: (1) The national banks can not loan money on real estate, and the State banks and loan associations loan only at ruinous interest; the Georgia banks charge from 8 to 12 per cent on real-estate loans; (2) the protective system is not carried far enough; all our agricultural exports are sold in competition with the products of pauper labor; (3) the State and Interstate Commerce commissions are helpless to enforce the laws. (462-464.)

Mr. NAFTZGER testifies that in central and northern California the Chinese and Japanese are tenants of a very considerable number of fruit orchards. They go especially into deciduous fruit growing and the making of dried fruit. They are not engaged to any extent in citrus fruit growing. (953, 954.)

2. Cash rentals and crop sharing.—*Northern States.*—Mr. POWERS says crop sharing is the old method of tenancy, as a rule, in the Northern States, and the most satisfactory method where the tenant has only a small capital. Where the tenant furnishes the implements and live stock he usually receives one-half the product. If the owner of the farm furnishes all the stock, implements, and seed, the tenant retains only one-third. There is now a tendency for tenants to assume the risk and pay a cash rental where their condition is improving. In sections where farm lands are valuable it takes a man of some capital to become a cash tenant, but the most desirable tenants are those who have capital. (172, 173.)

Professor DAVENPORT testifies that it is much more common than formerly in New England for landlords to stipulate that the tenants must manure the land. (263.)

Mr. SPEAR testifies that there is considerable renting of farms on shares in Vermont, though the fixed rental is on the increase. In share renting the landlord usually supplies the stock, tools, and machinery, and outside expenses, as for seed, fertilizers, and necessary repairs, are shared equally. The income is also divided equally. (403.)

Mr. STOCKWELL thinks there is very little crop sharing in Massachusetts, except in a small way. Sometimes a man makes an agreement with a farmer to raise a crop for him on shares, but this is infrequent. (886.)

Mr. NORRIS says that in New York a man rents a farm for so much, agreeing to do certain things. Farms are now being worked more extensively on shares than formerly. A man furnishes one-half the seed and does all the work, and the product is, as a rule, divided equally. In some cases where the owner furnishes the teams and all seeds, the tenant has one-third. When the man who does the work furnishes his own team, the owner, perhaps, pays a little more than one-half, under certain conditions, as where they run an evaporator. If a man evaporates the fruit, furnishes help, etc., the farmer generally pays him a little bonus. (322.)

Mr. COLES, of Salem County, N. J., testifies that there is a good deal of tenant farming on shares in that section. Generally, if the farmer owns the stock he farms for one-half the crop, finding half the seed, and generally half the commercial fertilizer. Where the owner of the land owns everything, and the tenant furnishes only the labor, he gets one-third of the crop. These terms have always been customary, but since there has been so much dairying and stock raising the owner of the farm is apt to have an interest in the stock also. (125.)

Mr. KETCHUM, of Mercer County, N. J., says the system of farming on shares is in vogue quite extensively in that section, on the usual terms of one-half or one-third, according to the ownership of the stock. (134.)

Mr. BRIGHAM, speaking with special reference to Ohio customs, says the owner sometimes furnishes all of the stock, tools, etc., in which case the tenant usually receives one-third. The owner and tenant sometimes each furnish half of the necessary supplies and then divide the product equally. In some sections the tenant is required to furnish almost everything. The division of the crop depends somewhat upon the fertility of the soil. In addition to his share of the crops the tenant is usually allowed a garden plot of his own and the use of fruit, and certain other privileges. (9, 10.)

Mr. SMITH, testifies that sugar beets were grown in Michigan almost exclusively by those who owned the land until 1900, when there appeared a tendency, especially at Holland and Benton Harbor, and somewhat at Bay City, to rent fields for cash rent to men who knew more about beet growing than the owners did and were willing to take chances. The renters were usually Germans or Hollanders. The factory at Holland also rented some land for 1900, and had to pay \$8 and \$12, and in some cases more, per acre. The renters take the land in small tracts, for the most part. One German rents 2 acres because he has only enough children to work that much; another man has 5 acres; a company has rented 103 acres at Benton Harbor. (577-579.)

Mr. WILSON, master of the Illinois State Grange, says that the landlord in Illinois furnishes nothing but the land and the buildings and receives from one-third to one-half the crop (probably two-fifths on an average), and cash for all grass lands. There are very few farm partnerships in Illinois except in stock. The landlord and tenant will each own half the stock, and the man will put his labor against the land and receive half the proceeds. As a rule the landlord pays the taxes on the real estate, but sometimes the tenant pays part of them. (245.)

Mr. MORAN testifies that farm tenants in western Minnesota usually receive half the product, the owner of the land furnishing the seed and usually paying half the actual money paid for thrashing. (710.)

Mr. PROM, a banker of Milton, N. Dak., says he owns and farms by tenants 7 quarter sections near town. He furnishes the seed and pays half the expenses of planting and thrashing, and receives half the grain. These are the general terms for crop sharing in North Dakota, except that the owner does not generally pay half the thrashing; the tenant does all the work and furnishes the thrashing machine and horses. A very small portion of the grain raising of North Dakota is done by crop sharing, however. The land is mainly owned by actual farmers who do the work themselves, except that during harvest there is some transient hired labor. Middle-aged men with families of children are preferred as tenants.

Mr. Prom says the tenant gets a certain part of the field for his exclusive use for garden stuff, potatoes, etc. The tenant furnishes his own fuel, paying \$4 a cord for poplar, or \$5.50 for oak. (787, 788, 793.)

Mr. BUDGE testifies that farm tenants in North Dakota have half the crop if the seed is furnished by the land owner, or two-thirds of the crop if they themselves furnish the seed and plow the land.

Southern States.—Mr. BARRETT, of Georgia, says a large part of the farm work in the South is done by tenants. Sometimes there is a money rent, which, in the section where the witness lives, ranges from \$1.25 to \$5 per acre. In other cases the tenant pays from 500 to 1,000 pounds of cotton for as much land as he can work with 1 mule, having a house, garden, and wood free. Another common method is known as "cropping." The owner furnishes the mule and its feed and a house for the tenant; the tenant furnishes the labor and feeds himself; fertilizer and other expenses are divided equally, and the owner and the tenant share equally the crop. In all these cases the law gives the owner a first lien on the crop for his rent. (46, 47.)

Mr. GRAHAM says there are sections of North Carolina where agriculture is carried on nearly altogether by croppers and renters. The cropper is a farmer whose landlord furnishes the land and utensils and pays for the fertilizers in proportion to his part of the crop. The cropper receives from one-third to one-half of the crop. The renter furnishes the stock. The landlord furnishes the house, firewood, and fully

an acre for garden purposes, and gets one-third or one-fourth, more or less, of the crop. (434.)

Mr. NUNNALLY testifies that the greater part of the farm work in the South is done on the share plan, the landowner furnishing the stock and feed for the same, all the farming implements, dwelling houses, garden plots, firewood, and one-half the fertilizer, the tenant furnishing the labor and food for the same, and the crop being equally divided. (455.)

Mr. AGER testifies that the renting of lands is practiced in some localities in Maryland. He knows one gentleman who furnishes everything, and gives the tenant one-third of what is sold off the place. In other localities, where land is better, the owner furnishes usually one-half the seed and gives the tenant one-half the crop. (105.)

Mr. WEDDERBURN, master of the Virginia State Grange, testifies that in the tobacco section of Virginia, south of the James and east of Petersburg, the general plan is for the landlord to furnish only land and house, advancing the tenant's living and charging him for it, and getting one-fourth of the proceeds of the crop as rent. In some places the landlord furnishes everything except the labor, and then gets about one-third. In the northern section of Virginia, near Washington, where land is valuable, the land alone is rented for from one-third to one-half the crop. Mr. Wedderburn thinks the only lien laws in Virginia are those applied on the advance of fertilizers. (620, 621.)

Mr. CLOHAN, of Martinsburg, W. Va., testifies that farming on shares in West Virginia is done generally by the whites, though one of the largest farmers in his section has a colored cropper, furnishing everything for him. Under the crop-sharing system in West Virginia the tenant furnishes everything and delivers two-fifths of the gross product to the landlord, the fodder and straw being retained on the farm. If the landlord furnishes teams and implements, the tenant gets one-third. Mr. Clohan estimates that one-half of the land in his locality is worked under the crop-sharing system. The landlords claim that their two-fifths gives them only about 3 per cent on the money invested. Quite a number of lawyers, bankers, and doctors own farms in that vicinity and reside in the city. (597, 598.)

Mr. NALL testifies that the system of crop sharing is growing in Kentucky, especially in the blue-grass region, because of the introduction within 15 or 20 years of the culture of Burley tobacco, which nearly all the blue-grass counties are more or less engaged in growing. The owners found that they did not know how to handle it with their colored labor, and induced white labor to come from the more hilly and poorer sections of the State as tenants. The landlord lets the tenant have whatever number of acres he wants, furnishes a house, pasturage for a cow and horse, a few acres for growing corn, and a garden, either with or without charge, according to contract. When the tobacco is sold at the warehouse and the expense is deducted, the tenant gets half and the farmer half. The tenant furnishes the team, or if the farmer furnishes it he is entitled to pay for it. (804, 805.)

Mr. Nall says that a good deal of corn land also is farmed by tenants, but in that case the tenant, as a rule, is not furnished a house. The tenant furnishes all the labor and cultivates the land for one-half the product. If the landlord advances supplies it becomes a lien on the crop. (805.)

Mr. WHITE testifies that tenants in North Carolina usually farm on shares. They rent the ground and furnish their own teams and supplies and give a third or a fourth of the crop as rent for the land. When the landlord furnishes the house, team, seeds, and implements, they divide equally. Men have often done well on these terms.

When the crop is gathered and ready for division it is divided into piles and the landlord takes his share. Sometimes the landlord gathers his share, taking, for example, every other row of corn; but the tenant generally gathers the crop. (420.)

Mr. White says the tenant sometimes gives so much cotton an acre, or, in lieu of cotton, so much money, but money rent is the exception. (420, 421.)

Mr. PEEK says the tenant system is the rule in Georgia. The land is rented for so much cotton, or the landlord furnishes everything except the labor and half the fertilizer and takes half the crop. (458.)

Mr. STEVENS says that where the tenant system of farming prevails in Georgia the average tenant is furnished with a home, water, fuel, pasturage for his stock, a share of the fruit on the place, a garden, an outhouse for stock, and storage for crops. In the sharing of the crop one-fourth of the cotton, one-third of the corn, and one-half of the small grain goes to the landlord, the balance to the tenant. The landlord furnishes the land and seed and a share of the fertilizer equivalent to his pro rata share of the crop. The lands are not let for continuous periods, but usually from year to year, and if the landlord becomes dissatisfied at the end of the year he can

dispense with the tenant, or the tenant may become dissatisfied and has a perfect right to go anywhere he chooses. The landlord has no lien and no claim upon the property or land except for rent and advances, which only apply to the present crop; moreover, the tenant is entitled to the benefit of the homestead exemptions, which are, to every man who is the head of a family, his household goods, his horse, \$300 worth of provisions, and so on. A tenant who has defaulted on one farm would not be regarded as a first-class tenant, but at the same time he can always get a place; some one will take him up.

Mr. Stevens finds it difficult to give all the reasons why so many of the tenants find themselves without any money at the end of the year, but attributes it in part to the exorbitant prices paid for goods bought on time, and partly to the ignorance and poor management of the tenants.

Growing crops are not attachable in Georgia, and if the tenant agrees to make the crop he does not have to stay the whole year, but can move at any time he chooses; there are no laws in the State to compel him to remain. (907, 908, 911.)

Mr. HAMMOND, a cotton planter of South Carolina, says that payment of rent in kind (one-fourth of the corn, one-fifth of the cotton), as was formerly the practice, is passing out of use. Money rents are generally paid at the rate of \$2 an acre for average land and more for the best quality. The system of crops on halves, the employer finding land, teams, implements, house, fuel, gardens, and half the fertilizers, is growing in favor. The cost of ginning, steam transportation to market, charges for insurance, and selling, are shared equally and are more than covered by the value of the seed. This system, as compared with that of hiring labor, gives additional security that the crop will be carefully gathered; and the cost of labor is 54 per cent of the cost of the cotton crop. When land is rented it deteriorates rapidly, but under the sharing system it is kept up. (822.)

Mr. DILLINGHAM says lands in Lowndes County, Ala., rent for from \$2 to \$3.50 an acre. The cash rent is growing in favor. The share system formerly existed to some extent, the landlord giving one-half the crop, or two-thirds if he furnished the machinery, but it has been largely superseded. (169.)

Mr. POOLE testifies that in Alabama the owner of the land furnishes the tenant house and all the necessary teams and implements. The tenant furnishes the labor and gets, generally, one-half the cattle and one-third of the corn and other crops. Frequently the landowner furnishes everything, including provisions, for, say, 6 months, and the tenant gets one-third of the crop. (918.)

Dr. SRUBBS says the negro tenants in the alluvial section of Louisiana are either sharers or renters: (1) If the landlord furnishes the house and mules, firewood, and feed for the mules, the negro will work the crop and feed himself, and divide equally at the end of the season. (2) The renter owns his mules and pays a stipulated rent, either in cotton, in money, or in cotton per acre. (775.)

Mr. KYLE, a lawyer of Sardis, Miss., has a place near Friar Point, in the Delta, which he rents for about \$4 an acre, money rent, to a white man, who subrents for a much larger amount to colored people and half a dozen families of Italians. These tenants run from one to four horse crops, cultivating about 20 to 25 acres in cotton to the horse. They generally raise their own meat and corn, and get supplies on credit from the chief tenant at the plantation store. Mr. Kyle also has lands in the hills where he supplies the labor himself. He does not hire by wages, but some of the colored people work on shares and some rent land. In working on shares the custom is for the landlord to furnish the mules or horses and implements, and the products are divided equally. No fertilizers are used except composts made on the farm. (464, 465.)

Mr. GAGE, a cotton factor of Memphis, testifies that his customers cultivate their land sometimes through croppers and sometimes by day labor. The share cropper is one who makes a bargain with the landlord to make a crop on shares. Generally the landlord puts up the land and a mule against the tenant's labor, and furnishes the tenant such supplies as he may want for his family during the year, charging him an agreed price for everything, generally a little higher than the cash price. The tenant, with his wife and children, makes the crop, and in the fall they divide the proceeds, or sometimes the crop itself. Nearly all the tenants are colored, but in the northern part of Arkansas a good many are white. (492.)

Mr. GODWIN testifies that he has a stock farm on the Wolf River, about 7 miles east of Memphis, and rents out his surplus land to tenants, who plant cotton mainly. A family cultivates from 25 to 50 acres, as a rule. A man who cultivates from 20 to 25 acres will have one plow animal; one who cultivates from 40 to 50 acres will have two. Mr. Godwin rents for cotton. For 20 to 25 acres of good land the rent is 2 bales of cotton; one tenant pays only 4 bales of cotton for 75 acres of good land. The tenants supply the implements and materials, but Mr. Godwin supplies

the house and all the firewood they want to cut. There are garden spots of from one-fourth to one-half an acre on which some of the tenants raise little crops of tobacco and potatoes and keep hogs, chickens, geese, and one or two cows. Mr. Godwin furnishes timber and nails for the paling around the garden, but the tenants very often burn it during the winter. (474-476.)

Mr. Godwin says that the law of Tennessee gives the landlord a lien upon the crops. Mr. Godwin does not keep a store, and prefers to have his tenants supply themselves elsewhere if they can, but otherwise he furnishes the absolute necessities, and by hiring his tenants to work on his stock farm he keeps their accounts very small. (475.)

Mr. Godwin says the tenants on his place come out even as a rule, and they made money on the crop of 1899. One of his tenants sold his last bale as late as March, 1900. (476.)

Mr. MASON, of Saulsbury, Tenn., besides hiring a few hands, rents two places to negroes, and has others working on shares, Mr. Manson furnishing the mules, feed, wagons, and implements and getting half the profit. He furnishes milch cows to his tenants without charge. (506.)

Mr. MASON, an ex-slave, testifies that he has been farming in Tennessee ever since emancipation. At first he rented 10 acres of land, with a house, etc., for a bale of cotton. He prospered, bought land, and now rents to tenants; the money rent averages \$2 to \$4 an acre. (498-500.)

Relative advantages of different plans.—Mr. DYE, of New Jersey, has found the system of cash rental more satisfactory than that of crop sharing. (84.)

Mr. M. F. GREELEY thinks there is not nearly enough crop sharing in South Dakota, and not nearly as much as there will be. He emphasizes the advantage of that method of farming to those who have large land interests that they can not oversee themselves. He thinks it is better, however, to give the one employed a little cash, crop or no crop, in order that he may feel sure of something. If he can also have part of the proceeds he is interested and does his very best. Mr. Greeley finds that he can let out a flock of sheep and give the man two-thirds and get more money out of it than by letting him have only one-half; when his self-interest is developed he becomes a better sheep man and a better farmer. (929.)

Mr. Godwin formerly practiced crop sharing and thinks it more profitable than renting for a stipulated amount of cotton, but a great deal more trouble. The landlord who rents on the share system undertakes the supervision of the tenants, who feel that they ought not to be interfered with, and the result is sometimes friction. When the land is rented the landlord only has to see that the tenants do not abuse the land and allow it to wash away. (475-479.)

Mr. ELDRIDGE, of Hillhouse, Miss., testifies that his son formerly made a great deal more money by working his plantation on shares and getting half the product than he now does renting the land for \$5 or \$6 an acre. (513.)

3. Advantages and disadvantages of tenant farming.—*Advantages from the standpoint of landowner and tenant.*—Mr. BRIGHAM predicts that crop sharing will be very largely employed in the future instead of money wages. A man will take more interest in work in the profits of which he is to share. (9.)

Dr. CROWELL says the English farmer is the most capable farmer in the world, because the business of land holding and land cultivation are separated; the farmer pays rent largely as interest on the capital the landlord has invested in buildings, drainage, etc., and has his capital free to use in cultivation. He is free to make the most out of the soil within certain recognized rules of cultivation, and his adaptiveness is marvelous. (340.)

Detrimental effects.—On the other hand, Dr. CROWELL refers to the disadvantage of the English farm tenant, under a lease prescribing a certain rotation of crops, in being obliged to sow a crop for which there may be little sale at the time, in contrast to the ability of the American farmer to adjust himself to changes. (333.)

Mr. BRIGHAM says that renting for cash ruins a farm. The tenant renting on shares will usually take good care of the farm. (9.)

Mr. POWERS considers the share system a detriment to the farming interests, especially where it is introduced with a view to making a permanent tenant class. He says that when a farm is leased to a stranger the land is apt to deteriorate; if it is leased to a relative or one who anticipates becoming the owner, the quality may be kept up. About 25 or 30 years ago there was a tendency on the part of rich farmers to buy up adjoining farms and lease them, but these farms were so generally deteriorating that they found it better to sell their land. (173.)

Mr. NUNNALLY, of Georgia, explains that the system of crop sharing had its origin in the lack of money with which to pay for labor. This ruinous system, he declares, has done more to impoverish the Southern farmers than any other combination of

circumstances. The labor thus employed works only about 7 months in the year, devoting the rest of the time to loafing, fishing, hunting, and having a good time. The contracts have grown looser and looser until the tenant ignores his landlord, and the tenants, as well as the landowners, have grown poorer year by year. The system may have been best at the time of its adoption, but on the whole it has been a stumbling-block in the way of progressive and diversified agriculture. (455.)

Mr. PEEK says there is a tendency with tenants in the South to get out of doing anything that keeps up the farm, such as terracing to prevent washing away of soil. (459.)

Mr. STEVENS, of Georgia, says the tenant system, as a whole, has a tendency to reduce the average production per acre of most of the crops, because a great deal is left to the management of the ignorant negro farm hand, the landlord being interested only to the extent of his rent. Public opinion is against the tenant system in Georgia for the reason that the crops and the land are neglected. The tenants go in to get what they can out of the land at the least possible expense, and pay no attention to building up the land or saving it; while the landowners who are native Georgians and live near by, permit this deterioration of the land without intervention as a matter of economy to themselves. They share in the extra present profits, and are recouped to a great extent for their losses by trading and trafficking with their tenants. A man continually in debt and wearing out the land under this tenant system is in a state of agricultural slavery, and it requires an abnormally large crop to get him out of debt. The tenants have no disposition to get out of the land anything but what is a present benefit. This applies not only to colored labor, but to white men as well. Mr. Stevens does not attribute the condition of the tenants to any oppressive disposition on the part of the landlords. (907-910.)

Mr. AGER thinks the tenant system undesirable for the owner; it is very difficult to get a tenant who has sufficient energy to work a farm as it should be worked. Owing to the cheapness of land in Maryland, a man with much ambition, energy, and industry is able to have land of his own. (105.)

Mr. DILLINGHAM, of Alabama, says on the authority of landowners who lease their land that the land is growing poorer. The people are also growing poorer. (166.)

Mr. HALE says there is too little of the owner's direct management in the case of rented land. He seems to be of the opinion that in the crop-sharing system, where the landlord furnishes the mule and bears part of the expense for fertilizers, there is tendency to stimulate somewhat better culture. (379.)

Mr. NORFLEET, of Memphis, says the tendency is to get rid of the management of the labor and rent land at so much an acre, furnishing cheap stock and utensils and improving as little as possible. He thinks this disposition to rent in this way is due chiefly to the desire of the negro to have charge of his own affairs without hindrance; on account of the scarcity of labor the landlords have to pursue the plan which suits the laborer best. As a result of this system the white people are, in thousands of instances, moving into the villages and towns. Under the management of the negroes the lands wash away and work out, and fences and other improvements become dilapidated. Mr. Norfleet thinks leaving the colored people together and alone so much also has a bad effect upon them morally. (486, 487.)

Mr. HILL, of Memphis, says the most serious objection to renting land is that it does not receive the same attention as it would under the care of the landlord. (504.)

Mr. JUMPER says that the land owned by mortgage companies in South Dakota and rented on shares reduces the average yield. The man who puts in a crop on another man's land never does it half as well as he cultivates his own land. (733.)

Tenancy a step toward ownership.—Mr. POWERS maintains that tenants represent, on the whole, an improvement upon the condition of farm laborers from which they have risen, though some of the negro farm tenants in the South represent a lower industrial level than the average farm-wage family of the North. Tenancy, except in isolated cases, is a step toward ownership. Many men accumulate enough money to retire from farming in their old age and surrender their farms to someone, often a son or other relative, or a hired man, who ultimately becomes the owner. As land rises in value it becomes necessary for young men to begin as tenants. The census of 1890 shows that the farm families whose heads were under 25 years of age were very largely tenants, while nine-tenths of those over 45 years of age were owners. It is becoming more and more common for young men to work as farm laborers; or they may start as tenants, and, if successful, buy the farm. (170, 173.)

Mr. BUDGE says the tenants in North Dakota work on shares only until they get a start, and then go out and take up land of their own. They generally become independent farmers, though they were practically all poor at the start. (846.)

Mr. CLOHAN testifies that the farm tenants of West Virginia prosper, and most of those who get on a good farm and stay 12 or 15 years ultimately become owners. (598.)

Mr. EDMONDSON, an ex-slave, testifies that he began renting on his own account in 1884 in Tennessee, and made 21 bales of cotton on about 26 acres of thin clover land, furnishing his own team and giving the landlord one-third. He made \$600 on rice and came out more than even. He has been able to save some money each year and expects to be able to buy a piece of land. (501, 502.)

4. Tenancy versus the wage system in the South.—*Impracticability of paying wages.*—Mr. GRAHAM says the man who attempts to farm under the wage system in North Carolina goes into bankruptcy because of the fluctuations in the price of cotton. (434.)

Mr. NUNNALLY, of Georgia, testifies that he works his farm entirely by the tenant plan; he can not get the labor to work otherwise. He has tried hiring men, but could not succeed while his neighbors worked on the other plan. Under the low price of cotton that was the only plan practicable. (455, 456.)

Mr. PEEK, also of Georgia, agrees with Mr. Nunnally that the system of tenant farming is the only one practicable in the South. The laborer wants liberty, and under the tenant system he has liberty to come and go as he pleases. (459.)

While condemning the tenant system severely, Mr. STEVENS says there is really no way to get rid of it; the landlord usually owns a great deal more land than he could cultivate himself, and there is a disposition on the part of colored laborers to become tenants rather than farm hands, because they are their own masters under the tenant system to a much greater extent; while the farm hands are required to work from Monday morning until Friday night, the tenant farmer is free to come and go as he chooses. The tenant farmer usually does work just as hard as the farm hand, but he is his own overseer, as well as his own workman, and for that reason his condition seems better to himself. The landlord does not rent the land so long as he can get better labor, but it is impossible to get just the labor he wants, and the result is that he is forced to resort to the tenant system of farming. (907-909.)

Mr. GODWIN, of Tennessee, says one can not afford to cultivate cotton with hired labor and sell it for 5 or 5½ cents. (479.)

Mr. MAXSON, of Tennessee, does not think he could raise cotton at the present prices (March, 1900) with hired help, unless he needed the help for other work about the place. (506.)

Mr. NALL, of Kentucky, considers crop sharing more satisfactory than hiring for tobacco raising. (805.)

Advantages of the wage system.—Mr. REDDING, of Georgia, tried to hire for wages from the time the negroes were made free, and is satisfied that that is the correct method. He thinks as a rule the farmers have been most successful who have hired by the month or year on a money basis. (44b.)

Mr. HALE says he could not make interest on the money invested in farms by letting them out to renters. He would prefer to hire the labor and have absolute control. He thinks a man with capital can go South, hire his labor, and by close attention to details make from 10 to 20 per cent in various lines. (390.)

Mr. HILL, of Memphis, has tried both systems and thinks that paying cash for labor and running the plantation is the more satisfactory. He raises grain, cattle, and hogs with wage hands. (504.)

Dr. STUBBS attributes the intelligent and economical cultivation prevailing in the lower portion of Louisiana to the exclusive employment of hired day labor on the estates under intelligent supervision. The negroes are taught to use improved implements and methods by the experienced and educated supervising overseer or manager, who remains with them all day, riding from one to another, pushing them, and seeing that the work is done properly. (770.)

Mr. LOVEJOY, of Georgia, believes that the laborers who get \$6 or \$8 a month are better off than those who rent or share crops. (75.)

D. Crop liens in the South.—1. *Origin and results of the system.*—Mr. HOLMES says it is a general custom of cotton planters and their tenants to use their credit with the neighboring merchants to obtain their plantation and family supplies in advance of the maturing of the crop, often even before the seed is planted. The farmer estimates about how much credit he wants, and the merchant tells him to produce so many acres of cotton, allowing a good margin against a possible crop failure. This system permits the planter and his tenants to live in the future, and to be improvident and hopeless. It is a direct cause of the enormous production of cotton, with a constant tendency toward overproduction, and of the low price of cotton. The cotton men are beginning to realize that they are the victims of a bad system. The store system of the South amounts to a sort of peonage with the cotton planter. The rate of interest on the liens of cotton crops averages at least 40 per cent a year, and the planters are at least a year behind. (160-162.)

Mr. HALE says the credit system of the South is a temptation to men without business experience or tact to tempt fate. Because the negro or the white farmer can get a loan on his cotton crop he is tempted to plant more than he otherwise would, and perhaps to buy more than he is able to pay for. Yet there are many who could not do much business if they could not get credit. Mr. Hale thinks the majority of Southern negro farmers who get advances on their crops get out of debt each year in October, or at least once in 2 or 3 years when they have an exceptionally good crop or prices are high; but they start in again in January, and are practically never out of debt. (380, 381.)

Mr. HAMMOND, a cotton planter of South Carolina, says that if the system of liens on the cotton crop were abolished, the amount planted would be materially reduced and the price increased. Cheap cotton is a vast advantage to the manufacturers and the world at large, but it is injurious to the yeomanry who provide it. (822, 827.)

Dr. STUBBS declares the crop-lien system a curse, though intended to be a blessing. After the war it was difficult to get money to farm with, and something had to be done; so almost every legislature in the South created a lien law to provide farmers with credit. It was asked for by the best people, but in the end was found to be detrimental, because even a white man, as soon as he gets credit, is very apt to go too far into debt and come to rely upon the merchant for supplies. (776.)

Mr. DILLINGHAM regards the crop-mortgage system as a step up from the condition of the negro at the time of his emancipation. It was the beginning of free contracting. (165.)

2. The merchant's risk.—Mr. LOVEJOY, himself a merchant, believes that the excessive rates of interest are one cause of the depressed condition of agriculture in the South, but justifies them in part by the high risks which are taken by merchants and money lenders. The merchant in making advances of goods to the planter, and especially to the laborers and negroes, adjusts the price of the goods to the credit of the individual. If a man is practically certain to pay, goods will be sold at perhaps 10 per cent advance of the cost; if the risk is high, the advance will be 25 per cent or more. The purchasers understand that these distinctions are made and the reason for them. Corn bought at 53 cents is sold at 60 cents for cash and at 75 cents on time, while bacon costing about 5.4 cents is sold for 6 cents in cash, or from 7½ to 10 cents on credit.

The merchant takes a lien on the crop for his advances, and of course runs considerable risk, since the crop may not turn out satisfactorily. The entire system, which has been in existence for 30 years or more, is bad for the merchants as well as for the planters. Merchants are not prosperous when the farmers are not, because they lose so much on their advances. Farmers do not borrow much money on crops and chattel security from banks, but chiefly from merchants, who themselves obtain loans from the banks. (75-78.)

3. Law and practice in various States.—*Kentucky.*—Mr. NALL quotes several sections of the Kentucky statutes, providing that a landlord shall have a superior lien without exemption upon the whole crop of the tenant raised upon the leased premises to reimburse him for money or property furnished the tenant to enable him to raise a crop, or to subsist while carrying out his contract of tenancy; also that when a tenant holds premises by virtue of a contract stipulating that he is to labor for the landlord, and fails to begin such labor, or without good cause fails to comply with his contract, his right to the premises shall at once cease. Mr. Nall says the law seems to be satisfactory to both parties. (805, 806.)

Loans by cotton factors in Tennessee.—Mr. GAGE, a cotton commission merchant of Memphis, testifies that in Tennessee rent is a statutory lien on the crop, and unless it is waived the landlord can get the proceeds of all crops, taking priority over anyone else the renter may be indebted to. Commission merchants, therefore, do not do business with renters to any extent unless the landlord waives his rent. Where they do business with renters they generally take a mortgage on the crop and live stock. (492.)

Mr. MOSELEY, of Memphis, does not believe that the farmers borrow much money from bankers; they get most of their money from the commission men who stand between them and the bankers. Anything over 6 per cent is usury in Tennessee. (516.)

Mr. NORFLEET, of Memphis, testifies that the cotton factors do not buy cotton at all, but they advance money and supplies to large farmers and planters. The colored people, as a rule, do not come to Memphis to get advances, but trade in their locality. It has been the custom for 50 years for the white farmers to come to the factor for money to make their crops. (488.)

Law of landlord and tenant in North Carolina.—Mr. GRAHAM, of North Carolina, says a landlord in that State has the first lien on the crop for his rent and supplies

furnished the tenant without any writing of any kind. Mr. Graham regards the verbal contracts now in effect as decidedly preferable to the written contracts formerly used, because more easily understood and remembered by ignorant tenants. (437, 438.)

Mr. WHITE, a colored member of Congress from North Carolina, testifies that since the war North Carolina has had a homestead exemption of \$1,000 worth of real estate and \$500 worth of personal property not liable to execution for debt on any judgment except on a mortgage given on that specific property. The law makes the furnishing of supplies and the rent of the landlord a lien upon the crop without any written agreement. The crop can be mortgaged even before it is planted. The removal of the crop without satisfying the lien is a criminal offense punishable by imprisonment; if the tenant removes a peck of potatoes without satisfying the landlord's claim for rent he is indictable. Sometimes the tenant lives on a little plot of ground of his own and rents land on the landlord's farm. When the landlord furnishes the house as well as the ground there is usually a little garden patch where he allows the tenant to grow the vegetables he may need on the table; but Mr. White has known cases where tenants have been indicted for gathering even out of the little garden spot.

Since the adoption of the homestead law the distinction between grand larceny and petit larceny is abolished, and all larceny is grand larceny. A great many men have been sent to the penitentiary for stealing a chicken worth 25 cents, but Mr. White has traveled as solicitor with one judge who refused to notice the stealing of a watermelon or chicken as too trivial a matter for a court to take up, and directed the solicitor in all such cases to enter a nolle prosequi. By a recent act the law has been modified so that if the article does not exceed \$20 in value the sentence for the first offense can not exceed 12 months' imprisonment. Larceny is a felony and the offender is disfranchised.

The application of the homestead act makes the records of the penal institutions very plethoric, and misleading to those not familiar with the facts. While the law was intended as a benefit to the poor man, Mr. White says that it works a real harm to him, because the landlords are almost forced to invoke criminal law to collect what otherwise they could collect by civil procedure. It is difficult for a tenant to avoid violating the letter of some law, and some landlords use that as a lever to hold the tenant, when he is disposed to go where he might better his condition by promising immunity from prosecution. Technical violations of the criminal law, however, are not invoked by the better element of landlords.

At the end of the crop year, in a great many instances, the tenant is unable to satisfy the lien and has to mortgage himself again. In a great many instances he is unable to get out of debt and goes from bad to worse. There is a great deal of fraud perpetrated on the ignorant who keep no books. In the fall the account is what the storekeeper chooses to make it, and the debtor can not dispute it because he has kept no account. (416-421.)

Mr. White says there are very few tenants who get cash on croppers' liens. If a tenant wants something at the store, he gives security and goes to the store and gets what he wants, and it is charged to the landlord. An act was recently passed prohibiting negotiations of the scrip. In some cases the stores charge a profit of 20 per cent. In many instances 50 per cent is charged. Mr. White considers the stores necessary, however. (433.)

Mr. White states that under the common law a tenant cultivating on shares taking part of the crop before the division would not be liable, because the crop is attached to the real estate, and real estate can not be stolen. (430.)

Mr. White suggests that the abolition of the homestead law would tend to better the condition of the negroes in North Carolina. He thinks the landlord and tenant should be put on an equal footing. Laws could be enacted that would protect the landlord while lessening the oppression of the tenants, but there is not a disposition to do so. (430.)

Advances by cotton factors in South Carolina.—Mr. HAMMOND, of South Carolina, says that the system of liens on growing crops is general. Small proprietors and renters get advances of \$10 a bale from the cotton factors, secured by lien or chattel mortgage. Mr. Hammond declares that the law for collecting liens on crops ought to be done away with. It has substituted an artificial credit for the proper and natural credit based on character and thrift. It has dismissed the intelligence of the community from the supervision of its industries, has led workmen into speculative undertakings that have brought them to bankruptcy, and has delivered them soul and body into the hands of the crossroads grocery dealers. "It is a legacy of the carpetbagger that has drained the country of the little he spared." Formerly the small farmer was not infrequently raided under the lien laws, but of recent years

the law is seldom resorted to; the victim, if there is one, has been trained to yield to the inevitable without resistance. (822, 839.)

Loans and advances to tenants in Georgia.—Mr. NUNNALLY, describing the tenancy system of Georgia, says loans are made to the tenant by the landlord or merchant in nine cases out of ten, and are secured by mortgage on the crops to be planted. Under the Georgia laws, in the absence of a contract the landlord is first paid out of the tenant's half interest for the supplies furnished. The law has worked well, giving protection to the landlord and food to the tenant. It is sometimes used to defraud other creditors, but only by men who are paid by the tenant to do so. (455.)

Mr. BARRETT says the law of Georgia gives the landlord a first lien on the crop, and the person furnishing supplies a second lien. Often the owner himself is forced to borrow or get advances of supplies, and has to waive his lien or discount the note of his tenant. The tenant who gets food and other supplies on credit is charged prices 50 to 100 per cent above cost. Liens are given on nine-tenths of the cotton raised. They fall due October 1 or 15, and in consequence practically the whole crop is forced into the market at the same time, depressing the price. Mr. Barrett thinks the law should not allow crop liens or mortgages. (47-49.)

Mr. HALE, of Georgia, says the owner of land always has a lien on the crop of his tenants for the rent. The landlord usually either buys the fertilizer or gives security for it, and there is also a lien on the crop for that, and generally for the year's supply of rations. A local store may furnish the rations and take a lien on the tenant's half of the crop.

Mr. Hale says the South is overrun with cheap goods of every kind, made for the Southern trade, and that something is needed to stimulate the use of better goods. He estimates the profits of the storekeepers at from 25 to 50 per cent. One great trouble, he says, is that there are too many small stores. Where there should not be more than two or three, there are a dozen general stores, and there is not enough business for all at a reasonable profit. (380.)

Mr. STEVENS says loans and advances to the tenants by the landlord are general in Georgia. The landlord must furnish supplies and mules with which to make the crop. If he prefers, he has his factor or merchant furnish these supplies to the tenant, to be paid for when the crop is marketed, the merchant frequently taking liens on the crop of the tenant to the extent of the advances. The effect of this is that the tenant frequently pays an exorbitant rate of interest. Credit prices are from 20 to 25 per cent higher than the cash prices, and while the legal rate of interest in Georgia is 7 per cent, and 8 per cent may be collected by special contract, it is considered perfectly legal to charge from 20 to 25 per cent more than the cash price for goods sold on time. (907, 912.)

Mr. Stevens does not see how the credit system, so far as the buying of supplies at "time prices" is concerned, can be controlled by legislation, but hopes the Industrial Commission will be able to recommend some way. (912.)

Mr. PEEK says a debtor can give a waiver on his homestead in Georgia. He thinks the homestead should be made secure. (463.)

Crop mortgages in Alabama.—Mr. POOLE says that negroes rent the land from the landlords in the 18 Black Belt counties of Alabama, and in 6 or 8 other agricultural counties. Generally there is an advance by merchants in the villages and towns, who take a mortgage on the growing crop for supplies furnished the laborer or tenant. Frequently the land owner makes an arrangement with the store for the supply of food to the tenants. The tenants pay a small percentage above the cash price, but extortionate profits are not charged, and as transportation has improved and competition has increased, provisions and other things have steadily grown cheaper. (919.)

It is customary in Alabama for the land owner and the tenant to sign a contract, usually on the 1st of January. Sometimes the tenant will run off and leave his crop, and in some rare instances he is prosecuted for the offense criminally, and if he has obtained money by false pretences, sent to jail; but his intention is very hard to establish; intent to defraud must be established in prosecuting criminally. Mr. Poole says that a negro has less regard for his contract than a white man, if he can better himself by going elsewhere. A recent law makes it a misdemeanor to break a contract without proper notice. (925.)

Dr. STUBBS says the crop-lien system is just as bad in Alabama as in Louisiana. (See CX, below.) (776.)

Plantation stores in Mississippi.—Mr. KYLE, of Mississippi, defines a plantation store as a store on the plantation, generally owned by the landlord, to furnish supplies to the people on the place. The statutes of Mississippi give the landlord a lien on all crops produced by the tenant, to secure him for rent and supplies. This gives the tenant credit at the landlord's store, which he would not have elsewhere, and his circumstances are such that he is almost compelled to deal there. Mr. Kyle does

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There is a disposition on the part of banks to loan money to the farmers. They loan in the city of Griffin at 8 per cent, on personal securities and mortgages on the crop, land, and stock. (444.)

Mr. MOSELY says that anything over 6 per cent is usury in Tennessee. (516.)

3. **Southern banks.**—Mr. YOUNG does not think the county banks of South Carolina are making money, even at the high rates of interest they command. He speaks of one having gone out of business. They very soon loan their paid-up capital, then they get a certain line of securities and arrange with New York banks to borrow money at 6 per cent, to which they have to add their profit. They have their money tied up in real estate and can not now realize the amount of the mortgages. (119, 120.)

Mr. POOLE, of Alabama, testifies that there was only one bank in his county 25 years ago, and the farmers borrowed their money from commission merchants at Mobile and Selma, pledging their shipments of cotton. During the past decade 5 new banks have been started, and any farmer known to be a debt-paying man can get what money he needs at 8 per cent, the legal rate; frequently money is loaned for less. Mr. Poole has seen men pay 20 per cent. (926.)

Dr. STUBBS says the banks of Louisiana are all prosperous. In the small towns, including most of the county seats, there are State banks; but there are national banks in Shreveport, Monroe, and St. Charles, as well as New Orleans. Louisiana has a State inspector of banks, and maintains a pretty thorough control over them. Dr. Stubbs says the present national-bank law is based on the old Louisiana law to a great extent. New Orleans paper was perfectly good before the war, and the banks were widely known. The word "Dixie" originally meant the New Orleans \$10 notes, which were known throughout the Mississippi Valley and elsewhere. (776, 777.)

III. AGRICULTURAL LABOR.

A. Condition of farm laborers.—1. **General statements.**—Mr. BRIGHAM, Assistant Secretary of Agriculture and formerly a member of the Ohio State Board of Agriculture, says that where he is best acquainted the number of laborers regularly employed on farms by the month or year has remained about the same as in earlier periods, but the amount of transient labor has decreased, especially by the introduction of improved agricultural machinery. The modern practice in haying and harvesting is to shorten the duration of the work as much as possible, and it is found very difficult often to find sufficient transient labor at that time. Most of the farmers find work for their men the entire year round and prefer to keep the same men for years without change if they prove satisfactory. There is thus employment through the entire year for faithful men.

The condition of farm laborers is quite satisfactory, and much better than in earlier years. The wages have risen, the work is less severe on account of improved machinery, and since the fall in the prices of farm products the farm laborer is often better off than his employer. The laborer is on the same social plane with his employer in most cases, eats at the same table and has a good deal of freedom. The degree to which farm laborers save money and become independent farmers varies greatly according to their industry and economy. Usually an energetic man can become independent in course of time, although of late years many have considered it preferable to continue to work for wages. Farm laborers belong to the same organization with the farmers themselves. They have no separate organizations for their protection. (5-8.)

Several details of this testimony are confirmed by Mr. JONES, Master of the National Grange. (33.)

Mr. DYE, secretary of the New Jersey State Board of Agriculture, confirms, generally, the testimony of Mr. Brigham concerning the improving conditions of farm labor. The conditions in New Jersey, however, appear to differ slightly from those in Ohio. The growth of manufacturing, railway building, etc., has caused a decrease in the number of farm laborers, especially among the natives. To some extent improved machinery has decreased the demand for farm labor, but there is still, on the whole, an insufficiency. The farmers are compelled to seek laborers in the cities and towns, largely of foreign birth. Colored labor also comes from the South for work during the summer, and the witness believes that this movement should be encouraged. (82, 83.)

Mr. POWERS says the natural interaction of forces is such that the owners and tenants of farms increase in number, the number of laborers decreases, and their wages increase. There is a greater opportunity for men to rise in farming than ever before. The great mass of the unmarried farm laborers are young people, usually children of the men for whom they work. (178, 179.)

Mr. SPEAR, formerly secretary of the Vermont State Board of Agriculture, says there has been a gradual falling off in the number of persons employed on farms in Vermont during the past 50 years; with machinery fewer men are required. The conditions of the laborers are very much improved; their wages buy more of the necessities of life. Mr. Spear does not think the average farm help has improved in intelligence or efficiency. The sons of farmers probably do not hire out to their neighbors as much as 30 or 35 years ago, but there is still much more native than foreign help. (402.)

Mr. STOCKWELL says the transient labor employed on Massachusetts farms in the busy season comes mostly from the manufacturing villages. In busy times, like the haying season, they get better wages on the farms than in the factories. (885.)

Mr. NORRIS, master of the New York State Grange, testifies that the social and moral conditions of farm laborers is very much better than formerly, and that they have more privileges. A large majority of those in his section are better informed and financially better off than 25 or 30 years ago. There is no reason why an industrious and sober farm laborer should not make a nice living and do fully as well as his employer. (320, 321.)

Mr. KERICUM, of Mercer County, N. J., testifies that among the farm laborers in that county there are a few Italians and other foreigners, but the greater part of the labor that comes from out of the State is from southern and southwestern Virginia. Comparatively few native young men work as farm laborers. In the northern part of the county, especially where dairying is carried on, the same amount of labor is needed in the winter as in the summer. He thinks about three-fourths of the laborers are permanent the year round. (132.)

Mr. BARRETT says the amount of agricultural labor employed in Georgia is increasing, but its condition is worse than ever before. Labor is becoming more transient, shifting from one plantation to another. Whites and negroes do not work together. The hours of labor, where it is hired, average a little over 9 a day. Day laborers are probably employed less than half the time. (46.)

Mr. CLOHAN thinks that fully half the farm laborers in Berkeley County, W. Va., own their own homes, the land being very low in price along the Northern Mountain. There is also a belt of cheap pine land, so the men can get an acre for \$10 or \$15 and put up their houses. The farm laborers in that vicinity are practically all Americans. (592.)

Dr. STUBBS does not think the agricultural laborers of Louisiana have accumulated much property. He estimates that there is less owned per capita than at the beginning of the last decade. (770.)

2. *Race* (see also, III F, *Specialized agricultural labor*, p. cxxviii).—Mr. LOVEJOY estimates that about 25 per cent of the laborers working on farms in the Southern States are white. The white laborers who work for wages are hardly more energetic and satisfactory than the negroes. They are perhaps somewhat more able to learn the use of improved farm machinery, but improved machinery is very little employed anywhere. There is so little mechanical skill among the people that they do not know how to put together or repair such machines as reapers and binders. White children after leaving school drift away from the farm whenever they are able to do so. (79, 80.)

Maryland.—Mr. AGER testifies that the farm laborers of Maryland are nearly all colored. During the summer, when they can get employment almost anywhere, they can hardly ever be kept more than a month. The best labor in Prince George County flocks to the city, attracted by shorter hours and larger pay. They would rather come to the city and black boots than work on the farm. Farther away from the cities the labor is less migratory. (104, 106, 108.)

Mr. Ager testifies that as a general rule the colored farm laborers require close superintendence, and do not often become intelligent hands. The white help in the South is not much better than the colored. Mr. Ager has lived in Wisconsin, and found the labor of Germans, Danes, and Norwegians cheaper, though better paid, than that he gets in Maryland. (106.)

Mr. WHITNEY says the negro population is the principal but not the only laboring class in southern Maryland. It is not nearly so large as farther South. (878.)

Virginia.—Mr. WEIDENBURN, master of the Virginia State Grange, says the colored laborer is generally satisfactory, and he does not believe the people of Virginia, who are used to him, would be willing to exchange him for any other kind. They know he is lazy and will steal chickens and pick up anything that is lying around loose, but they do not have to pay him very high wages, and he is the best laborer they can get. (620.)

West Virginia.—Mr. CLOHAN estimates that one-fourth of the laborers in Berkeley County, W. Va., are colored. The older negroes are first-rate laborers, but the younger ones, especially if they have a mixture of white blood, are a very trifling

class of labor. The negroes as a rule are trustworthy, and are probably not as brutal with teams as some of the whites. The terms of employment are substantially the same as for the white day laborers, but a great many more negroes are hired by the day than by the month, because the farmers do not like to bother their families to arrange two tables, and so let the negroes board themselves as much as possible. (593, 594.)

Kentucky.—Mr. NALL testifies that 41.5 per cent of the laborers employed on farms in Kentucky are colored. He estimates that of the remainder about equal numbers are white laborers and owners of small farms, the latter class being found mostly in the mountain section, where very little labor is employed. He believes that about 60 per cent of the white laborers are Americans. The colored labor predominates in the western and northern parts of the State, but there is very little in the south-eastern part, except in the mining districts. (803, 806.)

Mr. Nall says the colored laborer is not quite as reliable as the white laborer. Sometimes one colored man is worth a dozen whites of the kind available, but the German laborers are worth more and get a little more wages than the average colored man. (815.)

South Carolina.—Mr. YOUMANS, of Fairfax, S. C., has a plantation of about 4,000 acres, of which he plants about 1,300 or 1,400 acres. Houses are scattered over the remainder of the plantation, and these are leased to colored tenants, who work the land surrounding them. He hires them for 6 months in the year, and pays them by the day. The plowmen and foremen are about the only ones he hires steadily by the month. The tenants are not expected to neglect their own crops to work for him, but they always want work, and their wives and children attend to their crops. Mr. Youmans says he has raised most of the labor on his plantation, and has no trouble with them. He sees no difference respecting them now as compared with the system of slavery. (121, 122.)

Mr. Youmans has between three and four hundred negroes on his plantation, and has no complaint to make of their efficiency or conduct. He says they are like large children; they have to be looked after, but they respond to kindness more than any other race. He prefers colored labor to white. The white man does not obey him any better, and generally puts him to more trouble and is harder to please. The white man is paid the same wages for the same work. (119-121.)

Mr. HAMMOND, a South Carolina cotton planter, says that colored labor constitutes as much as 75 per cent of the rural laboring population of his State, and that some 75 per cent of the colored laborers are engaged in agriculture. They are used almost exclusively in the gineries and oil mills, and to a large extent in railroading, as section hands, firemen, trainmen, etc. They run stationary engines, cotton gins, and oil mills. Some 50-odd letters, published about 1885 in the *Tradesmen's Journal of Chattanooga*, from rolling mills and similar manufacturing establishments, testified that in the majority of cases such employers preferred them to white laborers. (822, 823.)

Georgia.—Mr. PEEK estimates that about 75 per cent of the colored people of Georgia are employed on farms. (459.)

Mr. HALE, of Georgia and Connecticut, estimates that 90 per cent of the agricultural laborers in the South are negroes. He considers the negro laborer of the South the best agricultural laborer in America. The Yankee boys are perhaps a little smarter for some expert work, but in general Mr. Hale says he can accomplish more work for \$1 in Georgia than for \$3 in Connecticut, and gets as good results, so far as labor is concerned. The average daily wage on his farm in Georgia is about 65 cents, as against \$1.25 in Connecticut; the additional advantage is in the efficiency, honesty of purpose, and faithfulness of the negroes. They need more definite orders than the white laborers in the North; one can not leave as much to their judgment, but with a clear explanation they do not need to be followed up any more closely than the average white man. Mr. Hale's superintendent once left the place in the charge of negroes for 5 weeks, and found everything in perfect order on his return. Mr. Hale also finds the negroes very adaptable; they have learned budding, pruning, and spraying, even mixing the solution. He has men who have put in 2,500 buds a day. It is pretty good work for the most efficient men in Northern nurseries to put in 3,000 a day, and they want \$3 and \$4 for it. Mr. Hale's packing house was built by negroes. He declares that negro labor is the foundation of the prosperity of the South. (382-384.)

Mr. Hale uses white men as superintendents for the most part, though some negroes make efficient superintendents. His permanent superintendents and assistants are white, but have under them foremen of gangs who are negroes and are very efficient. To the whites and negroes who superintend the picking of fruit he pays \$1 a day. (377.)

Mr. Hale testifies that in general the negro laborers in his section of the country are very contented and permanent. Some of them move about from plantation to plantation, but Mr. Hale has men on his place who were there as slaves, and they were very much alarmed when a stranger bought the farm for fear they would have to move off. Mr. Hale let them raise cotton while gradually working them up to fruit culture. (379.)

Mr. STEVENS says both white and colored laborers, but generally the latter, are employed for farm service in Georgia. For dairy products, and in business requiring a high grade of intelligence, white labor is employed; but the negro, under the direction of the white landowner, is the best labor for the cotton fields. At least 95 per cent of the colored laborers were either born and raised in Georgia or have moved there from adjoining States. They are not subject to malarial diseases as are the whites, and they understand the manners and customs and methods of cultivation employed in the State. Mr. Stevens considers the colored farm labor the best that can be obtained for that part of the country. Nearly all the labor in the cotton factories and other manufacturing interests is white. The white and negro laborers do not like to be together. Colored labor naturally goes to agriculture, and is also employed in the oil mills and in the guano factories, where the work is not very pleasant and is disliked by the whites. Colored labor has not been tried in cotton manufacturing, except to do menial work about the factories. Labor is not plentiful in Georgia, and the cotton mills may be forced to try immigrant labor.

Mr. Stevens predicts that the question of labor will settle itself. The colored laborers will naturally drift to the farms and perhaps to warmer climes, the whites going into factories and transportation. The negro's wants are few. He must have a church, a schoolhouse, and, "by all means, his rum and tobacco." (912, 913.)

Mr. NUNNALLY testifies that the greater portion of the field labor in Georgia comes from the colored population; about 20 per cent are white. The contracts are made on the same basis with either race. (455.)

Mr. REDDING says the farm laborers of Georgia are almost entirely colored. They do not seem to have much ambition to acquire farms, as a rule. The negro is pretty well satisfied if he gets enough to eat and coarse clothes to wear. (448, 449.)

Mr. BROWN, of Georgia, testifies that colored hands are paid from \$6 to \$8 per month, and in addition are given 4 pounds of meat and a peck of meal (weekly?), a good house, and a patch of 2 acres of land, on which they can raise vegetables, etc., or a bale of cotton. The more a negro is paid the less efficient he becomes. Mr. Brown cites instances to show that where negroes earn enough in 3 or 4 days out of the week to support them the entire week they can not be kept at work continuously. Higher wages mean more money for drink and gambling. The farm laborers really are better off, with the various privileges which they are given, than colored laborers in the towns. (71, 72.)

Notwithstanding his opinions as to the incompetency of colored labor, Mr. Brown has recently undertaken the experiment of dispensing with white overseers, and has found that it works fairly well so far. He has explained his purpose to the negroes, and they understand that the overseers will be reestablished if it should prove necessary. (73.)

Alabama.—Mr. POOLE says that in many instances colored men fill places of responsibility on the large farms of Alabama. Mr. Poole has a negro superintendent on one of his three plantations. (923.)

Mississippi.—Mr. KYLE, of Mississippi, thinks people would generally rather hire colored men than white men as farm help. They make better servants. (471.)

Arkansas.—Mr. BALCH, of Arkansas, says the negro is the most reliable, docile, and faithful laborer the Southern farmer has ever had. It is necessary to have a few more of them than if they were white men who were trying to get ahead in the world, but the negro is the laborer for the cotton farm. He is adapted to the climate. Mr. Balch has hired young men from the North, and found that they did more work than the negroes for a few months, but not after the hot weather came on, about cotton-picking time. (497.)

Louisiana.—Dr. STUBBS, director of the Louisiana experiment stations, says the negroes who are remnants of antebellum days are in great demand in Louisiana; but among the younger generation there is an indisposition to be taught, and, never having been trained, the younger negroes are not as effective as the older ones. (770.)

New Jersey.—Mr. DYE says that in some parts of New Jersey a considerable number of negroes come up each season from the Southern States to work on the farms. This practice is advantageous both to the North and the South, and should be encouraged. The great difficulty in securing domestic help in the Northern States also shows the desirability of immigration of colored women to the North. (87.)

Mr. KIRCHUM, of Pennington, N. J., testifies that the lack of good white help in that section has led to the employment of negroes from Virginia since about 1892.

He considers them preferable to foreigners. The first year or two they return South about Christmas time, generally returning to the same neighborhood the next year. Very few of them are hired through an intelligence office. Many of them are employed for the following year when they go South in the fall. They make it a point to return by the 1st of April, which is the time for employing help. Those Mr. Ketchum has employed can read moderately well, and several of them can write legibly, their attainments in these respects comparing very favorably with those of the native colored people in New Jersey. Mr. Ketchum would not care to trust them with intricate machinery the first year they are in the field, but they can drive teams, and if nothing gets out of order they can run mowing machines. (133, 134.)

Other Northern States.—Mr. HAMILTON thinks not many negroes go into Pennsylvania during the crop season, except perhaps in the neighborhood of cities, where berries are grown extensively, and women and children are employed in gathering the crop. (351.)

Mr. STOCKWELL says there is a very small percentage of colored labor in Massachusetts, and it is mostly in cities. (887.)

Mr. WILSON testifies that there is very little colored farm labor in northern and central Illinois, but a good deal in southern Illinois. As a class the negroes are not as efficient as white labor. (246.)

California.—Mr. SAYLOR says that in California nearly all the hand labor in connection with sugar beets, and nearly all vegetable raising, gardening, and that sort of work, is done by the Chinese and Japanese. (590.)

3. Social status.—Mr. HANLEY testifies that farm hands in Minnesota are admitted to the family as equals, eat at the same table, and partake of the same social conditions as members of the family. (275.)

Mr. POWERS says the average farm hand in the Northwest lives with the family of his employer and boards at the same table. In the case of a married man a house and garden is furnished free as a rule, if he works by the year or the month. (174.)

Mr. HAMILTON testifies that the farm laborer in Pennsylvania takes his seat at the table with the family as a rule. (351.)

Mr. CLOHAN, of West Virginia, says there are very few cases in his locality in which the white farm laborer who works by the month or the day does not eat at the same table with his employer. No such thing is allowed with the colored laborers. (594.)

4. Conjugal condition.—Mr. STOCKWELL, of Massachusetts, says many farmers prefer single men, and board them so as to have them right at hand. This appears to be the general preference. (886.)

Mr. BRIGHAM says many farmers prefer to hire married men to do their work. They furnish them with tenement houses, which are usually quite comfortable; they furnish also a garden plot, keeping no account of the vegetables raised. Fruit, also, is often furnished free, and the employee is allowed to keep a cow or a horse, or both. (9.)

Mr. DYE says tenant houses are falling down in many localities of New Jersey for lack of use, since laborers are more migratory and fewer of them married. (83, 84.)

Professor DAVENPORT, of Illinois, remarks a tendency to employ older men than formerly as agricultural laborers. His experience is that more married men are employed than 20 or 25 years ago, though the bulk of the laborers are still young men. The wife of an agricultural laborer often helps with the housework. The married laborer is generally employed for a year, by the month, and has a house with a little patch of land. Most of the married farm laborers in Illinois and Michigan, so far as Professor Davenport has observed, are American born. (255.)

Mr. POWERS says the number of married men among farm laborers is relatively diminishing. (174.)

Mr. GREELEY, of South Dakota, thinks the solution of the hired-help problem in that section is to encourage the tenant hired man with a wife and children. A single man may change at almost any time, and can not be depended upon nearly so well as one who is married, especially if he has a family; he then stays willingly the year round. If he has children they have the opportunity of growing up in the country, and his family are valuable help in busy times; it is much more convenient to employ them than to go after other help and perhaps pay very high for it. Again, the farmer does not have to pay all cash. He can give his tenant help a good garden and the use of one cow without feeling it much, and this means a great deal to a man with a family. If he can be provided with vegetables also, he can almost live on what the farmer can give him from the ordinary Western farm without missing it. The laborer who has a small piece of land to cultivate is learning how to get a living out of the land, and can lay up more money than one employed in the city at much higher wages. (928.)

5. Ambitions and prospects.—Professor DAVENPORT has noticed a decided change in the ambition of the farm laborer. Twenty-five years ago or more a man worked on

the farm for the sake of getting money with which to buy a farm for himself, but now that cheap lands are not to be had, there seems to be a decided tendency for the farm laborer to work without a very definite object and to use his money for whatever his fancy dictates, most likely a horse and buggy. (256.)

Mr. WILSON estimates that 50 per cent of the farm laborers of Illinois look forward to renting farms of their own. (244.)

Mr. GREELEY, secretary of the Board of Regents of Education of South Dakota, worked for 5 years on farms as a hired man before getting a small piece of land of his own. (929.)

Mr. CLOHAN says that in rare and exceptional cases the farm laborers in his neighborhood, besides raising their vegetables, kill a few good hogs; but that class of laborers in a very few years become tenant farmers. (593.)

B. Supply and demand.—1. Number of laborers.—*New York.*—Mr. NORRIS, of Sodus, N. Y., thinks the number of agricultural laborers in New York State has increased somewhat during the last 20 years, and that there is still (1899) a tendency toward increase. He thinks there has been an increase in the amount of transient labor employed in New York, especially in his section, owing to the harvesting of the fruit crops, notwithstanding the fact that the general harvest work is now done largely by machinery. (320.)

Illinois.—Mr. WILSON, master of the Illinois State Grange, thinks about the same number of agricultural laborers are employed in Illinois as 20 years ago, but the hired help is now very largely of foreign birth, whereas 20 years ago many were native born. Through central Illinois they are usually German, Danish, and Swedish. (243, 245.)

Kentucky.—Mr. NALL, Commissioner of Agriculture of Kentucky, says the population and farm acreage of Kentucky have increased, and the number of agricultural laborers has increased in proportion. They are very largely colored. (802.)

Louisiana.—Dr. STUBBS testifies that during the last decade of the century Louisiana increased the area cultivated and amount produced, and there has been a natural increase in the number engaged in agricultural labor, but not all of the natural increase has remained; he supposes there has been a comparative decrease in numbers. (769.)

2. Duration of employment.—Mr. SHEAR says some farm laborers in Vermont are employed through the year and the rest for 7 or 8 months, making an average of about 10 months. (402.)

Mr. STOCKWELL says that agricultural laborers in Massachusetts are hired by the month for 8 or 12 months. If a man is a good worker he usually finds work at all seasons. (885.)

Mr. NORRIS, of Sodus, N. Y., estimates the average number of days farm laborers are employed in the year in his section of the State at from 190 to 200. They are regularly employed 8 or 9 months of the year as a rule, and the majority of those who wish to can find work nearly the whole year at fair prices; but there are some of those who hire out for 8 or 9 months who are inclined to take things easy and have a good time after their time is up. (320.)

Mr. DYE says there is considerable irregularity of employment in New Jersey, owing to the fact that most farmers do not require much help during the fall and winter. Moreover, the laborers themselves are inclined to migrate, desiring to see new places and to try new employers. (83.)

Mr. WILSON, of Illinois, says more hands are employed by the year than 20 years ago, but the hiring is largely for 9 or 10 months. Many of the hands stay through the winter, feeding the stock or something of that kind for their board. They do not usually have to pay board in the winter. He estimates that the average farm laborer has from 250 to 300 days' employment in the year. They are hired by the month almost entirely, but are sometimes hired for a year at so much a month. (244.)

Mr. M. F. GREELEY says the farmers of Minnesota and the Dakotas generally hire men for about 6 to 8 months—more often 6 than 8. The bulk of the laborers, however, are hired by the day or for short terms during harvest, haying, and other busy times. (928.)

Mr. BUDGE testifies that the harvest labor of North Dakota is a floating population that comes in on the railroads and stays during the harvest, which lasts about 3 months. On some of the big farms there are a few hired men. A man who has 320 acres generally takes care of the farm himself, with his family, until spring; he then hires 1 man until harvest and has 2 or 3 during a harvest and thrashing. (846.)

Mr. PROM, of Milton, N. Dak., says no farm labor is done in that section during January, February, and March. The labor begins in April and is continued until November, when the hauling of grain begins. During the winter months the laborers generally stay on the farms, however, except those from Canada, who go home and visit relatives. (788.)

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Mr. AGER, of Maryland, testifies that in dairying the laborers are employed 365 days in the year, but in other agricultural occupations there is not as much employment in the winter as during the growing season. (104.)

Mr. CLOHAN, of Martinsburg, W. Va., says farm hands in that vicinity are generally hired for about 9 months, from the 1st of April until the 1st of January. The better class of day laborers even get almost constant employment, except on rainy days. (592.)

Mr. NALL testifies that farm laborers in Kentucky can get regular employment. They usually hire by the year, wages being payable monthly. Soon after the war there was more paying by the year. (803.)

In reply to inquiries, Mr. Nall finds the number of days of employment in Kentucky to be stated at from 240 to 300 days. There is usually something for everyone to work at in Kentucky. (803, 804.)

Mr. HAMMOND, of South Carolina, declares that a good negro laborer finds employment and will work the year through, except holidays for funerals and society meetings and a few days at Christmas. The average laborer works from 200 to 250 days a year. There is a deep-rooted desire to have Saturday free. On that day the negroes collect in crowds in town or at the store. (819, 820.)

Mr. NUNNALLY, of Georgia, testifies that in the yearly contract with laborers it is often necessary to allow them two months in the summer for loafing, like those who are tenants. They can not be employed for the whole year. (455.)

Dr. STUBBS says the agricultural laborers of Louisiana are employed as many days in the year as they want to work, and a good many make 300 workdays a year. Dr. Stubbs has paid some for more than 300 days' work in a year. The average hand in the sugar district will work more than 200 days. In the extreme winter, after the crop is taken off, the plantation has no immediate use for all its hands, and may lay off some part of them during the rainy season of the winter, but some work the entire year. (775.)

Dr. Stubbs says it does not take nearly as many men to run a rice plantation as a sugar plantation. The rice planter needs men to break the land, but keeping the crop between planting and harvest requires only about one man to 300 or 400 acres, while the sugar planter requires a large number at all times. (777.)

Mr. NAFTZGER says the labor conditions in California are peculiar. There is practically no season when either fruit harvesting or grain harvesting is not going on. (953.)

3. Causes of irregularity of employment.—Mr. STOCKWELL says the wide-awake farmer will hire all the help he can with profit, and no more. He will discharge help he does not need. His demand for help is regulated by his expectation of profitable returns. He will adapt himself to the conditions of the season and the markets. (885.)

Mr. HANLEY says irregularity of employment is often caused by industrial depressions, which are often brought about by people living beyond their incomes. Under these conditions the farmer and his family try to get along with less help and do more of the work themselves. (274.)

Mr. POWERS says the greatest irregularity of employment in the North, particularly in the Northwest, is found where farmers raise one or two staple crops, to the neglect of diversified agriculture. There was more irregularity in the early days of the West than to-day, because the great central States of the North are tending naturally and inevitably toward a diversity of crops, which keeps the men engaged for a larger part of the year. Wherever a system of diversified farming is being developed the average number of days employed in the year is steadily increasing and transient labor is decreasing. (172.)

Mr. HALE says the irregularity of employment in the South is due to too little diversity of agriculture. Cotton makes a short season of a certain number of months, and the rest of the year there is very little to do. From 150 to 175 days is about the length of employment on the cotton plantation, but on fruit and truck farms there is employment for 12 months, except when the hands want a little vacation at Christmas. The fruit harvest, in June, July, and August, is a dull season with cotton planters. (376.)

4. Inefficiency of farm labor.—Mr. COLES testifies that the agricultural labor throughout southern New Jersey is not as good as a few years ago, because manufacturing establishments have taken the best help. In parts of Salem County the farmers depend largely on Southern laborers, who come North in the spring, many of them going back in the fall. There is a considerable colored population in the county, but it can not be relied upon as well as the newcomers from the South. It is sometimes a little difficult to keep the help as long as is desired. Though the men are trustworthy, they have been brought up to slow habits. (124.)

Mr. HAMILTON thinks the effect of manufacturing establishments is to take the best laborers, so that farmers now have to do with a less efficient grade of labor than 30 or 40 years ago. There is not now the same difference in the wages of harvest hands that there used to be before the introduction of modern machinery. (350.)

Mr. M. F. GREELEY, of South Dakota, says the average hired men in Minnesota and the Dakotas are not quite as good men as they used to be. They are determined to work fewer hours, though they are paid better wages than formerly. (927.)

Mr. WHITNEY says he can not see how thrifty methods can be introduced into certain areas. He does not think that any kind of education would improve the farming conditions in southern Maryland and make them attractive to young men. It would be discouraging for a young man to go back and live under the social conditions prevailing there; he can not do the work with his own hands, and does not have intelligent or efficient labor to carry out his ideas. The conditions are almost hopeless for the introduction of new methods and new crops on an adequate scale. (878.)

5. *Scarcity of farm labor.*—Dr. CROWELL says the British dairymen had to resort to milking machines because they could not get laborers to milk their cows. (340.)

Mr. ROGERS, president of the Binghamton Beet Sugar Company, says one of the troubles experienced by many farmers growing large areas of sugar beets is the difficulty of getting help for a few weeks in the busy season. (554.)

Mr. MILLER says the farmer does not use as much hired help as in former years, but there is a demand for help in the rural districts of Ohio. (617.)

Professor DAVENPORT says there is difficulty in securing good farm laborers in Illinois. The demand is perhaps for a better class of men than formerly, new machinery making the labor more complicated. (256.)

Mr. WILSON says the opportunities for getting transient labor in Illinois in busy seasons are poor; the labor is not to be had. The farmers get what men they can from the towns and villages. Mr. Wilson has never yet known the time when a good hand could not get work on a farm. (244, 246.)

Mr. HANLEY testifies that the farmers of Minnesota and the Dakotas have the greatest difficulty at harvest time in getting enough farm laborers to save the crop, although they pay from \$2 to \$3 a day. One thing which diverts laborers from the farms is railroad building, which affords regular work with shorter hours. (275.)

Mr. BUDGE testifies that help was scarce in North Dakota in 1900. There was a poor crop. The year before that there was more labor than the farmers could take care of. The railroads move the laborers to parts of the country where there is a good crop and a big demand for labor. (846.)

As explaining the scarcity of farm labor, Mr. NORFLEET estimates that there are 150 colored men at work as common laborers on levees and other public works within 3 or 4 miles of his plantation in Tunica County, Miss. They are paid from \$1.25 to \$1.50 a day. There is more or less of that kind of work going on throughout the entire section. (487.)

Mr. HALE says there is generally an abundance of labor in Georgia for everyone who wants it. He has had no difficulty either in getting negroes for field work or intelligent white people for picking and packing fruit. They come in far greater numbers than he can use. (376.)

Mr. HAMMOND, of South Carolina, testifies that serious losses are often caused by the irregularity of the laborers, though this is perhaps less true of the negroes than of any other agricultural laborers. (See also Negroes, p. —.) Farmers who live in the vicinity of the towns are considered fortunate in that they can draw on the town supply of day labor without being at the trouble and expense of maintaining it. Elsewhere expensive methods have been adopted to insure a supply. Farmers build numerous houses on their land for day laborers, so that if one fails another may be secured. They allow the laborers gardens, firewood, etc. Another plan is to keep a commissary and furnish supplies on credit. Although the profits charged in the commissaries are high, and although the negro laborer very seldom shirks or repudiates his debts, it is doubtful if the net gain amounts to much, because the employers often have to take payment in work that they would not have paid cash for. (819.)

Mr. STEVENS states that during the busy seasons the farmers of Georgia often find trouble to secure the necessary labor, and very often hire hands from the towns and cities. (906.)

Mr. GODWIN, of Tennessee, says he has no white labor, except one general superintendent and one to look after the dairy business. He has tried for a year and a half without success to get a white man to take charge of and assist in the milking, though he offered \$30 a month and a free house and fuel. He says that the class of white men that offer for hire in his neighborhood, as a rule, are "a very sorry class of men." (476-477.)

Mr. NAFTZGER testifies that until recently there has been an ample supply of labor in California, made up to a considerable extent of Chinese and Japanese, who are employed in agricultural pursuits of every kind; but more recently there has been a shortage of labor. The class usually found to do odd jobs is not fond of more work than is necessary. (953, 954.)

6. Employment agencies. (See also, as regards Chinese labor bureaus, III F 1, Naftzger, p. CXXVIII.)—Mr. POWERS testifies that during the last few years bureaus of intelligence have been organized in Western cities and men sent out to the farms as laborers. Every man out of work and ready to adapt himself to anything could thus find a place. Mr. Powers says it is wise in times of depression to find out where there is a deficiency of labor and send men there. (184.)

Mr. SPEAR says the farmers of Vermont secure immigrants as laborers through the immigration bureaus at Boston, New York, and other ports. (403.)

C. Hours of labor.—Mr. BRIGHAM says the hours of farm labor have been greatly reduced during the last 40 or 50 years. It was often the custom earlier to work from 5 in the morning until dark. At present 10 hours a day are considered good time; usually from about 7 until 6, with an hour at noon. In the winter the hours of work are 8 or 9. In the South hours are somewhat longer than in the North. Farmers generally feel that as much can be accomplished in 10 hours as in the longer period on account of the greater vigor of the work. (5, 6.)

Vermont.—Mr. SPEAR says the hours of labor on Vermont farms average about 10 a day; on dairy farms, probably 12 a day. (402.)

Massachusetts.—Mr. STOCKWELL says the legal day in Massachusetts is 10 hours, and it is very carefully and generally observed, though the hours vary in certain cases, as on milk and vegetable farms, where laborers are hired with the understanding that they will be paid in accordance with the length of the day. While 10 hours make a day's work, the early feeding and the later chores make the day longer; e. g., chores from 6 to 7, an hour for breakfast, and work from 8 to 12 count as 5 hours' work, but the hours are different from those of a man working in a mill, who begins and finishes his work without reference to the care of stock. (885.)

New York.—Mr. NORRIS, of Sodus, N. Y., says 10 hours is the established rule as to hours of labor on most farms in that section. (320.)

New Jersey.—Mr. COLES, of New Jersey, says the hours of farm labor have a tendency to grow shorter, as in other pursuits. (125.)

Mr. DYE says the hours of labor have been reduced in New Jersey, partly through the influence of reduced hours in manufacturing business. Men scarcely average 10 hours of actual work each day. They insist also on working continuously during the middle of the day, whereas it would often be more advantageous to the farmer to have them begin early and work late, with an intermission during the middle of the day. A still greater advantage might come from working two sets of men during the harvest season, so as to cover all the hours of daylight. Men are often careless of the interests of their employers in stopping immediately when hours are ended, to the injury of the crops. (83, 84.)

Mr. KETCHUM says the general tendency is to shorten the hours of agricultural labor, though truckers have to work long hours at certain seasons, and dairymen have to get around very early in the morning. (136.)

Mr. MAGIE says the hours of work for farm laborers are shorter than formerly in New Jersey, even in the dairy business, where the hours are necessarily long. In dairying, the hours are from 4 o'clock in the morning until about 6 in the evening, or longer in some seasons. (105.)

Illinois.—Mr. WILSON testifies that the hours of labor on Illinois farms have been shortened to about 9 hours in the field. The prevailing hours in central Illinois are from 7 to 11.30 and from 1 to 6.30. The farmers have conceded shorter hours for their own benefit; they wanted time for other things, and with improved machinery the longer hours were not necessary. Mr. Wilson thinks 9 hours long enough both for a man and for a team. (244.)

Minnesota.—Mr. HANLEY thinks the average hours of labor in harvest and thrashing time in Minnesota are from sunrise to sunset; some work until the moon rises. After the rush is over the farmers are very reasonable, and the hours are from 7 until 6, or even less. (275.)

North Dakota.—Mr. PROM testifies that the hours of labor on the farms of North Dakota are generally from sunrise to sunset. The season is so short it is necessary to use the whole day. (788.)

Mr. BUDGE, of Grand Forks, N. Dak., says: "During harvest we commence as soon as we can get out and work until sundown." At other times the hours do not exceed 10 a day. In the winter there is not much to do but to take care of the stock. (846.)

South Dakota.—Mr. M. F. GREELEY says the men seem to expect to work about 10 hours a day, though there are seasons, at haying, thrashing, etc., when they have to work longer. (928.)

Maryland.—Mr. AGER, of Maryland, testifies that the hours of labor in the dairy-ing business are generally from 4 or 5 o'clock in the morning to 7 or 8 at night, and about the same in other agricultural pursuits. He once heard a public speaker say that the farmers had settled the 8-hour question by having 8 hours before dinner and 8 after. (104.)

West Virginia.—Mr. CLOHAN, of Martinsburg, W. Va., says the hours of labor in his locality are from daylight to dark. (592.)

Georgia.—Mr. NUNNALLY testifies that the length of a day's work in Georgia is from sunup to sundown, with from an hour to an hour and a half nooning. Under the tenant system the tenants work about as they please. (456.)

Mr. STEVENS says the hours of labor on Georgia farms are from sunup to sundown, with 2 hours in the middle of the day for dinner and rest. Work continues from Monday morning until Friday night, sometimes until Saturday noon, Saturday being considered a holiday among the farmers of Georgia. The negro farm hand works on the average from 180 to 200 days, the rest of the time being spent in going on excursions, picnics, etc. (906.)

Louisiana.—Dr. STUBBS says the agricultural laborers throughout Louisiana work from sunrise to sunset. (775.)

The South generally.—Mr. HALE thinks the hours of labor are too long in the South; from 8½ to 9 hours in the shortest days and from 12 to 14 hours in the longest days of the year, certainly an average of 11 hours a day of field work. (376.)

D. Compensation (see also *Specialized agricultural labor*, III, F, p. cxxviii).

1. The increase of farm wages.—Mr. MILLER, secretary of the Ohio State Board of Agriculture, testifies that farm wages have greatly increased as compared with 40 years ago, but perhaps not as compared with 30 years ago. (617.)

Mr. HOLMES says the wage rates of farm labor have on the whole been increasing. The average wages of agricultural laborers in the United States in 1895 were \$17.69 per month, without board, a decline of \$1.49 from the average of 1893, when farm wages were higher than at any time since 1869. The average wage, without board, in the Eastern States in 1895 was \$29; in the Middle States, \$23.80; in the Southern States, \$12.71; in the Mountain States, \$30.04; in the Pacific States, \$31.68. (152, 157.)

Professor DAVENPORT says farmers pay as high money wages as they ever did, and the purchasing power of the money is vastly greater than 20 or 25 years ago for everything but land. Although farm wages are higher (1899) than 25 years ago, the farm laborer can not secure as much land or opportunity as formerly. (257, 267.)

Professor Davenport says the farmers feel that they are paying as much for labor as they can afford, and that, considering the cost of board, they pay as good wages as other employers. Professor Davenport thinks labor of the same grade is as well paid on the land as in most other lines, and that the surroundings are helpful and healthful. (257.)

2. Wages in particular localities.—*New England.*—Mr. BACHELDER, testifying early in 1899, says that the condition of farm labor in New England is better than ever before. Most laborers are employed by the year, and the wage is about \$25 a month. (42.)

Mr. SPEAR testifies that the maximum farm wages in Vermont are about \$275 a year, with board and washing. He estimates the minimum for fairly competent labor at \$150, but says that some are not able to earn much besides their board. Labor is usually paid for in cash as the money is needed, and a final settlement is made at the expiration of the contract period. There is usually a contract for a specific time. But few farmers provide tenant houses; where they are supplied the rent is usually reckoned at from \$2 to \$4 a month. (402, 403.)

Mr. STOCKWELL gives the following as the wages of agricultural laborers in Massachusetts: Wages by the month with board, \$16 to \$25; without board, \$28 to \$35, or higher in some few cases. Wages by the day, \$1.50 to \$1.75. Payments are nearly always made in cash, usually once a month. An employee may draw on account and perhaps leave a little balance in the farmer's hands to accrue during the season, but monthly payments are preferred by the employees. They can have them more often if they desire. (885.)

New York.—Mr. NORRIS, of Sodus, N. Y., says the usual farm wages in that section are \$17 or \$18 a month. The wages for single men include board and lodging, but not washing. The universal daily wage is \$1, and the man boards himself. The single men are all paid in cash.

Mr. Norris says the most progressive farmers in his section now pay their hands

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every month, often hiring them at so much a day. Some continue the old practice of hiring for 8 or 9 months and settling up at the end of that time. (321.)

New Jersey.—Mr. DYK says the wages and general conditions of farm laborers in New Jersey are better than they were 40 years ago. Where men board themselves, wages are \$25 to \$30 a month, with a house and garden usually furnished; where they are boarded, \$12 to \$18 per month. Day wages are ordinarily from 75 cents to \$1, but during harvest time \$2 to \$2.50. (84.)

Mr. COLLES, of Woodstown, N. J., says the maximum wage for farm laborers in that section is \$20 a month and board. Not very many get that much. Wages range from \$20 down to \$12 or \$10 for hands employed through intelligence offices. Truck farmers pay somewhat higher wages than others, the season being short and the work exacting as to hours. Wages are paid in cash, by the month. (125.)

Mr. KETCHUM, of Pennington, N. J., testifies that the prevailing wages for farm labor in that section are from \$10 to \$20 a month and board. (133.)

Mr. MAGIE, a dairyman and stock raiser of Elizabeth, N. J., says that competent farm laborers receive more in his vicinity than they did 30, 40, or 50 years ago. In dairying the wages are from \$12 to \$20 a month and board, or \$30 or \$35 a month and house rent, for competent men. (102.)

Pennsylvania.—Mr. HAMILTON submits the following table of farm wages in Pennsylvania for 1899:

	Maximum.	Minimum.	Aver. ge.
Farm wages, by the month, with board (whole year)	\$20.00	\$8.50	\$12.69
By the month (summer only).....	25.00	10.50	15.83
By the day, with regular work (with board).....	1.00	.50	.80
By the day, with regular work (without board).....	1.40	.75	1.11
By the month, whole year (without board).....	35.00	10.00	20.07
By the month, without board (summer months).....	40.00	11.66	23.95
By the day, with board, for transient work (when wanted, only).....	1.63	.50	1.05
Harvest wages, by the day (with board).....	2.00	.90	1.29
Household help, with board (by the week).....	3.00	1.25	1.99
Estimated cost of boarding farm hands by the day.....	.50	.15	.35

Mr. Hamilton explains that each reporter gives the maximum and minimum, the amount between them being the average he submits; that the reports of the 4 reporters in each county are averaged, and that the general average for the State is the sum of the 67 county averages divided by 67. He knows of no statistics showing the relative amounts of high grade and lower priced labor. The general average is found to be nearly the same, year by year. (349, 350.)

Mr. Hamilton explains the divergence between the maximum and minimum wages by saying that Philadelphia County employs market gardeners and florists—more expert labor than the outlying counties—and that the proximity of manufactures and railroad work increases farm wages and takes the best laborers, so that the farmers must content themselves with the lower grade. (349, 350.)

Ohio.—Mr. BRIGHAM says the wages of farm laborers have increased greatly compared with 40 or 50 years ago. At that time in Ohio the best men could be hired for from \$10 to \$12 per month with board. The maximum wage is now \$18 or \$20 a month with board, the average being perhaps \$16 or \$17. The daily wage during the harvest season is from \$1 to \$1.25. Wages do not fluctuate materially with changes in the prices of agricultural products, although when there has been a continued depression of prices it may tend to reduce the general level of wages.

Married men are quite often preferred by employers. In such cases they are usually furnished with houses and are paid by the year at from \$200 to \$250.

Farmers usually pay wages in cash, promptly at the time due, whether by the day, week, or month. (5-9.)

Illinois.—Mr. WILSON testifies (1899) that the maximum farm wages in central Illinois are \$21 to \$22 a month and board, for 9 or 10 months. This is higher than wages were 20 years ago, but in recent years there has been very little difference. When a man is hired by the year he probably gets \$18 and board; some heavy cattle feeders will pay \$20. Payments are in cash almost entirely. Married men get about \$25 a month by the year, with a house, one-fourth or one-half an acre of land, and a cow, or pasture for his own cow, and the use of a team for hauling when needed. Only a few married men will hire for less than a year. (244, 245.)

Minnesota and the Dakotas.—Mr. GREERLEY testifies that farmers in Minnesota and the Dakotas now pay about \$20 to \$25 a month, with board, lodging, etc., or about \$4 or \$5 more than 8 or 10 years ago, on an average. Many pay tried and reliable hands still more. (928.)

Mr. MORAN, of Graceville, Minn., testifies that when he used a McCormick reaper he paid as high as \$3 a day for laborers to bind grain. Farmers now pay from \$2 to \$2.50 during harvest time, which is a short period. The farmers get along during a good deal of the time without farm help, invariably doing the chores themselves during the winter, at least. If they have more stock than they can take care of, they usually hire a man by the year for \$175 to \$200, usually with board. Men hired during harvest by the day are paid from \$2 to \$2.50. Men hired by the month at the busy season usually receive \$20 to \$30 a month and board. Mr. Moran says the farm wages for the yearly laborer have not varied much as compared with 25 or 30 years ago. Mr. Moran worked for less money 40 years ago, however. (711.)

Mr. BUDGE states that the average farm wages in North Dakota are about \$15 a month in the winter, and \$22 and \$25 a month from spring to fall. Payments are made in cash. (846.)

Mr. PROM estimates the average farm wages in North Dakota during the fall to be \$22 a month and board. During harvest the rate fluctuates greatly. The farmers pay up to \$30 a month, and often are unable to hire men by the month and have to pay \$2 to \$2.50 a day. (788.)

Mr. JUMPER, of Aberdeen, S. Dak., says farm wages with board and lodging are from \$200 to \$210 by the year, or 20 per cent higher than 4 years ago (1896-97); about \$20 a month for the 8 summer months, and from \$8 to \$10 for the 4 winter months; and about \$2 to \$2.50 a day for harvest, and \$1.50 for the haying season. (739.)

Maryland.—Mr. AGER testifies that wages for agricultural labor in Maryland are from \$10 to \$15 a month with board, or 75 cents and \$1 a day without board. Men are usually hired by the week, day, or month, very seldom by the year. Wages are paid in cash. It used to be the custom years ago in Maryland to furnish rations to farm laborers, but this is not done much at the present time. (104, 105.)

Virginia.—Mr. WENDERBURN, of Dunn Loring, Va., near Washington, says farm labor in that section of the State is paid 50 cents with board or 75 cents without board. Occasionally a higher price is paid. In harvest the wages run from \$1.50 to \$2 a day. Wages by the month are about \$12, or \$15, or \$16, but wages are generally by the day and are paid weekly in cash. Store orders are now very rarely given. Where the landlord employs a married man by the month or year, he furnishes a tenement house. There is very little white labor. Sometimes a man does partially skilled labor, such as digging ditches or wells, or pruning fruit trees, and gets \$1 a day. (620.)

West Virginia.—Mr. CLORAN, of West Virginia, says farm wages in his locality run from \$8 to \$15 a month, with board, not including washing and mending. Where a man boards himself the wage is 75 cents a day, or \$1 in the busy season. Several farmers pay about \$100 to \$150 a year and furnish a fairly good house, garden, cow-pasture, and perhaps a run for two or three hogs. (592, 593.)

Kentucky.—Mr. NALL testifies that agricultural laborers in Kentucky get from 50 cents to \$1.50 a day, and in rare cases in harvest \$2.50 a day, but not as much as a few years ago. Wages by the month, when the hand is boarded, range from \$11.50 to \$14 and \$15. Wages by the month without board, where the hand lives on the place in a house furnished by the farmer, run from \$15 to \$23. Sometimes a specially good horseman, for instance, will get \$26 or \$27. The average pay where the laborers board themselves, however, runs from \$16.50 to \$19.10 per month. The laborers who board themselves are as a rule housed on the premises rent free, and usually have a pasture for a cow and have their fowls and pigs. (803.)

Mr. Nall adds that as a rule wages are paid in cash, but an employer will sometimes for convenience give store orders. Mr. Nall thinks the stores sell as cheaply when these are presented as if they received cash. (804.)

Mr. Nall says the colored laborer gets as much as the white if he does as much work. The figures given are averages for all labor employed. (815.)

North Carolina.—Mr. WHITE testifies that a great many persons in North Carolina hire themselves out by the day or month to land owners or to very well-to-do tenants who run a four or five horse crop. The wages are usually from 25 to 50 or 60 cents a day, or from \$8 to \$10 a month. Some of the laborers wait until the crop is sold for their pay except food actually consumed; others are paid daily, largely in provisions for their families from the storehouse. The storehouse prices are very high—double city prices. A great many men with families do not get over \$10 a month. Their wives and children are hired out. Their provisions are very coarse, usually corn, a little molasses, and Western side meat. (423.)

South Carolina.—Mr. HAMMOND, a South Carolina cotton planter, says that day wages are 40 to 50 cents, without food, and with or without shelter, garden, and fuel. Monthly wages at the time of his testimony were relatively high, because of the higher price of cotton, ranging from \$7 to \$12, with house, fuel, garden, rations, and

privilege of poultry. Cotton picking is paid for at from 30 to 60 cents a hundred-weight. The wages of domestic servants in towns and of men in stores are much better than the wages of agricultural laborers. But the laborers who live in town and work in the neighboring fields get only common agricultural wages. (820, 821.)

Mr. Hammond says that wages are paid daily, weekly, fortnightly, monthly, and, more rarely, yearly. Monthly and yearly wages are usually paid, one-half at the end of each month and the rest at the end of the year. There is little payment of wages in kind, but more is paid by store orders or advances from the farm commissary than in cash, until the final settlement is made, when cash is given for the balance. Negro laborers have a very clear idea of what is due them, though they may not be able to explain their mathematics. Employers generally settle fairly to avoid the reputation of being bad paymasters, which would interfere with their getting labor. (821.)

Mr. YOUNG, of South Carolina, testifies that he runs his plantation in connection with a store. The store sells goods at 50 per cent profit, and the plantation laborers are paid partly in store orders. All the plowmen get for $5\frac{1}{2}$ days' labor, in addition to 1 peck of meal and 3 pounds of bacon and salt, is 90 cents in trade at the store, and 20 cents in cash. When labor is employed by the day, he pays 30 cents, one-fourth in cash and three-fourths to be traded out at the store. He employs his plowmen by the month, and unless they are prevented by the weather or sickness, they make $5\frac{1}{2}$ days' honest work each week, a little more than slaves did before the war. He allows the hands on his plantation 2 acres of land, and the plowmen have the use of the animals on Saturday evenings, if they are not needed. (117, 118.)

Georgia (see also III F, p. CXXVIII).—Mr. REDDING testifies that farm laborers who work for wages in Georgia receive about \$120 or \$125 a year and rations—4 pounds of bacon and a peck of meal a week. The employer also furnishes the house, garden patch, and fuel free of charge. The men are paid to some extent in cash, and others are paid in supplies; some farmers pay at the end of the year. It is difficult for a man to support a large family on these wages, but a man working only for himself, or for himself and wife, if the wife is willing to work, can lay up something every year. Women are mainly employed in the spring in chopping cotton, and in the fall in gathering cotton, but only men are employed regularly. (448.)

Mr. NUNNALLY, of Georgia, testifies that farm wages in the South range from \$5 to \$8 a month, with board and house room, seldom reaching \$10 a month. If white men are hired in Georgia they are paid \$8 and are furnished a house to live in. (455, 456.)

Mr. BARRETT says that where labor is hired in Georgia it is usually by the month during about 7 months of the year, up to cotton picking time, and the wages range from \$2 to \$6 per month, together with rations, which cost about 35 cents a week. The negro is furnished a house and garden, and may keep pigs, chickens, etc. During the cotton picking season work is by the 100 pounds, the average wage amounting to 50 or 60 cents per day. Some farmers pay their help in store orders, receiving a commission from the storekeeper. (46.)

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her, on everything that the landlord owns. The law protects the laborer entirely, and the landlord's property can be attached for such a debt anywhere. Moreover, public sentiment sustains the safety of prompt payment of claims of this nature, and a man who would not pay it would not get any more labor at all. The garnishee law does not apply to wages; the law provides that wages for labor of any kind can not be garnisheed. Labor is thus protected in every way, and the result of this kind of payment is that the laborer has a sort of forced saving made for him by the landlord. If it were not for this plan the colored laborers, as a rule, would spend every cent of money they receive just as fast as they make it. Some of them, however, are industrious and economical, and succeed in life very well, attending to their own business and making money. (906, 907, 910.)

Mr. PEEK, of Georgia, hires both white and colored farm laborers and pays \$10 a month and rations—about 15 pounds of bacon, a bushel of meal, and a gallon of sirup a month. He also provides furnished houses and garden patches and firewood. He thinks that counting the house rent, rations, etc., the remuneration is equivalent to about \$15 a month. It is customary to employ all the wives and children on the farm the year round. (460, 461.)

Alabama.—Mr. POOLS testifies that agricultural labor in Alabama is better provided for and receives better returns than it did 15 or 20 years ago, and that it is less migratory. The maximum wages for agricultural laborers in Alabama are about \$10 a month, and the minimum about \$6, for farm laborers with their provisions and tenant houses furnished. Wages are generally paid half cash monthly. (918, 924.)

Mississippi.—Mr. KYLE says men are very rarely found working on farms in Mississippi for wages. Those hired in that way are paid from \$6 to \$15 a month and found. (471, 474.)

Tennessee.—Mr. GODWIN, of Tennessee, pays his colored tenants for casual labor 50 cents a day, without board. (475.)

Mr. MANSON, of Saulsbury, Tenn., pays about \$8 a month for hired help, and furnishes houseroom, firewood, and cooked food. (506.)

Mr. HILL, who owns a plantation near Memphis, Tenn., pays his laborers \$10 a month and provides houseroom, wood, and cooked meals. (505.)

Mr. NORFLEET, of Memphis, testifies that farm wages in the uplands are about 50 cents a day, and in the Mississippi bottom about 75 cents a day. Houses and all the ordinary farm comforts are provided. He thinks labor is better off in the South now than ever before since the war. (485.)

Mr. GAGE, of Memphis, says his customers sometimes pay the laborers so much to work the crop and "lay it by" (meaning that the crop is finished and waiting for the warm sun of June, July, and August to mature the cotton); then the owner pays generally from 40 to 50 cents a hundred pounds for picking. Men employed by the day are paid in the neighborhood of 60, 65, or 75 cents a day in some places; in other places not more than 50 cents. The food is not included in these prices, but the owner sells it to the laborers; he generally keeps a storeroom, and on Saturdays the laborers come and get meat, meal, tobacco, molasses, and other necessities. Men who look after the mules are employed by the month. The owner generally furnishes a good house and an acre or half-acre of ground for a garden, and gives the laborers the privilege of cutting wood. (492.)

Arkansas.—Mr. BALCH, of Little Rock, Ark., testifies that 75 cents a day, without board but with free house rent and fuel, is the customary wage for farm labor in his community. In 1899 some were paid 40 cents a day and boarded. (496.)

Louisiana.—Dr. STUBBS says \$1 to \$1.25 is about the average daily pay for a laborer in Louisiana, where they are employed by the day. A house, garden, firewood, etc. are furnished, but not rations. In the cane fields from 75 cents to \$1.50 is paid. On the cotton plantations there are no regular wages (see II C 2, p. —), but the few white farmers who hire for wages usually feed the laborers from their tables and pay from \$8 to \$15 a month. As a rule, however, the wages are so much a day for chopping cotton and so much for picking cotton. (777.)

Plantation stores.—Dr. STUBBS says that nearly every large sugar estate has a store. A timekeeper gives each workman a metal or a horn token representing a day's work and receivable at the store. Everyone on a sugar plantation is paid off on the 15th and 30th of the month; but "if he has spent his chips, as the tokens are called, he does not get his money."

Dr. Stubbs says only the large rice planters run stores in connection with their plantations. (777.)

3. Special forms of compensation.—*Acreeage plan* (see also *Thinning sugar beets*, III F 2, p. cccxix).—Mr. NORFLEET, of Memphis, testifies that in the Mississippi bottom, where cotton is cultivated under the acreage plan, the laborer is paid \$4 to \$5 an acre for his labor. The landlord furnishes the team, feed, implements, and seed. (489.)

privilege of poultry. Cotton picking is paid for at from 30 to 60 cents a hundred-weight. The wages of domestic servants in towns and of men in stores are much better than the wages of agricultural laborers. But the laborers who live in town and work in the neighboring fields get only common agricultural wages. (820, 821.)

Mr. Hammond says that wages are paid daily, weekly, fortnightly, monthly, and, more rarely, yearly. Monthly and yearly wages are usually paid, one-half at the end of each month and the rest at the end of the year. There is little payment of wages in kind, but more is paid by store orders or advances from the farm commissary than in cash, until the final settlement is made, when cash is given for the balance. Negro laborers have a very clear idea of what is due them, though they may not be able to explain their mathematics. Employers generally settle fairly to avoid the reputation of being bad paymasters, which would interfere with their getting labor. (821.)

Mr. YOUNG, of South Carolina, testifies that he runs his plantation in connection with a store. The store sells goods at 50 per cent profit, and the plantation laborers are paid partly in store orders. All the plowmen get for $5\frac{1}{2}$ days' labor, in addition to 1 peck of meal and 3 pounds of bacon and salt, is 90 cents in trade at the store, and 20 cents in cash. When labor is employed by the day, he pays 30 cents, one-fourth in cash and three-fourths to be traded out at the store. He employs his plowmen by the month, and unless they are prevented by the weather or sickness, they make $5\frac{1}{2}$ days' honest work each week, a little more than slaves did before the war. He allows the hands on his plantation 2 acres of land, and the plowmen have the use of the animals on Saturday evenings, if they are not needed. (117, 118.)

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wood choppers, etc., \$372; miners, \$420; those engaged in manufacturing and mechanical industries, \$445; fishermen, \$225. (153.)

Mr. KERRICHUM says mechanics' wages are higher than those of farm laborers, because they work by the day, but comparing earnings for the entire year, he thinks the farm hand is in about as good a position as the mechanic. He does not think the average labor on a farm the year through is any harder than that of a mechanic working ten hours a day, but mentions truckers and dairymen as working harder than the average farmer. (137.)

6. *Savings of farm laborers.*—Mr. MORAN, of Minnesota, says the young man who gets \$200 a year and board on a farm, after paying for his clothing, shoes, washing, and incidental expenses, may possibly have a trifle left at the end of the year; if he is careful, it may be \$100. (711.)

Mr. GREELEY, of South Dakota, says a married farm laborer, with a small piece of land to cultivate, can lay up more money than one employed in the city at much higher wages. Mr. Greeley knows of cases where men whose wives worked with them lay up all their wages. They have chickens to pay the grocery bill, and possibly two cows, which almost support the family. Mr. Greeley knows several families who sell enough butter and eggs to provide all their clothing and living, and very often more than the wages are saved at the end of the year. This kind of living engenders a wholesome independence and self-reliance. Such persons almost invariably become owners of land, and they are twice as apt to succeed as men from the city who know nothing about farming. Their work is a valuable education, the lack of which so frequently wrecks the beginner. They almost invariably make good farmers and intelligent citizens. (928, 929.)

E. Housing of laborers and tenants (see also *Scarcity of farm labor*, III B 5, p. cxix).—Mr. HALE says it is the general custom of the South to furnish laborers with tenant houses with about 2 to 3 acres of land and fuel, usually without charge; in some instances 2 days' work a month pays the rent. (379.)

Mr. Hale says the original plantation houses of the South were for the most part 1-room affairs of logs, 20 or 25 feet square. The modern house is a frame house, boarded and sheathed, with 3 rooms. (384.)

Mr. AGER testifies that most farmers in Maryland have tenant houses on their places. They are usually small (about 3 rooms), but quite comfortable, and are lathed and plastered. There is generally a garden spot of perhaps a quarter of an acre, more than most of the tenants will cultivate. The owner of the farm usually plows the garden, and the tenants work it at night or early in the morning; their wives generally do more of it than the men. They raise a few garden vegetables, potatoes and corn, and possibly some watermelons. Some classes of tenants, like the Germans in the West, would raise enough vegetables to support themselves on a piece of ground of that size, but the colored tenants do not. The laborers are not, as a general thing, given time on Saturday afternoons to cultivate their gardens, though the aim is to get through a little earlier on Saturday night than on other nights, and they do not work in their gardens on Sunday. Mr. Ager has 3 tenements on his place, and hoped thereby to secure some reliable help, but was mistaken. None of his tenants are employed on his farm; they go to some one else. He charges \$4 a month rent, and the tenants have the use of such down fuel as they may pick up about the place. (104, 105.)

Mr. WHITE testifies that probably over half of the farm tenants of North Carolina are very poor. They are huddled together in small houses of 1, 2, or 3 rooms, sometimes 8 or 10 in the family. Poverty, he says, always begets degradation and immorality. (420.)

Mr. HAMMOND, of South Carolina, says that the negro prefers an isolated house. The houses now built are much more comfortable than they have been before since slavery times. Log houses have gone out entirely. The dirt floor has not been commonly used in 60 years. Houses are now coming to be generally provided with glass windows. The tenement house is likely to have a front room 18 by 20, with two shed rooms 15 by 20 for bedrooms. These 2 and 3 room houses, with fuel and a garden plot of an acre or less, rent for \$2 a month, or a day's work a week. Such a house costs from \$85 to \$150. Lumber and carpenter work are very cheap. (821.)

Mr. Hammond admits that the negroes would probably prefer that their cottages be somewhat near together in the farming neighborhoods, if they were policed, as under the old plantation system. In the Southern towns the negro quarters are as marked features as the Jews' ghettos anywhere in Europe. There they get along tolerably well, but they have police to keep the peace. (822.)

Mr. STEVENS, of Georgia, says there has been considerable improvement in the last 20 years in the homes of the colored people. The landlords have been forced to

privilege of poultry. Cotton picking is paid for at from 30 to 60 cents a hundred-weight. The wages of domestic servants in towns and of men in stores are much better than the wages of agricultural laborers. But the laborers who live in town and work in the neighboring fields get only common agricultural wages. (820, 821.)

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ners and pick them up one by one; he goes to a Chinese labor bureau, or usually to one of the Six Companies, who are always prepared to contract for any number of men, and hires the number he wants, to begin at a given date. They are the best fruit packers in California. Fruit growers in central California say it would be practically impossible to harvest their crops without the Chinamen; they can not find other people who will do the work properly. Cannerymen also say it would be impossible to run their canneries without Chinamen, without being continually harassed by strikes and shortage of labor. The pay of the Chinese laborers is usually received by the person contracting for their employment, or by the foreman of the squad. Mr. Naftzger thinks this is a purely voluntary arrangement; he knows that the Chinamen so engaged always have money Saturday night to gamble with all night or all day Sunday. There are many instances in which Chinamen are employed singly on farms. (954.)

Mr. Naftzger says sometimes fruit packing is done by the package, but as a rule the wages of Chinamen in fruit growing and packing, etc., are about \$1.25 a day, while white men's wages would be \$1.50 to \$1.75. Wages by the day are without board. Farm and ranch (orchard) laborers receive \$25 to \$40 a month, the year round. Where contracts are made for large numbers of Chinamen on certain classes of improvements, Mr. Naftzger thinks they are obtained as low as \$1 a day; and he thinks they live on as little as 25 cents a day. The Chinamen do more or less contract work; in some instances they are section men on the railroads, but Mexicans are used more for that purpose. (955.)

Mr. Naftzger says that when the Chinese are engaged in contract work or ranch work they invariably feed themselves, and usually rice is the chief article of diet. When they go into the city they eat meat, especially pork, and fish. (954.)

2. Thinning sugar beets.—Mr. ROGERS, president of the Binghamton Beet Sugar Company, says he hires boys or Italians to thin sugar beets. All the help necessary can be obtained in Binghamton. In 1899 he established a tent on the river bank, and the boys regarded it as a sort of a picnic. He paid from 50 cents to \$1.25 a day of 10 hours, charged 10 cents a meal, and lodged the boys under the tent. He estimates that it cost about \$6 an acre to thin the beets. (555, 556.)

Professor KENZIE testifies that in Bay City Polish women and children have been employed very largely for weeding out sugar beets; they are very efficient, and work very cheaply. Professor Kenzie mentions one farmer who paid \$14 an acre for thinning, while another employed Poles at \$4 an acre. (547.)

Mr. SAYLOR testifies that the California planters contract with the laborers for bunching, thinning, hoeing, weeding, harvesting, and piling sugar beets at so much an acre, the contract being made either with individuals, or several in combination, or with a man who furnishes a group of laborers. That kind of labor is nearly all done by Chinese and Japanese. (590.)

Mr. SMITH says that in 1898 beet raisers in Michigan found it possible to hire women to thin beets at from 50 to 65 cents a day; but later in the season, as the supply proved inadequate, these women, and children as well, received from 75 cents to \$1 a day. In 1899, in the same locality, they habitually received \$1 a day and dinner. At Benton Harbor the price rose to \$1.25 and board, and about all the factories in the very busy season the wages rapidly rose to \$1 a day and upward. (574.)

3. Thrashing crews.—Mr. BUDGE says the operators of thrashing machines in North Dakota furnish their own crews. They take their kitchens and cooks with them and board their hands. The operator and his men lodge in the straw stack or the cooking shanty. The thrashing is done for so much a bushel. (851.)

G. Labor of women and children.—1. *On Southern farms.*—Mr. GODWIN, of Tennessee, says that women and children do most of the hoeing of cotton. After the hoe work is done there is no other work they can do until the cotton is ready to pick. They commence picking about the middle of September. The work is light, and the children do not hurt themselves.

Mr. HAMMOND, of South Carolina, states that the negro women work only during certain seasons of the year, as cotton picking and cotton hoeing. (816.)

Child labor on Southern farms.—Mr. GRAHAM, of North Carolina, testifies that children work on the farms from the age of 8. A boy of 10 is as good a plow hand as a man. They pick cotton from the age of 6. Girls hoe and pick cotton. This labor of children is general in both races. (439.)

Mr. GAGE, of Memphis, says a boy 15 years old is big enough to pick cotton, and generally does so, but is not strong enough to plow and to hoe. Mr. Gage has never seen children 9 or 10 years old working in the field, so far as he knows. (494.)

Mr. EDMONDSON, a negro farmer of Tennessee, says that boys who work in the field will never go to the workhouse or the penitentiary. He has 8 boys, of whom 3 are

of age, and the others are working for him. He also worked his daughters in the field as long as they were with him. He testifies that children are a material help; that he would not have been able to accumulate as much as he has without them. (502.)

2. Domestic service.—Mr. GREELEY says that, as a rule, unless there are grown-up daughters, there is little help for the wife and mother in farm homes, principally because none can be had; but very frequently the wife of a tenant hired man is glad to help in trying times and earn a few dollars of her own. The grown girls of such families can also generally be induced to help when needed, though they might not be willing to hire out regularly to strange families; and they may thus become good housekeepers. This repeatedly works greatly to the mutual advantage of all concerned. (929.)

Mr. KERCHUM, of Pennington, N. J., says there are in that vicinity a good many female servants from the South, a great many of whom marry and live there permanently. (133.)

Mr. HAMMOND, of South Carolina, says that in Augusta the wages of a housemaid or a cook range from \$8 to \$15 a month, and those of house servants sometimes go as high as \$20. The better class of servants go to the winter resorts of the South, and in summer to the summer resorts of the North. In this way they make very good wages. (820.)

H. General considerations respecting labor.—1. *Desirability of agricultural labor.*—Professor DAVENPORT does not consider agricultural labor drudgery. He regards the position of a farm laborer as infinitely better than that of a day laborer, plasterer, or mason in the city. (256.)

Mr. HAMILTON, Secretary of Agriculture of Pennsylvania, thinks men accept farm service as a rule because they are not in a condition to go abroad and do better, but adds that the precarious character of mill work and of mining has its effect in making men willing to accept a lower per diem wage in the country; the mine or manufacturing establishment may shut down and leave them without occupation for a period, and living under expensive conditions. (350.)

Mr. HANLEY says there is not so much drudgery in farm labor as there was in the early days. (274.)

2. Labor organizations and disputes.—Mr. POOLE says that in Alabama, as elsewhere, the agricultural labor is so scattering it does not strike. Strikes in other industries have been very rare in Alabama. There has been only one serious strike in the mill districts, and that was years ago. The question of compulsory arbitration has not been agitated. (925.)

Referring to the controversies between capital and labor, Mr. RICHARDS, a Chicago grain merchant, says wrong exists on both sides. As a remedy he proposes a national law authorizing labor organizations to be created, with as many subordinate classified branches as they may require, under a department of the Government. The present labor organizations have no legal entity. We have organized capital against disorganized labor; both should be on the same footing. (207, 208.)

3. Enticing laborers away.—Mr. HALE says Georgia has a law against enticing laborers away from their employment, but he does not think it amounts to very much. It was probably framed because of the traveling black missionaries who raised discontent among the hands with colonization schemes. There was a class of tramp negroes who were not industrious and found it easier to live by trying to move others than by doing anything themselves. Mr. Hale thinks in general that the law is not unjust and has accomplished some good. (379.)

4. The Southern attitude toward manual labor.—Mr. POOLE, of Alabama, says that among the old aristocracy of the South there was a tendency to look down upon the trades, but that is gradually disappearing and many of the best young men are going into trades. A neighbor of Mr. Poole's, who is a wealthy cotton mill owner, has a son at Lowell learning the textile industry. This is mentioned as one of numerous instances. Mr. Poole says there is in the South a very liberal disposition toward the mechanical trades. (921, 922.)

Dr. STUBBS says that not only is it respectable for white men to work with their hands in Louisiana, but some of the best and wealthiest men do so, and such labor is the admiration of everyone in that country. Dr. Stubbs has seen a millionaire's son plowing with a 4-mule plow.

Before the civil war there was no necessity for such labor, but there has always been a feeling among all Southern people that they should do the work when there was necessity. Even before the war Dr. Stubbs has seen the children of wealthy and aristocratic farmers who had gone to pieces financially take to hard work like negroes, and yet be received in the best society as always before. Dr. Stubbs remarks that a man who can make use of hired labor to do the work, whether he is from the

North or the South, is very apt not to do it himself, but to turn his attention to something more profitable. The Californians use the Chinese just as the negroes are used in the South. Dr. Stubbs believes every man should labor when there is necessity, however, and says he himself has done as much hard work as any working man in the North. (778.)

5. *Iron law of wages.*—Mr. REDDING, director of the Georgia Experiment Station, thinks the wages of common physical labor everywhere are down at the point of actual subsistence, and that no man rises above that level unless he becomes skilled and displays energy and ambition. (445)

IV. PROBLEMS OF RACE AND IMMIGRATION.

A. Number of negroes in certain States.—*North Carolina.*—Mr. WHITE says that eliminating South Carolina and Mississippi there are very few communities in the South where the negro is in the majority. In North Carolina there are 2½ whites to every colored person. Out of 96 counties only 8 or 9 have a negro majority. Mr. White says he was sent to Congress partly by white votes. (429, 430.)

Mr. GRAHAM estimates that one-third of the population of North Carolina is colored, and that the negroes own \$3,000,000 out of \$200,000,000. The poll tax is the same for both races. Two-thirds of it goes to the schools, and the other third to the poorhouses or county homes. (438.)

South Carolina.—Mr. DUNCAN, of Newberry, S. C., testifies that there are in South Carolina about 400,000 whites and a little over 600,000 negroes; the ratio is about 3 to 2. (518.)

Alabama.—Mr. POOLE, Commissioner of Agriculture of Alabama, testifies that about 50 per cent of those engaged in agricultural labor in Alabama are colored. A very small percentage of these own their property. Of the different modes of farming, tenancy, sharing or partnerships, and the wage system are about equally represented. There are about 18 Black Belt counties crossing Alabama from east to west, in which the soil generally is black and the population largely colored, the negroes outvoting the whites 5 or 6 to 1. (918, 919.)

New York.—Mr. NORRIS says there are very few colored people in the State of New York. When the slaves were freed in New York, the Fitzhugh family, of Sodus, gave their slaves about 1,000 acres, but the negroes, though having this land given them, still live in little hovels, and have made no progress whatever. They have decreased in numbers fully one-half; some of them have gone away. They do not seem to have any inclination for education, though they could go to school with the whites if they desired. They are indolent, and there is not a single good farmer in the lot. (324.)

B. Unfortunate characteristics of the negro race.—Mr. BROWN says the negroes are accommodating, good natured, and naturally polite, but careless and improvident. They are much inclined to drinking, and have little regard for morals generally. The large proportion of Georgia counties which have adopted local prohibition is explained by the desire to prevent the negroes from obtaining whisky. Most of the terrible outrages committed by the negroes are due to the influence of drink.

Another injurious effect from the presence of negroes is that the whites come to consider farm work as menial. They prefer to live in the towns on air and water rather than to work on farms at a fair pay.

Mr. Brown does not know whether it will be possible to make the negroes prosperous and self-sustaining by technical and industrial education. Even though having a reasonable education, they seldom succeed for any length of time. They are contrasted with the whites, who, though having little education or capital, gradually rise from year to year after they once get a start. Very few negroes are landholders, and the experience of 35 years of liberty shows doubtful indication of capacity for progress. (65, 66.)

1. *Indolence and unreliability.*—Mr. GRAHAM testifies that a good white man is a better tenant than a good negro, but a good negro is much better than a mean white man. He thinks a larger percentage of the negroes than of the white men are indolent. Some of the negroes are as reliable as anyone, but most of them are more unreliable than white men. Mr. Graham does not think that the negro has improved as a farmer since his emancipation. One of the old slaves who was taught farming under an overseer or owner is a better farmer to-day than the younger men, with some exceptions. Among the slaves there were also blacksmiths and carpenters as good as those of to-day. (434.)

of age, and the others are working for him. He also worked his daughters in the field as long as they were with him. He testifies that children are a material help; that he would not have been able to accumulate as much as he has without them. (502.)

2. Domestic service.—Mr. GREELEY says that, as a rule, unless there are grown-up daughters, there is little help for the wife and mother in farm homes, principally because none can be had; but very frequently the wife of a tenant hired man is glad to help in trying times and earn a few dollars of her own. The grown girls of such families can also generally be induced to help when needed, though they might not be willing to hire out regularly to strange families; and they may thus become good housekeepers. This repeatedly works greatly to the mutual advantage of all concerned. (929.)

Mr. KERCHUM, of Pennington, N. J., says there are in that vicinity a good many female servants from the South, a great many of whom marry and live there permanently. (133.)

Mr. HAMMOND, of South Carolina, says that in Augusta the wages of a housemaid or a cook range from \$8 to \$15 a month, and those of house servants sometimes go as high as \$20. The better class of servants go to the winter resorts of the South, and in summer to the summer resorts of the North. In this way they make very good wages. (820.)

H. General considerations respecting labor.—1. *Desirability of agricultural labor.*—Professor DAVENPORT does not consider agricultural labor drudgery. He regards the position of a farm laborer as infinitely better than that of a day laborer, plasterer, or mason in the city. (256.)

Mr. HAMILTON, Secretary of Agriculture of Pennsylvania, thinks men accept farm service as a rule because they are not in a condition to go abroad and do better, but adds that the precarious character of mill work and of mining has its effect in making men willing to accept a lower per diem wage in the country; the mine or manufacturing establishment may shut down and leave them without occupation for a period, and living under expensive conditions. (350.)

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2. Labor organizations and disputes.—Mr. POOLE says that in Alabama, as elsewhere, the agricultural labor is so scattering it does not strike. Strikes in other industries have been very rare in Alabama. There has been only one serious strike in the mill districts, and that was years ago. The question of compulsory arbitration has not been agitated. (925.)

Referring to the controversies between capital and labor, Mr. RICHARDS, a Chicago grain merchant, says wrong exists on both sides. As a remedy he proposes a national law authorizing labor organizations to be created, with as many subordinate classified branches as they may require, under a department of the Government. The present labor organizations have no legal entity. We have organized capital against disorganized labor; both should be on the same footing. (207, 208.)

3. Enticing laborers away.—Mr. HALE says Georgia has a law against enticing laborers away from their employment, but he does not think it amounts to very much. It was probably framed because of the traveling black missionaries who raised discontent among the hands with colonization schemes. There was a class of tramp negroes who were not industrious and found it easier to live by trying to move others than by doing anything themselves. Mr. Hale thinks in general that the law is not unjust and has accomplished some good. (379.)

4. The Southern attitude toward manual labor.—Mr. POOLE, of Alabama, says that among the old aristocracy of the South there was a tendency to look down upon the trades, but that is gradually disappearing and many of the best young men are going into trades. A neighbor of Mr. Poole's, who is a wealthy cotton mill owner, has a son at Lowell learning the textile industry. This is mentioned as one of numerous instances. Mr. Poole says there is in the South a very liberal disposition toward the mechanical trades. (921, 922.)

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Mr. HALE says it is the hardest thing in the world for a darkey to keep money. He urges his laborers to save part of their wages, and encourages them to buy household furniture or other staple necessities with it. In that way they are furnishing their houses a little better each year. They take fairly good care of their tenant houses, and were glad to paint them when he offered to furnish the paint. While entertaining a high opinion of the negroes as laborers, Mr. Hale admits that they are very careless about leaving their tools "anywhere and everywhere." (384.)

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C. Progress of the negroes.—1. *Intelligence and general condition.*—Mr. HALE thinks that around the large cities and towns where the negro has come into too close contact with the white folks, he has perhaps deteriorated, but in 10 years of agricultural work in the Black Belt of Georgia he has seen a very marked improvement in the intelligence, general appearance, and efficiency of the negroes. (400.)

Mr. POOLE testifies that the colored man in the Black Belt is well fed and clothed, law abiding, and well adapted to agriculture. The South seems to be his home. The colored people there come in contact with those who owned them when they were slaves, or their descendants. They are obedient and respectful, and there have never been any labor troubles. There is very little migratory labor in the Black Belt. (919.)

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Mr. KYLE, of Mississippi, thinks there has been a general advance of the negro race, but that they do not work as closely or as diligently as when they were slaves; yet he considers them the best labor the South has ever had. The great mass of them do not seem to have any ambition to own property, but occasionally they acquire farms and homes, and when they do they are very loath to mortgage them. Mr. Kyle thinks there is more hope for the negro in industrial education than in other lines. (467, 469, 471.)

Mr. HILL, of Memphis, while glad that the negroes are free, does not believe that they are improving. White people do not pay the same attention to the training of the negroes as they did in the days of slavery, when the children formed industrious and moral habits, and the negroes themselves do not control the children as well as the old slave parents did. The colored people will not live in the yards with the white people; they want to be by themselves. On Mr. Hill's plantation there are a few of the old slaves who are very well contented, but the younger ones are discontented and inclined to be idle; they work a few days and then enjoy themselves in the village until their money is gone. Mr. Hill says the colored man does not live as well as he did under slavery, and that it cost the slave owner more to support the negro than he now pays him under the wage system. (504, 505.)

Mr. MANSON, of Tennessee, says the negroes were taken a great deal better care of in slavery than they are now. If a negro got dangerously sick he was taken right into the house and cared for. On Mr. Manson's father's farm every negro with a family had a cotton patch of his own to buy Sunday clothes and extras with. They had plenty to eat and wear, and dressed better than they do now on Sunday. Mr. Manson agrees with Mr. Hill that their labor was dearer in those days than now; he thinks the greater cost was offset by the better control. (509.)

Mr. NALL, of Kentucky, says that when the colored laborers were slaves the master was expected to take care of them, especially when they were ill; and they were cared for as comfortably as could be. This was to the interest of the master. Now the colored laborers are congregated mostly in the outskirts of the towns. They sometimes suffer from diseases, and their personal physical condition is not so good as when they were slaves. They are subject to smallpox and other fatal diseases, and Mr. Nall thinks from observation that the rate of increase is less than formerly, yet he believes that a free man is better than a slave. (802.)

D. The negro as a farmer and as a workman.—1. Incompetence.—Mr. BROWN thinks that one of the great causes of agricultural depression in the South is the incompetence of the negro. The negro does not know how to use improved implements and does not want to know how. He is averse to raising anything except cotton. In fact the negro can not subsist by himself. He requires the direction and example of the white, and is much given to imitation. The witness cites the case of a certain territory which became exclusively inhabited by negroes, and which was finally abandoned for agricultural purposes. (62, 63.)

Mr. BARRETT thinks the negro is never a good farmer without white supervision; he can not be trusted to use improved implements; he is cruel and careless in his treatment of stock. (58, 59.)

2. Standard of living.—Mr. REDDING, director of the Georgia Experiment Station, thinks the great trouble with cotton farming in the South is that negroes, who are willing to live in the most primitive style on hog and hominy, can make cotton at 7 cents, though if they counted the labor of wife and children it would cost more than that. The white farmer is not willing to live so poorly, and must either make cotton at a less cost or get more for it, or he can not live. Mr. Redding thinks most of the farm tenants in Georgia are colored. (445.)

3. The negro's economic advantage in agriculture.—Mr. POOLE testifies that in his part of the Black Belt the lands are rented to negro tenants because they can afford to give more for them than the white man. Mr. Poole himself rents several plantations to the negroes because he can get more rent from them. The negroes furnish their own labor, and can afford to pay more rent than the white man who hires his labor. (926.)

4. Mechanical trades.—Mr. POOLE, of Alabama, says that before the war there were on every plantation two or three carpenters who had been taught the trade by their owners. While a number of these old carpenters are still living, they are diminishing in number, and their places are being generally supplied by white carpenters. (921.)

Mr. HALE thinks the negro rather predominates in bricklaying, carpentering, and blacksmithing in the small towns of the South. (401.)

Mr. REDDING, director of the Georgia Experiment Station, says that in the field of common labor the negro is a drag to white labor. Farmers can get negro hands for 50 or 60 cents a day, but Mr. Redding's observation is that skilled negro bricklayers receive about as much as white men. (445, 446.)

5. Negroes not generally employed in cotton mills.—Mr. WHITE says that, with an isolated exception now and then, the colored men are not allowed to work in the Southern cotton and woolen factories, and until recently the whites have had almost a monopoly of all skilled labor. The whites and negroes compete on the farm perhaps more than elsewhere. It is rare to find a white farm hand in eastern North Carolina; the white farmers either rent for themselves or have their own land. (429.)

Mr. HAMMOND, a cotton planter of South Carolina, says that so far colored labor has not been successfully utilized in cotton mills, though it was successfully used before the war, and though they now do other sorts of work, such as the running of gins, which are believed to require more mechanical ability than cotton-mill work. Mr. Hammond believes that there is no reason except race prejudice why the negro should not be put in cotton factories. He does not believe that their irregularity is a sound reason. He has tried both negro and white labor on the plantation, and he declares that the negro works better and more continuously than the white man and does not want so many holidays. (823.)

E. Education of the negroes.—1. *Discrimination against colored schools in certain States.*—*Maryland.*—Mr. AGER considers the school facilities for white children sufficient in Maryland, but says there is a lack of schools for colored children, many of whom are more anxious to get an education than the white children and go farther to get it. As a rule the white schools are looked after better than the colored. (106, 107.)

North Carolina.—Mr. WHITE testifies that there is more money paid to the white schools of North Carolina for a given number of pupils than for a like number of colored people. The teachers are paid more, though they may be examined by the same board and given the same certificate. He thinks the terms are longer in the white schools than in the colored. (424.)

South Carolina.—Mr. HAMMOND says the trustees in each school district in South Carolina have power to distribute the school funds according to their best judgment, and they generally pay higher salaries to the white teachers and give the white schools a longer term. The white teachers get from \$40 to \$45 a month, and the colored teachers \$30, yet in Mr. Hammond's district the white schools have an enrollment of about 35 or 40 pupils, and the negro schools about 200. The negro children are very irregular in their attendance. The desks and seats in the white schoolhouses are made by local carpenters out of pine after the model of the improved school bench. Each pupil has a seat to himself. Mr. Hammond thinks that in the colored schools there are only benches. (824-826.)

Georgia.—Mr. REDDING says the negro schools of Georgia generally have negro teachers, who are not as well paid as the whites. He supposes that very few of the teachers are paid as much as \$40 a month. The pay is regulated by the county board. He thinks the school accommodations for colored children are not quite as good as for the whites, but sufficient facilities are furnished. There is no difficulty about schoolhouses, a few men get together and put up a house in a day or two that answers all purposes for an ordinary school. (451, 452.)

2. Equal school facilities in certain States.—*West Virginia.*—Mr. CLOHAN testifies that the course of study and the school term are the same in the colored and white schools of West Virginia, and that the colored teachers have to pass a pretty rigid examination and are well qualified. Most of the colored teachers are men, though in the white schools the proportion of female teachers is 4 to 1. There are many colored children who have to travel 3 and 4 miles to get to school, on account of the sparse population. In some magisterial districts there is only 1 colored schoolhouse, and some districts have no colored school at all, the children attending a school in the neighboring district. (594.)

Kentucky.—Mr. NALL testifies that in the agricultural part of Kentucky the farmers were largely slave owners, and there was some prejudice against improving the negro race; but he thinks that has all died out, and for several years Kentucky has had more liberal educational laws. White and black now have equal school facilities. All taxes for school purposes go into a common fund, and the money is drawn per capita, the colored pupils getting the same as the white. Mr. Nall thinks that up to the high school the colored schools are as good as the white, being taught by very efficient colored teachers. In the days of slavery it was forbidden that the negroes should be taught, and it was rare to find one who could read. The colored people are still separated from the whites as much as possible in social relations. There are separate coaches on the railroads for them, but the carriers are required to furnish equal accommodations for the money paid. (803, 814.)

Tennessee.—Mr. MANSON, of Saulsbury, Tenn., says the school facilities in his region are just the same for white and colored (usually 2 months in the winter and 2 in the summer), but the negroes do not take much interest in school. When a boy gets to

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be 14 or 15 years old and does not want to go to school his parents do not make him go. (507, 508.)

Mr. HILL testifies that 90 per cent of the school taxes of Memphis are paid by white people, although the negro population of school age exceeds the white population of school age by 1,200. (504.)

Alabama.—Mr. POOLE testifies that the school facilities of Alabama for both whites and blacks are very much improved, though not yet what they should be. The same amount is given for the same number of days of schooling in white and colored schools. The school term has been increased equally for the colored and for the white pupils, but frequently the schools are continued by private subscriptions. A compulsory education bill was introduced in the last legislature, but failed of passage. (923.)

Mississippi.—Mr. KYLE testifies that there is no distinction between the races in the matter of school facilities in Mississippi, except that the colored teachers do not generally hold as high grade certificates as the whites, and their salaries, being based on the grade of the certificate, are not as high. The negro children generally attend pretty regularly; they are anxious for an education, though Mr. Kyle thinks no more so than the poor whites. There is no discrimination between the races in the length of the school term. (468.)

Louisiana.—Dr. STUBBS says there is a preponderance of colored schools in Louisiana. Although the taxes collected from the colored people amount to very little, the school fund is divided pro rata according to the number of children. The State also appropriates annually a large amount toward the maintenance of an agricultural and mechanical college for the colored people and a considerable amount for a colored normal school. The negroes are a very heavy tax on the whites, constituting a very large part of the population and paying no taxes to speak of. Not only must they be educated, but the court costs, jail costs, etc., amount to a very large sum. (779.)

Arkansas.—Mr. BALCH says Arkansas has the same school facilities for the negroes as for the whites. The teachers are paid according to the certificate they get, but a great many colored teachers have first-grade certificates. Most of the negroes are very anxious to send their children to school, but a few of the ex-slaves disapprove of educating a laboring man. (497.)

3. School attendance.—*North Carolina.*—Mr. GRAHAM says the school attendance of negroes in North Carolina is greater than among the whites. He attributes this more to the fondness of the negroes for getting together in any kind of a meeting than to their desire for education. (439.)

Georgia.—Mr. NUNNALLY testifies that the negroes of Georgia take advantage of the schools up to 18 years of age, and that nearly all the children are learning to read and write. (456.)

Mr. PEEK testifies that the negro will go to school every day he has an opportunity, and in Georgia he has the same opportunity as the whites. (459.)

Alabama.—Mr. DILLINGHAM testifies that the negroes of Alabama show a disposition to learn. There are boys at the Calhoun School who walk 8 miles a day to attend school. (167.)

Tennessee.—Mr. GODWIN says colored schools are provided in Tennessee, but he does not see much interest taken in them. He does not think that children from more than 3 or 4 families out of the 15 or 18 families on his place attend school at any time during the year. (476.)

4. Higher education.—*North Carolina.*—Mr. WHITE speaks of a surplus of colored teachers in North Carolina, the facilities for higher education of the colored people being very good. Four additional normal schools have been created, and there are now 6, 7, or perhaps 8 colored normal schools, besides a great many denominational institutions, such as Bennett Seminary, at Greensboro; Scotia Seminary, at Concord, maintained by Northern people largely, where the president and the majority of the teachers are white; Livingston College, at Salisbury; Shaw University and St. Augustine Normal and Industrial Institute, at Raleigh; and the Gregory Normal Institute, at Wilmington. The endowments are not sufficient, and the institutions have to keep financial agents on the road begging all the time. The students, as a rule, pay their own way; now and then a philanthropic person in the North gives a scholarship. (425, 426.)

Tennessee.—Mr. MANSON testifies that Fisk University, at Nashville, for the higher education of negroes, is supported in part by the State of Tennessee. (509.)

Mississippi.—Mr. KYLE says there is a State university for the colored people at Rodney, Miss. Shaw University, at Holly Springs, built by the contributions of charitable Northern people, has received annual appropriations from the State treasury. There is also a school for colored girls, supported by Northern people, and a well-attended agricultural and mechanical college at Starkville. (403, 469.)

5. Professional education and occupations.—Mr. KYLE, of Mississippi, thinks the negroes who attend the universities do not, as a rule, take professional courses after completing the college curriculum. There are few colored doctors. Mr. Kyle has lived in a town where there were 2 or 3 colored lawyers and at least 1 colored physician, but they were not patronized much by the colored people. (469.)

Mr. STEVENS says the educated negroes very often become teachers, preachers, and professional men. Some of them branch off into merchandise and do well, while others fail. Very few of the educated ones remain on the farm. (910.)

Mr. POOLE says that in the rural districts of Alabama there are generally colored teachers for the colored schools and white teachers for the white children. At the Patterson School, a State normal school for colored teachers, with an attendance of 750, there are both white and colored teachers. (923.)

6. Is negro education useless or detrimental?—Mr. YOUNG, of South Carolina, is disposed to be friendly toward the negroes and cheerfully pays taxes for their education, but thinks the money is thrown away. He thinks education is of no benefit to the negroes, his experience indicating that the educated negro is of no account, and that education does not improve his morals. (119, 120.)

Mr. MANSON, of Tennessee, believes that farming is the natural vocation of 19 out of 20 negroes, but says that as soon as a negro can read and write and cipher a little he does not want to work on a farm any longer. He says 75 or 80 per cent of the negroes in the Georgia penitentiary can read and write, a much larger proportion than among the negroes outside of the penitentiary. Education does not elevate the negroes morally. (508, 509.)

Mr. HAMMOND, a cotton planter of South Carolina, does not think that education spoils the colored child. He is as faithful after getting an education as before. The white people of South Carolina generally favor the education of negroes. (826, 827.)

Mr. DILLINGHAM says the condition of things in the black belt is dangerous and urgent; at the same time the situation is hopeful if reasonable stimulus, help, and guidance can be given the colored people. The nation can have there a body of intelligent, taxpaying, industrious, thrifty citizens if it pleases. (164.)

7. Desirability of agricultural training.—Dr. CROWELL, formerly president of Trinity College, North Carolina, says that an education that is not disciplinary would not be of much value to colored people, and that an education not primarily agricultural would detract from their usefulness in agriculture; it would probably cause them to leave the farm. The educational scheme should deal first with the three R's, and secondly with plants, soil, atmosphere, etc. (336.)

Mr. DILLINGHAM believes that the nation and the States should do something to teach colored men to be farmers. (166.)

Mr. NALL, Commissioner of Agriculture of Kentucky, has great sympathy with the negro and is willing to do everything he can to elevate him. If he finds a community of negroes trying to farm and be independent he is going to hold institutes among them and do what he can to improve their condition. (815.)

F. Proposed solutions of the negro problem.—**1. Negro communities in the South.**—Dr. CROWELL looks with much favor upon the tendency among industrially educated negroes to establish themselves in colonies on small farms, but predicts that the tendency will be checked if the Southern States fail to give the children proper educational privileges in the locality. He says the most ambitious character in the South to-day is among the colored people. (335, 336.)

Mr. STEVENS does not believe that village communities of negroes would be an advantage. There is no part of Georgia except in the mountainous country (where there are almost no negroes) in which there is not within a radius of 3 miles a sufficient number of children between the ages of 6 and 18 to form schools and churches. Mr. Stevens does not believe it would be an improvement to collect them all together. They do better where they are separated. (906.)

Mr. NALL suggests that people be encouraged to improve the villages of the laboring men and make them more attractive. The people of Kentucky can not go ahead and do what they would if the laborers were white, because the colored laborer when he gets money and accumulates property feels just like one of the whites, and it is impossible for those who have known the negroes as slaves to recognize an equal social position for them. In sparsely settled parts of the country, therefore, where there are not enough of them to make a village of their own, the white people can not take them in and make them a part of the community as they could if they were white people, even of little education. (815.)

2. Colonization.—Mr. BROWN thinks that the only solution of the difficulty is the separation of the races. The Fitzgerald settlement in Georgia was started by whites with the purpose of excluding negroes altogether from a certain territory. The inhabitants seem well satisfied with the experiment, and their town is prospering.

The witness advocates the attempt to colonize the negroes either in some part of this country or elsewhere, and would approve of an appropriation by Congress for that purpose. It is doubtful, however, whether the scheme is practicable. The negroes themselves probably do not want to go. The whites of the South are so dependent upon negro labor that they would at first object to sending it away, but in the long run it would be better for them, even if lands lay idle for some time before laborers could be found to work them. (62, 63.)

Mr. YOUNG is opposed to sending the negroes out of the country and colonizing them. Although the negro makes way with whatever he earns, he thinks there is good in him. The sections in which there are only white people do not look any more prosperous than those in which there are negroes. (120.)

Mr. DUNCAN, of South Carolina, states that there is certainly a surplus of negroes in certain parts of that State, and that it would perhaps be well to send out a colony of the surplusage; but he agrees with Colonel Orr (See Vol. VII, pp. 485) in his opposition to sending the negroes as a body out of the country. He thinks the negro is a necessity in the South as a farm laborer. (518.)

Mr. WHITE is decidedly opposed to the colonization of negroes, either within or without the United States. The negroes have copied the civilization of the white man. Mr. White suggests that Bishop Turner, with whom colonization is a hobby, has an underlying purpose to accomplish. He knows his white neighbors do not care to have the negroes leave, and his purpose may be to arouse them to mete out justice in order to keep them. (428.)

Mr. POOLE, of Alabama, believes the attempts which have been made to carry off the colored people from Alabama and colonize them elsewhere were money-making schemes, and not for the benefit of the negroes as a whole. Mr. Poole does not think the colored population of the State would be better off in any other State in the South. He thinks 99 per cent of the white people of Alabama are glad to have the negroes there. They are comparatively law abiding. "They will steal a little bit sometimes, but they make good farm laborers and good servants generally." (924.)

3. Emigration of negroes from the South.—Mr. WHITE is in favor of relieving the overcrowded agricultural communities of the South by a gradual thinning out of the negroes, taking them here and there among the white people of the East, West, and North, where they may have a new impetus by the changed habits and opportunities and educational facilities. Where his white neighbors are poor and illiterate the negro has nothing to aspire to, and he goes from bad to worse; but where there is a higher ideal he will advance.

Mr. White says the mortality among the negroes who went north after the war was very great. A colored man past middle age going North will probably contract some pulmonary trouble, but the younger negroes become acclimated, and the children of those who went North after the war are not affected. Mr. White has found a great many negroes in Massachusetts, Maine, and the Northwest who were healthy, robust and thrifty. (428, 429.)

4. Further investigation needed.—Mr. DILLINGHAM, principal of the Calhoun Colored School, Alabama, says he feels deeply the fact that though a generation has passed since the colored people were emancipated, practically nothing has been done by the Government in the way of careful inquiry into the conditions of these new citizens. He suggests that if the Industrial Commission were to investigate conditions of agricultural labor in the Black Belt it would have a value difficult to estimate, and would show the urgency of the situation and the nation's responsibility. He suggests that carefully selected typical areas be chosen in different sections of the cotton belt and investigated, with cooperation with such schools as Hampton and Tuskegee and such settlements as that of Calhoun. Expert supervision would be necessary. An expert should prepare a catechism for the inquiry and take a certain amount of testimony himself on the spot. There is great need for the collection of statistics. The study should also include the white tenant. (163, 164, 167.)

G. Character of foreigners as farmers.—Mr. POWERS, of the Census Office, testifies that the foreigners on the farms of this country are largely men who were employed in Europe as agricultural laborers. He does not remember ever meeting a man on a farm who came from a city. These foreigners have come largely from Germany, Scandinavia, and Great Britain. A few from Bohemia have settled in certain sections, and many of the best educated among the Irish immigrants have gone onto farms. The percentage of literacy among the immigrants who have settled on farms is probably not far from that of the people of the North as a whole. The immigration from Scandinavia probably has a larger percentage of people who can read and write their language than the native population of almost any State in the Union. The percentage of literacy among the Germans is a little less. The Irish, when they come to this country, represent a still lower degree of average

education. Mr. Powers thinks that the general intelligence of foreign immigrants has been such as to elevate the general character of Western and Northern agriculture. The more educated foreigners, up to a certain level, go to the farms. There is a certain ignorant class among the Irish that drifts into the cities. When Mr. Powers has met the Irish in the country he has looked upon them as most desirable people. He never saw on the farms of New York any of the drinking element to be found in cities.

Mr. Powers says the first great motive of immigration is to obtain a home. Both foreign immigrants and native Americans went West before there were markets there, but the creation of markets has greatly stimulated the movement, and men now get homes mainly where markets have been provided by the building of railroads.

Mr. Powers states, as the result of an investigation he made while Commissioner of Labor of Minnesota, that the American-born farmer is able to make a slightly greater progress in the accumulation of wealth than the foreign born. He says it takes a man some time to adapt himself to changed conditions. (179, 180.)

Professor DAVENPORT says the better class of foreigners who have gone onto Western lands have succeeded and become wealthy. The Scandinavians and Germans are ambitious for land and money. Farmers from Europe have a higher idea of the value of fertility of land than Americans have. (263.)

Mr. STOCKWELL refers to a lecture by President Pritchett, of the Massachusetts Institute of Technology, before the winter meeting of the Massachusetts Board of Agriculture, which showed that our early immigration was English, Irish, Scotch, and German, a valuable addition to intelligent citizenship, while now the immigrants are Poles, Italians, Finns, and others of the less intelligent races. These immigrants are drawn more largely into other pursuits than into agriculture, however. (884, 886.)

Mr. Stockwell says the cheapest labor in Europe and Asia is now brought to this country for the benefit of mining and railroad corporations. The influx is not as great as a few years ago, so we are reaching after cheap labor from the islands of the sea. The cheaper the help the more they are sought for by the great corporations. This is a part of the commercialism of to-day. (886, 887.)

New England.—Professor DAVENPORT predicts that the foreigners who are taking up abandoned farms in New England will succeed, because (1) their cost of living is comparatively low, and (2) they know the necessity of keeping up the fertility of the soil. (263.)

Mr. SPEAR says the immigrants coming to Vermont as farm laborers are principally Canadians and Scandinavians. The Swedes and Norwegians are the best help; Poles are also very satisfactory. In a good many cases the Scandinavian immigrants become landholders and permanent residents and make good citizens. They sacrifice social advantages and take farms remote from schools, post-offices, and railroads, which are obtainable for very small prices. There is no marked tendency to colonize or to preserve foreign customs. The immigrants are mostly young men, though some have families who follow later. Scandinavians are also being employed as domestics more than formerly. (402-404.)

Mr. STOCKWELL, of Massachusetts, says the immigrant class takes the first labor at hand, which is usually manufacturing or laborer's work. If the corporations evade the law and bring over immigrants for a low price to do a certain kind of work, that is their first work; but as they leave it they drift into other lines, including farming. Some of them make very good farmers. The Swedes are a very good class of workers and citizens, and some of the Poles have done very well. The Italians are seldom seen on farms in Massachusetts, though they are good workers in other lines. (886.)

New York.—Mr. NORRIS, of Sodus, N. Y., says Germans and Hollanders predominate among the foreigners in that part of the State. The Germans as a rule are quite intelligent, and have had educational advantages, more so than the Hollanders. Foreigners control most of the land of Wayne County; they seem to be born agriculturists and they make good citizens. If one of them goes to a farmer, and stays with him about 10 years, he generally buys the farm and the farmer moves to town. They are better farmers and more thorough in tilling the soil than the Americans. The Hollanders, especially, pick up lowlands, ditch them out and reclaim them, and raise large quantities of onions, celery, etc. (323.)

Mr. Norris says there are hardly any Italians in his part of New York, but he is told that near Rome, where sugar beets are largely grown, Italians living along the canal to work on the canal and railroads are employed, together with the women and children, to weed out the beets. (323, 324.)

New Jersey.—Mr. DYE says the early German and Swedish immigrants who went upon the farms in New Jersey were thrifty and industrious. There are still

opportunities for foreigners to come and establish little homes of their own, especially because of the low price of lands. It would be of great advantage to many of them to enter farming and stick to it rather than to seek employment in the crowded cities. A large proportion of the immigrants who are now coming upon the farms come as transient laborers. The farmer has to teach them their business, usually, and no sooner have they become somewhat efficient than they quit farming. To some extent, however, Hungarians, Swedes, Germans, Italians, and Jews are taking up market gardening and fruit raising independently. They improve as they settle permanently and mingle with native people, although there is some tendency among them to form colonies. Many pieces of land which were considered barren a few years ago are being utilized by such immigrants. (85, 86.)

Mr. COLES testifies that some immigrants are settling in southern New Jersey, but they are usually members of families who are already there. There are a great many native-born citizens of foreign parentage who are very good farmers, economical in their habits, and generally very successful. They are mainly Germans and Irish; there are also several Jewish colonies. Some of the German women work on the farms, and some few of the Irish women. Children of immigrants are purchasing farms to some extent, and some of them occupy farms formerly occupied by Americans. (124.)

Ohio.—Mr. BRIGHAM says there are many sections of Ohio where Germans and French are numerous, although in the particular section where the witness lives the farmers are mostly native. There is a tendency among the foreigners to form colonies, and even to insist on their own language being taught in the schools, but the majority of them are growing away from this practice. (10.)

Michigan and Indiana.—Mr. AARON JONES regards the Swedes, Germans, and Hollanders on the farms of Michigan and Indiana as thoroughly desirable citizens, although they have a tendency to form colonies. The Hollanders are reclaiming the lowlands and making good farms of them. There are also many Poles, and native farmers find it impossible to compete with them in the local markets. They keep up parochial schools. (34.)

Illinois.—Professor DAVENPORT says a great many of the unmarried men employed on farms in Illinois are foreign born, especially German and Scandinavian. They are not, as a rule, from southern Europe. (256.)

Mr. WILSON, master of the Illinois State Grange, says the Germans of Illinois are good farmers. Many of them get more help from the women and children than the Americans do, but otherwise do not raise crops any more cheaply. It costs some of them as much to live as it does the Americans, but others live more plainly and use coarser food, without variety. Their manner of living may depress the local markets somewhat. (246.)

Minnesota.—Mr. HANLEY says there are a great many Scandinavians, Germans, and Irish among the farmers in Minnesota. They work hard and are successful. Where they form colonies they do not become Americanized as rapidly as elsewhere; there are some sections where they can not understand English. (277.)

North Dakota.—Mr. BUDGE testifies that North Dakota is being rapidly settled and developed. The growth is now taking place most rapidly in the central portion of the State, where a rich farming area is being opened. The branch railroads are pushing out into a territory previously unoccupied. An increase of more than 74 per cent in population during the past decade is a growth equalled by but very few States or Territories. The settlers are usually of an excellent character—industrious, and, for the most part, intelligent. Many were farmers in other parts of the country or in Canada. They are rapidly improving their farms, and many who have been in the State a few years possess respectable bank accounts. Towns are putting in electric-light plants and waterworks; public buildings are being erected, and the schools are well supported. Mr. Budge refers to a wonderful increase in the numbers attending the public schools and institutions of higher education. (845, 846.)

Mr. Budge says the immigration to North Dakota comes from Norway, Sweden, and Germany. There are also a few Hollanders, Russians, Scotch, Irish, English, Canadians, and Poles. The remainder come from the States. There are French Canadians in Walsh County, and a few in Cass County. (847.)

Mr. PROM says the population of North Dakota is made up mainly of Scandinavians and Canadians, with some French. They are desirable citizens, except where the French colonize in villages or mix with half-breeds. The village of Olga, north of Milton, is an Arcadian village, where they preserve their customs, speak French exclusively, and have French priests. (788, 789.)

Mr. PROM says the Scandinavians and Canadians work well together in North Dakota. They are generally industrious, and have aided materially in developing the country. In the neighborhood of Milton the Scandinavians predominate, mainly

Norwegians. The Icelanders came first to the neighborhood, then the Norwegians, then the Canadians. The proportion of Americans on the farms is hardly noticeable.

The Canadians come from Ontario. The migratory population which returns to Canada in the winter is not large, probably not 10 per cent of the whole. It is composed mainly of young unmarried men. When they can afford to do so, they marry and settle down in the State and become citizens of the United States.

Mr. Prom thinks that special inducements have been offered by railroad corporations to bring immigrants to the western part of North Dakota. (789.)

South Dakota.—Mr. M. F. GREELEY, of South Dakota, says that most of the hired help in that section are foreigners, and a great many of Mr. Greeley's neighbors are Scandinavians and Germans. In his farmers' institute work in Minnesota Mr. Greeley has found the Scandinavians, Germans, and Canadians the most intelligent, practical, and thorough farmers in the older sections, where they have had opportunity to become thoroughly Americanized. They are almost invariably prosperous after they get acquainted with the country, language, and customs, and, with scarcely an exception among those Mr. Greeley has come in contact with, become landowners. They seem to realize what it means to be without a piece of land in an overcrowded country, and seem determined not to be caught without land a second time. A larger percentage take lands than among the native Americans. The American boys, as a rule, seem to think they can get land at any time, but the foreigner sees plainly that it is going. It is hard to get an American boy to become interested in land. Mr. Greeley predicts that American boys will be the hired men and tenants of foreign landowners in the near future. Yet, he says, there is an increased tendency, particularly among the Minnesota farmers and their sons, to stick to the soil. (929, 930.)

Mr. Greeley remarks that foreign farm laborers seem to be more thorough than native Americans. They seem to expect to do something for what they get, and to do it as it ought to be done. They have made a business of mastering some kind of work and are proud of it. If a farmer wants a good shepherd in South Dakota he generally tries to get a Scotchman or an Englishman. (928.)

Mr. Greeley declares that the people who have come to this country from Scandinavia, Germany, and Canada have greatly helped the agriculture of the Northwest. To take them out of some sections would nearly ruin the country. Mr. Greeley considers the Americanized Scandinavian the best citizen in the Northwest. (930.)

Southern States.—Mr. BARRITT says there is little if any immigration into the Southern States. The cost of negro labor is so low that no other class can compete. Moreover, white men will not work beside negroes, and unless immigrants should form colonies they would largely be forced to associate with negroes. A few immigrants come to take employment in the new cotton factories. (46, 52.)

Mr. HALE also says there is practically no immigration in the South. (382.)

Mr. AGER testifies that there are few immigrants in Maryland, and they are mostly Germans, who are generally thrifty, industrious, and good citizens. He has known them to go to work as farm laborers and in a few years have lands of their own. He thinks their presence has improved the condition of agriculture. They generally settle near the cities and engage in truck farming, which requires less capital than general farming. Mr. Ager thinks there is a grand opening for foreign immigrants in portions of the North and West and in Maryland. There is very fine land between Washington and Baltimore which needs only intelligent cultivation. (106.)

Mr. NALL says there is a drift of thrifty Germans around every city in Kentucky. As a class they work their own farms. (803.)

Mr. PEEK says there are one or two colonies of foreigners in Georgia, but no immigration from the Northern States to amount to anything. (460.)

Mr. STEVENS says there is very little foreign immigration of any kind in Georgia, most of the newcomers being Americans from the North and Northwest, and from the Southern States. This class of immigrants make the most satisfactory citizens. The few foreigners in Georgia are compelled by their surroundings to become Americans, adopting the English language and conforming to American customs.

Among the most thrifty, prosperous, and best citizens of the State are some Germans near Savannah. They are producing large quantities of vegetables, have gone into the dairy business, and are developing the country to a wonderful extent. They do well, and have given the other residents some new ideas. The people of Georgia are not seeking to have common laborers come into the State; what they would like would be to have people come there and settle on the land, help develop the resources of the State, and become citizens. The Southern people are intensely American and cling to American ideas, but they are not unfavorable to the best class of foreigners, some of whom are among their best citizens. (912, 913.)

Mr. Stevens calls attention to the recent landing of a number of immigrants at

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New Orleans, mostly Italians and Hungarians, who are to work, he is informed, in the sugar-cane fields of Louisiana. A few have been secured to work in the coal mines near Birmingham, Ala. (912.)

Mr. POOLE says there is very little immigration of white farmers or foreigners into Alabama. (927.)

Mr. KYLE says the Italians in Mississippi are very successful cotton farmers. They are more energetic and more successful than the negroes. The Italian, however, does not stay long on the fertile lands; he stays until he has enough money to engage in some other business and then drifts back to the city. He is, therefore, not as desirable a laborer as the colored man, who stays on the farm. (467, 468.)

Dr. STUBBS testifies that between 25,000 and 30,000 Italians have been imported into Louisiana in 15 years. There are also some Germans and Swedes. As between the Italians and the negroes, some of the planters prefer one and some the other. Those who have stores prefer the negro, because he will spend 95 cents out of every dollar he gets, while the Italian keeps everything he can get. The French immigration is of a rather higher order. (777.)

New Mexico.—Mr. WHITNEY mentions a settlement in the Pecos Valley of New Mexico where a large area of land was taken up and put under irrigation. Agents were sent from this country to attract immigration, and settlers were brought from Switzerland, France, and Germany to introduce European grapes, develop the sugar-beet industry, and grow fruits and truck crops. The scheme failed completely because the soils, water, and climate were not suited to the industries that were started. The water is very alkaline. The failure was due also to the unfamiliarity of the people with the conditions. (860, 861.)

California.—Mr. TURNBULL regards the Chinese as undesirable inhabitants. They wear their own dress instead of adopting ours. They do not seem to adapt themselves to the customs of the country. By reason of their gambling and from other causes, the 35,000 Chinamen in San Francisco give the police more trouble than all the rest of the population. It is almost dangerous to go through Chinatown in the daytime without being well armed or accompanied by a policeman. (976, 978.)

Mr. Turnbull says, however, that the Chinese can learn very readily if they have the opportunity. They are brighter than the Japanese. The skilled Chinaman is as bright as any man. They are also very steady and punctual, and stick close to their work. They surpass many white men in these ways. In some degree and in some classes of work they may be preferred to white men on this account, but in general they are not. A white man commands higher wages than a Chinaman in California for the same kind of work. Mr. Turnbull places the difference at 50 to 75 cents a day. Skilled Chinese workmen are employed in sundry trades, tailoring and shoemaking, and various manufacturing establishments, which they maintain in a small way. Chinese labor is employed on the farms, especially in the fruit-picking time, and in the sugar-beet industry. They are on the railroads as section hands and in construction work. (976, 978.)

Mr. Turnbull states that Chinese women are brought to California and sold and kept in a kind of slavery for purposes of prostitution. The Chinese merchant is entitled to bring his wife. He may bring one of these women and sell her; that is one way that they get in. The practice has existed for at least 10 years. The United States authorities have recently taken hold of the evil, and it is hoped that it will be suppressed. (978.)

Mr. NAFTZGER testifies that Chinamen have in many cases become owners of fruit orchards, and are industrious and frugal; but they live alone, without any family relations. In a few instances only have Chinamen married and become permanent settlers, and they are all in the cities. (955.)

Mr. Naftzger says many people in California prefer Chinamen as domestics, because the Chinaman, as a rule, will do more than any woman, and does not object to any part of the work. He is usually faithful, and seldom cares to run about much. Chinese domestics get from \$1 to \$1.25 a day, or from \$30 to \$35 and \$40 a month. (955.)

Mr. Naftzger testifies that the Chinese and Japanese in California have no social status whatever; they are not regarded differently from the Indians or Mexicans in that particular. Mr. Naftzger has never observed that they show any desire to be treated as social equals. (954.)

Mr. Naftzger thinks Japanese labor is in less favor for common work than Chinese. The Japanese want house places and light jobs, though some of them do such work as fruit picking and packing. They want to live in a little better style than the Chinese, and are more particular about the class of work they do. They dress exactly like Americans, and adopt American habits more than the Chinese. Many

of the Chinamen also wear American clothes, doubling their queues up under their hats. Few Chinese and Japanese are born in this country. (967.)

Mr. Naftzger testifies that the Mexicans in California are chronically indolent, and will not work as long as their stomachs are full. The Spaniard is a somewhat different type. (957.)

H. Colonization of foreigners.—1. Preservation of foreign customs and languages.—Mr. STOCKWELL, of Massachusetts, says the Italians are very much inclined to congregate together. He does not think that tendency general among the immigrants in Massachusetts, however. The children attend the schools, learn English, and desire to associate with the children of the natives. The French Canadians become naturalized very soon after arrival, and take an active part in public affairs. The number of immigrants is not sufficient to furnish any opportunity for them to do otherwise than go into the public schools, except the parochial schools, over which there is a certain oversight. (886.)

Mr. NORRIS, of New York, says Hollanders especially are quite clannish, a little more so than the Germans. There is a tendency for them to settle in little neighborhoods. Lyons, the county seat of Wayne County, N. Y., is controlled, politically and otherwise, by the Germans. (323.)

Mr. WILSON, master of the Illinois State Grange, says there is a tendency among the foreigners in Illinois to congregate in colonies. They do not become Americanized as quickly as where they are distributed among the native born. (246.)

Mr. POWERS says colonies of Germans in the Northwest, especially when settled under semireligious auspices, maintain the foreign language; while Scandinavians seek to put their language behind them. Some of the German colonies insist upon devoting a part of the day in the public schools to the study of the German language. (180.)

Mr. M. F. GREELEY, of South Dakota, says there are in the Northwest communities of foreigners who are inclined to colonize and preserve their language and habits, but the better class of foreigners prefer to be blended with the Americans, which is a mutual benefit. The colonizing is bad for the immigrants and for the country. (930.)

Mr. BUDGE says there is not much tendency on the part of the immigrants in North Dakota to colonize to preserve their language. The Scandinavians have tried to build a Scandinavian school, but the boys all go to the university, where one-third of the students are now Scandinavians. There is a chair of Scandinavian at the university, but the Scandinavian boy very seldom studies Scandinavian, though some Americans do. English is the language taught in all the common schools. (347.)

2. Beneficial results of colonization.—Dr. CROWELL says a large part of our agricultural labor has come from colonization. The colonies have taken up tracts of land, selected by carefully chosen agents, as a rule, and thereby laid the foundation of economic prosperity. They preserve their agricultural instincts and abilities on a much higher level than the American farmer who has moved West. The Pennsylvania Dutch, the best farmers in the United States, have maintained their industrial enterprises amidst all changes, so as to increase their wealth and keep up their standards, while other sections of the country have lost ground. They have always been able to make good profits out of the land, although the price of land in Lancaster County is high. (333.)

Dr. Crowell attributes the success of the Pennsylvania Dutch as farmers largely to the fact that they have not taken part in the general tendency to waste their resources in luxuries. They put their surplus into their farms or into the education of their children. They sow such crops as succeed each other in the course of a year, so that no crop suffers for lack of attention when it is ready for harvest. (334.)

Dr. Crowell calls attention to the same strong colonial solidarity and fidelity to the interests of agriculture among the Scandinavians in Minnesota and the West. The farm unit is the life, center, and soul of the community. He attributes the high level of agriculture in the Northwest and the prosperity of these farmers to the prevalence of that colonial solidarity which resists any tendency to impair economic efficiency. He also mentions the Huguenot colony of North Carolina, which is making itself felt in the same manner. This colony brought its standards of agricultural energy from the valleys of the Alps. These foreign colonies, he says, have been the mainstay and bulwark of progressive agriculture. The Scandinavian farmer has had centuries of training in the effort to make a dollar go as far as possible, as he had to do on his little patch of land in Scandinavia, and that he is more given to continuous labor than the American farmer. Dr. Crowell counts the economic traditions of the European farmer as among the most valuable assets of American agriculture. (334, 335.)

Dr. Crowell says technical education amounts to practically nothing as far as the

Pennsylvania Germans are concerned. He has understood that the Scandinavians in the Northwest are very much more apt to avail themselves of such advantages; yet the German colony in Pennsylvania is more advanced in agriculture because it is nearer large markets and responds readily to the demands of the market. (337.)

3. Assisted colonisation.—Mr. DYE says there are in New Jersey, especially in the southern part of the State, a number of colonies of Jews which have often been aided by philanthropic effort. They are mostly occupied in agriculture. A man will be given perhaps 10 acres of ground, a little house built for him, and he will be aided and instructed in raising certain crops, with the understanding that if he is industrious the property can be made his at a low price in the future. Each of these settlements occupies perhaps several hundred acres, the aggregate amounting to thousands of acres. Their progress has been slow, but on the whole they are succeeding very well, although the possibility of securing outside aid has some tendency to foster indolence. The system, in Mr. Dye's opinion, is of doubtful benefit to the country. (85, 86.)

1. Encouragement and restriction of immigration.—**1. Restriction advocated.**—Mr. BRIGHAM, Assistant Secretary of Agriculture, is inclined to believe that this country has been too generous with its public lands and other inducements for foreign immigration. The competition of the new lands opened up by them has been a serious injury. The railways and steamship companies have advertised these free lands and used other inducements. The witness would not favor excluding immigrants who are likely to become good citizens, but believes in tests as to their intelligence and moral character. He admits that the immigrants who go on farms are mostly of a relatively high class. (10, 11.)

Mr. DYE, of New Jersey, also believes that this country has offered undue inducements to immigrants, the public-land policy especially having been too generous. Railway and steamship companies have advertised public lands and encouraged immigration. For the present immigration should be greatly restricted, educational and property tests both being applied. If this were done the labor problem would soon settle itself. (86, 87.)

Mr. POWERS suggests the restriction of immigration on the basis of education and moral character. (182.)

2. Encouragement of desirable immigration suggested.—Mr. NORRIS would rather encourage than discourage the immigration of the classes of foreigners that have settled in New York State. (323.)

3. Chinese exclusion act.—Mr. NAFTZGER thinks the people of California, even including the fruit growers, (see III F 1) generally favor the extension of the Chinese exclusion act. It is regarded as a safety valve. They have no disposition to force out of the country those who are here, who are a peaceable people and seldom disturb public order; but they have no desire for an increase of the Chinese population. (954, 955.)

Mr. TURNBULL says that if the Chinese exclusion law is not renewed the white labor of the Pacific coast will come into competition with the labor of 600,000,000 Chinamen. The cheapness of the Chinese labor already in California is such as to shut out the unskilled labor of white men. The people of California are overwhelmingly in favor of the continuation of the exclusion law. No man could be elected to office on any ticket if he opposed it. (976, 977, 979.)

4. Distribution of immigrants.—Mr. M. F. GREELEY thinks the distribution of immigrants, if it could be made rather general so as not to colonize them, would be a benefit both to the country and to the immigrants. He does not think there would be any difficulty in placing the immigrants that would be brought into the farming districts of the West. Any sober, land-loving man, with a little experience in farming or stock raising, would have no difficulty at present in working into steady employment. (930.)

V. THE MOVEMENT TO THE CITIES AND THE WEST.

A. Abandoned farms in Eastern States.—**1. Amount of land abandoned.**—Mr. WHITNEY, Chief of the Bureau (formerly Division) of Soils in the United States Department of Agriculture, says large areas in the New England States have been abandoned; large areas in the Southern States have been practically abandoned and given over to waste, and large areas in the Far West which were once settled have been abandoned or are held in very low esteem. (859.)

Mr. Whitney says agriculture has been at a low stage in New England, particularly during the last 10 or 12 years. Many tracts have been abandoned and many people have moved away. These conditions are due to causes other than the poverty of the soil, and there is no reason why the agriculture of that country could not be built up and made more profitable than ever by adjusting it to new conditions. (867.)

Mr. BACHELDER says the abandonment of farms in New England began about 50 years ago, and continued until about 10 years ago. It was due primarily to the development of the West, which reduced the profit of New England farms and drew young men away, and also to migration to the cities for the sake of social enjoyment. Most of the farms abandoned are still owned by individuals, and the taxes paid; they have not reverted to the State, as some suppose. Ten years ago there were in New Hampshire about 1,000 farms having buildings suitable for occupancy which had been abandoned, out of a total of 32,000 farms in the State. Besides these a good many farms in more distant and mountainous places were so completely abandoned that no buildings remained, and these can probably no longer be made profitable for cultivation. (40, 41, 43.)

Mr. SPEAR testifies that there are not as many acres tilled in Vermont to-day as there were 40 years ago. A great many of the farms remote from town are now used as pastures. Some are being devoted principally to the growth of timber. (408.)

Mr. FLANDERS does not know of any abandoned farms in New York. (999.)

Mr. COLES, of Woodtown, N. J., says there are no abandoned farms in that section. (124.)

Mr. WEIDENBURN says some land has been sold to the State for taxes in Virginia, but he knows of no abandoned land. The farmers' houses are generally occupied. (622.)

2. Causes of abandonment.—Mr. WHITNEY names as the first cause of the abandonment of lands the development of new areas and new agricultural industries, and the competition of the more easily tilled lands of the West. The opening up of the grain-producing States of the West, particularly the wheat lands of California and of the Red River Valley, and the introduction of white burley tobacco in Ohio and Kentucky, have had a great influence upon the agriculture of the Eastern States. As the second cause he names the increase of factories and the demoralizing effect of factory life and factory wages upon farm people. With the feeling that the old conditions have changed, there is a lack of that business planning and management that would enable the farmers to fit their farming to new conditions. Among other causes contributing to the abandonment of lands, Mr. Whitney mentions unfortunate ventures in bringing people from a distance to settle regions with which they are unfamiliar; the selection of localities in which the climatic conditions are unfavorable; in the West, the scarcity of water in the arid regions, excess of minerals in the water or soils, and the deterioration of the ranges and consequent injury to the cattle industry; flooding by storms and tides; the difficulty of maintaining proper physical conditions in the soil, e. g., the trouble and expense of clearing the stones off the New England fields; cheap transportation and discrimination in freight rates against certain localities; and the difficulty of getting suitable farm labor for truck farming. (860-868.)

Mr. Whitney thinks that in the New England States, even more than in the South, the restless desire for material advancement and the higher education has been felt, because of the greater density of population and other conditions. Another contributing cause to the tendency in New England has been the demoralizing effect of the summer boarders upon agriculture. Moreover, the severe climate has been against the development of agriculture in some cases. The development of the West, and the lower price of farm products, brought about by the development of transportation systems, together with the increase in the number of factories and the restless desire of the people to enter the world of commerce and industry, have contributed in a marked degree to depreciation of land values in New England. (870.)

Mr. Whitney says that soils in Connecticut have been abandoned because of deficient rainfall, although there is a rainfall of 40 or 50 inches. The Windsor sand, which occasionally produces very fine tobacco, is so coarse and leachy that it dries out, and is subject to such disastrous droughts that the conditions are favorable only about 2 years out of 5. The expectation of getting a crop even 2 years out of 5 has induced many farmers to hold on until finally there have been successive seasons of failure, and they have had to give up. These coarse, sandy soils are found all the way along the Atlantic seaboard and the Gulf, and many farms have been abandoned on these areas. (862.)

As an instance of failure, due to unfavorable climatic conditions, Mr. Whitney mentions the conditions in Kansas and in portions of Nebraska and Colorado, settled during the boom times of 15 and 20 years ago. Cotton mills were put up in semiarid regions of Kansas and Nebraska, and are still standing as monuments to the unfortunate ventures that were tried. (861.)

Mr. BACHELDER says that chief among the causes of abandoned farms is the development of the West, and the opportunity it offered for young and energetic men. There has also been a desire for more social enjoyment than was available on the farms, and young people have gone to cities and villages for the reason. (40, 42, 43.)

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Professor BAILEY, of the Agricultural College in Cornell University, thinks that many farms that are now abandoned would never have been settled if the more fertile lands of the West had been accessible at the time. All the accessible and more fertile lands of the East are still good farming areas. While the abandonment of farms in parts of New York and New England may work hardship upon the present generation, it is a necessary economic change and will in the end produce good results. (1012.)

Mr. AGER attributes the large amount of abandoned land in Maryland to the following causes: During the period of slavery the land was owned in large tracts, and when the slaves were freed the planters, thinking that they could not do anything with hired labor, gave up the attempt to farm their lands and mortgaged it to get means of support. In this way the land fell into the hands of merchants in Washington, one grocer owning perhaps half of Prince George County from having to foreclose mortgages. Another cause is the exhaustion of the land by continual cropping. The abandoned lands in Prince George County sell from \$6 to \$10 an acre. They are being taken hold of and reclaimed more than formerly. All they need is intelligent cultivation. Dr. Ager once remarked to a gentleman near Marlboro that the land should be sown to clover, but he replied that the farmers did not want to raise clover when they could get fertilizer in Baltimore by signing a note. (109.)

Dr. CROWELL says that when agriculture reaches the point where the returns on capital and labor are declining, land will be thrown out of cultivation unless new methods or new agencies are introduced. In the East, where the productivity of the soil has declined to the point where it ceases to compete with the richer soils of the West, it has frequently passed out of cultivation until a new kind of agriculture, such as market gardening, has been introduced. That has taken place in Massachusetts, New Jersey, Pennsylvania, and along the Eastern coast. The decline in productiveness is no proof that the land is not going to be a profitable field of investment in some direction. (344.)

3. Purchase of abandoned farms in New England.—Mr. WHITNEY thinks there is already a reaction going on against the abandonment of farms in New England. A considerable portion of the land has been taken up in recent years by French Canadians, and many abandoned farms have been annexed to neighboring farms, so that their cultivation has generally been continued. (866, 867.)

Mr. BATCHELDER says the State of New Hampshire began the movement, which was followed by other New England States, of advertising these abandoned farms for sale and otherwise seeking to bring them back into use. Three-fourths of those in New Hampshire have been taken up, and the movement in the other States is in the same direction. Most of the persons who have taken up the farms are Americans, many of them farmers and residents of New England who had gone West, and in some cases people returning from the cities. A considerable proportion of the farms have been taken by people of wealth for summer residences. Considerable investments have been made in improving farms of this class, so that in some cases the assessed valuation of towns has been increased. The prices of land have varied greatly according to the distance from the railroad, the fertility, and in many cases the scenery. (41, 42.)

Mr. STOCKWELL says there are partially abandoned farms in Massachusetts, but the State has been doing something, with success, toward repopulating them. They are being sought for, and the outlook is brighter. The last time a new edition of the catalogue of abandoned farms was prepared, the number of returns was very small in comparison with the earlier editions, demonstrating that agriculture is improving in Massachusetts.

Mr. Stockwell says the abandoned farms are being taken up, not by recent immigrants, but the immigrants of years ago who have become citizens. Of 269 purchasers, 159 were residents of Massachusetts, 14 of New York, 10 of Connecticut, 5 of New Hampshire, and the rest scattering or unknown. So far as he can judge 151 were Americans, 14 Irish, 8 Germans, 7 French, 4 Scotch, and the rest unknown. Massachusetts was largely her own purchaser. During about 2 months in 1899 73 requests for catalogues were received by mail, besides many individual calls at the office. Twenty-nine of these requests were from Massachusetts, 17 from New York, 5 each from Connecticut and Pennsylvania, 3 each from New Jersey and Vermont, 2 from Nova Scotia, and 1 each from New Hampshire, Canada, North Carolina, Michigan, Ohio, Texas, Illinois, and Tennessee. Those who have gone in past years from Massachusetts to the Far West frequently write as to the conditions, and desiring to return. (893.)

Mr. Stockwell says that a few years ago land was so cheap in Massachusetts and the adjoining States that people, seeing that that condition could not continue, bought it for investment. There is now more desire to retain the farms in Massachusetts, and there are practically no abandoned farms. (901.)

B. Migration to cities.—1. Prevalence of the movement.—Dr. CROWELL thinks the general tendency of intelligent farmers' boys has been toward the professions and business in the city. Many are drivers of trucks, or street-car drivers and conductors. The Navy has enlisted a considerable number. As a rule the farmer's boy gets a greater number of days' employment and a greater profit in the city than in the country if he finds employment. As a rule he makes a much more efficient employee than the city-bred boy, and is naturally selected for his fidelity and perseverance. Dr. Crowell thinks there is nothing alarming in this migration to the cities if people are free to go and free to return, and if the dollar of capital put into the farm holds out as good a prospect of profit as a dollar put into city enterprises. In France farmers' boys go to the city and work to accumulate capital, and then go back and buy land to fall back upon when work is slack, or as they grow older. In this country that process has not yet begun to develop, but is likely to grow out of the development of transportation facilities from city to country. (338.)

Mr. POWERS says that in the exodus from the farm to the town there is a larger proportion of farm owners than of farm laborers. They have a little money and are in better shape to avail themselves of the opportunities of the city. They go to the cities and make the backbone of the Republic. Many of the leading men of the cities were originally farmers. The movement to the city is no new thing; it has been going on for centuries, and will continue. (178, 179.)

Mr. HALL does not think the tendency to go to villages and towns is any greater among the whites than among the blacks in the South. (401.)

Massachusetts.—Mr. STOCKWELL, secretary of the Massachusetts State Board of Agriculture, says that 40 years ago the hill towns were engaged in various manufacturing enterprises, and the land was regularly laid out in fine farms. Business of all kinds was prosperous. The farmer was making money and bringing up children whose influence is now felt throughout the Union. The decline of the manufacturing industries in the hill towns is greater than the decline of agricultural industries. The proportion of abandoned wagon shops, shoe shops, sawmills, etc., which were once the life of flourishing villages, has outstripped the abandonment of the farms, and much of the so-called decadence of the hill towns is due to the changed methods of manufacturing industries, which have concentrated the work in large plants with improved machinery, thus drawing the workmen to the large towns. (888.)

New Jersey.—Mr. COLES, of New Jersey, says a great many of the children of farmers leave the farms, but the farms in his section are all occupied. If the farmer has two or three sons, he can not find room for them all unless he cuts up his farm or buys a neighbor's. It is only now and then that one who leaves the farm for another occupation succeeds better than the one left on the farm. (125.)

Mr. KETCHUM, of Pennington, N. J., says the tendency with the brightest and best young men in that section is to leave the farms and go to Trenton or other cities to enter the professions or mechanical pursuits. Agriculture is considered too slow and too laborious a way of making money, and the difficulty experienced in getting reliable farm help has led a good many to give up agriculture. (133, 138.)

Pennsylvania.—Mr. HAMILTON testifies that at the end of last century nearly 89 per cent of the people of Pennsylvania lived outside of incorporated towns and cities, and almost the entire number were engaged in agriculture in some form. In 1890 only 44 per cent lived outside of incorporated towns and villages, and only about 21 per cent are now engaged in agriculture. (365.)

Minnesota.—Mr. MORAN, of Graceville, Minn., testifies that the tendency of young men to leave the farm is increasing. (709.)

West Virginia.—Mr. CLOHAN, of Martinsburg, W. Va., says farm labor seems to be less efficient than formerly, because the most intelligent young men leave the farm and go to the city, where the hours of labor are not much more than one-half as long and the wages fully one-half better. (591, 592.)

Kentucky.—Mr. NALL testifies that there is a tendency among the agricultural laborers of Kentucky to seek other employment. Being largely colored, they like to get together and live in groups in the suburbs of a town. Many are also drifting to large cities, where the factories employ them at better wages than they get on the farm, though the cost of living is also greater. The handling of tobacco is an important line of work in the factories employing many of these hands, and they seem to be fond of that kind of work. Every factory employs some teamsters, etc., at least. A colored teamster makes pretty good wages. (804.)

South Carolina.—Mr. HAMMOND, of South Carolina, says that the census showed 29 per cent of the population of his State engaged in agriculture in 1870, 30 per cent in 1880, and only 20 per cent in 1890. His observation confirms the conclusion that the agricultural population is proportionately decreasing. His own township, a purely agricultural community, decreased in population by several hundred between 1880 and 1890. Five families left in the year 1900. (816.)

Georgia.—Mr. PECK, of Georgia, says prices have not been remunerative, and there

is a disposition on the part of both white and colored and both laborers and landowners to get away from the farm to other employment. In some sections of Georgia the farms are turned over entirely to the tenants, the landowners having left. The majority of men in Georgia would go into other business if they could get out the capital they have invested in farms. (459, 460.)

Mr. STEVENS testifies that within the last 50 years the population of Georgia has increased 144 per cent; the 5 largest cities in the State have increased in the same time 427 per cent, and the urban population of the State as a whole at an even greater rate.

Alabama.—Mr. POOLE, Commissioner of Agriculture of Alabama, says there is a great disposition among the young white men of the South to leave the farms and go to the towns. The same disposition exists somewhat among the colored people, because they are rather imitative. There is a disposition among the younger negroes of the Black Belt to go to the mining districts for higher wages, but after working there a few months they generally drift back to the plantations. (919, 922.)

Mr. DILLINGHAM, of Alabama, says the negro boys and girls are beginning to drift to the cities to help fill the slums. (167.)

Tennessee.—Mr. GODWIN, of Tennessee, says the best labor is in the cities. Young, strong men go to Memphis, where they can get better pay than farmers can afford to give. The planters get the old men, women, and children. (476.)

Louisiana.—Dr. STUBBS testifies that agricultural laborers are being lost to Louisiana in considerable numbers, particularly along the railroads and rivers. They go to villages and cities or to work on the railroads and levees. Dr. Stubbs has found 2,500 colored men working on the levees at Cairo, Ill., a great number of whom were from Louisiana. (770.)

Cotton-mill laborers in the South.—Mr. HAMMOND says that the white people who are now in the Southern cotton mills were not before doing work in competition with the negro. He thinks they were largely managers of little farms. (833.)

2. Causes of the movement.—Professor DAVENPORT enumerates the following fundamental reasons for the migration of farm laborers to cities: (1) A large proportion of humanity is strongly desirous of an exciting environment; (2) farm labor is more exacting in the range of ability it requires than most of the labor in the city, which is so organized that the labor of any one individual is comparatively simple; a man on a farm is expected to do a great variety of things, and is left a good deal to his own resources; (3) the wages paid in the city are apparently higher; there is a strong tendency to compare money wages in the country with money wages in the city, and to disregard the value of board; (4) the country has experienced a wonderful development along mechanical lines, and the American is naturally a mechanic, while until very lately farming has hardly been considered a scientific or skilled occupation; (5) a great many young men feel that farming is degrading. (257, 258.)

Mr. HAMILTON mentions the following causes for the growth of cities and the diminution in the percentage of agriculturists: (1) The hope of gain and opportunities for advancement the cities present to young men; (2) the absence of suitable rural schools; (3) the difficulty of access to the country because of poor roads. (365.)

Mr. STOCKWELL explains the migration of agricultural laborers to cities substantially as follows: (1) Farm life is secluded, and there is a great desire to huddle in the larger centers; (2) the feeding of stock and other chores makes the day longer on the farm than in a mill; (3) agriculture is a strenuous life, strong, healthy labor, not sitting on a stool and guiding machinery. "Too many prefer the stool, or, if life must be strenuous, wild cats and wild oats are more attractive." Mr. Stockwell fears that hard labor is not as attractive as formerly. (885.)

Mr. Stockwell dates the beginning of the decline of New England agriculture from the concentration of industries in large centers. Twenty or forty years ago Massachusetts was alive with little industries, and on every water power was a mill or some little manufactory. The shoe business was done in the various towns, the young people from the farm houses doing the work. This all brought a certain amount of life, and the home market brought a certain amount of money to the town, and everything was prosperous until the industry moved away to a larger center. It took with it the young laborers, and the support given to the church and the school; in consequence, the farmer had the whole burden to bear, adding very greatly to his taxes, and the discouraging fact of his sons and daughters going away led to his going after them and the farm being abandoned. (889.)

Mr. J. C. HANLEY, national organizer of the National Farmers' Alliance and Industrial Union, gives the following reasons for the inclination of young people to leave the farm and seek employment in the already overcrowded cities: (1) The ambition to achieve greatness and prosperity, which is deemed impossible on the farm; (2) the monotony and irksomeness of farm life and the yearning for the amusements and

excitements of the city; (3) the drudgery and small pay on the farm in contrast with the better wages and shorter hours in the city; (4) the lack of home comforts and pleasant surroundings. (275, 276, 285, 286.)

Mr. POWERS says that a given number of men can produce as much food as twice the number could 50 years ago; something must be done to give the extra men employment, and they find employment in manufacturing, transportation, and other industries. The increased productivity of labor on the farms makes it possible to sustain the life of great numbers, and the progress of these others in turn helps the farmer. With some people the poorer facilities for education and inferior mail facilities in the country have something to do with the tendency to go to the cities. (174.)

Mr. BRIGHAM calls attention to a considerable migration to the city, not from necessity, but because men enjoy employment in the city and the company which they secure. There is a marked tendency for the boys brought up on the farm to seek other occupations. They often desire to be doctors, lawyers, or merchants. This tendency is partly due to a failure to appreciate the comforts of farm life, especially the advantage of supplying a large proportion of the necessities of life directly, without purchase. It is the aim of farmers' organizations to make farm life more attractive and profitable so as to keep young men on the farm. (7, 8.)

Mr. WHITNEY says the social conditions of New England have changed in the past few years. The growth of the factory system, the increase in wages, the increase in the variety of articles considered necessary for comfort and health, the general increase in the cost of living, the general feeling of discontent, and the unwillingness to remain in the laborious life of the farm have all had their influence. Of all of the causes that have contributed to the abandonment of lands in New England, no factor has been more potent than the success of individuals in commercial and industrial lines and the apparent ease and luxury of their lives as compared with the laborious and simple life of even the successful farmer. (866.)

Mr. Whitney adds that there is a general feeling among the farmer boys in New England that they want the higher education and want to take up the professions. Young men have a great ambition to get into electrical work on account of the high wages, and there is a desire to go into commercial and industrial lines rather than to remain on the farm, except in the communities in which special crops and special agricultural interests are being developed. (868.)

Professor DAVENPORT says the rapid development of the country seems to require the frequent meeting of men interested in large enterprises, and thus tends to form centers of population favorable to the rapid conduct of business. (258.)

Mr. KETCHUM, of New Jersey, says the tendency of the best farm labor, such as was available 30 or 40 years ago, especially in the case of Americans, has been to leave the farms and go to the city, partly because they could get higher wages, and partly because the members of their families could get work at fair wages. These causes, together with social advantages of the cities, have drawn the best American labor away for a radius of 30 or 40 miles about the city, and after they are in the city with their families they can not be induced to return. (137.)

Mr. DYE attributes the movement partly to the depression of agriculture, partly to the hope, often unrealized, of securing high wages and short hours in the city. Young men hope to get rich quickly by going to the city, but statistics show that a large proportion of them fail to make money by doing so. The desire for the social advantages and amusements of the city is also a strong influence. Young men and women also tend to consider farm labor unpleasant and dirty, and want to go into something more stylish. (84, 91, 92.)

Mr. GREELEY, of South Dakota, says many people rent farms that are not good land, or think they are farmers because they have bought a piece of land, and make failures of farming and become discouraged. There is also the idea that the farmer must be a drudge—must get up earlier and work later than other people. Many boys and girls are worked so hard on farms that the thought of farming is distasteful forever afterwards; but this is all wrong, and the advanced agriculture of to-day warrants as much leisure and as pleasant homes as any other profession. The farmers are adopting better machinery and more reasonable hours. Not long ago, to be considered a good farmer one had to be up with the whole family at 4 a. m., and to keep them on the jump until 10 p. m. was considered especially commendable; but to-day the reverse of this is becoming true in the best farming sections. The man who, after his land is paid for, finds it necessary to get his family out of bed at 3 or 4 in the morning in order to make a living is not an up-to-date farmer. He generally lacks in management or intelligence, or is miserly. (935, 936.)

Mr. WHITE, of North Carolina, thinks perhaps the leading reason for the migration of negroes to the cities in North Carolina is the oppressiveness of the landlord and

tenant act, which reduces them to serfdom. There is nothing for them to look forward to on the farm, and they lose hope and go to the cities. (428.)

Mr. REDDING thinks the disposition of a young man brought up on a farm is to go to the city, where wages are better than in the country. Agricultural labor is not well paid, and even those farmers who are making money and paying fair wages can not always keep their sons on the farm. Under the old régime the sons worked on the farm, and when 21 or 22 years old married a farmer's daughter and were given part of the land, or were helped to buy a farm close by, and given a couple of mules and a few negroes. It was an easy matter for a farmer's son to get a farm. Farmers can not now set their sons up as they used to, and young men do not like the idea of starting out with nothing, so if they have a little education they will go to town and hire out at almost anything. They are paid off every Saturday night or twice a month, while the farmer has to wait until his crop is matured, and unless he has credit has a very hard time in the meantime. There are scarcely any social opportunities in the country; the roads are bad; post-offices and churches are at a distance; there are no electric lights and street railroads, shows, and pretty things to see. These, Mr. Redding says, are what attract young men to town more than anything else, and after they see the railroads and electric lights, and enjoy the social functions, etc., they dread work, common clothes, and lack of style. (449, 451.)

Mr. GEORGE attributes the migration of young men away from the farms to the monotony and drudgery of the farm as compared with the attractions of city life. Mr. George says that until the farmer's son is educated in his pursuit, as other classes are for their callings, he can not have a real interest in the farm; ignorant labor is drudgery. The agricultural colleges do not receive more than one in a hundred of their students for the purpose of educating them in the conduct of farms. (224.)

Mr. WILSON testifies that the native-born citizens of Illinois, a great many of whom were formerly agricultural laborers, have largely gone into the towns, where the financial and social conditions were considered better. He thinks there is not as much feeling that other vocations are more respectable than agriculture as there was 20 years ago. The young farmer of to-day believes he is as good as any other man, but perhaps thinks that other vocations offer a better chance to rise. Mr. Wilson mentions the presence of foreigners as one cause of the migration of the native born to cities. (243, 246.)

Dr. CROWELL says that in many sections of the country the process of exhaustion of rural capital has gone on until men could not borrow any capital to keep up their farms, and had either to take up new lands where little capital and labor were required, or to go to the city and work for wages. This process is not found in the colonies of foreigners. (334.)

Dr. Crowell adds that the economic traditions of the New England farmer are entirely different from those of the European farmer. In the former there is much more of the speculative, more of a disposition to meet demand through the distributive system rather than to wait for the productive processes of nature. He is a man of the city rather than of the country. (335.)

Referring particularly to the South, Dr. Crowell says the rewards of manufacture and of working for wages in factory villages are so great comparatively that as few people remain on the land as possible. (335.)

Mr. NUNNALLY attributes the tendency of young white men in the South to leave the farm to the low prices of products. (457.)

Mr. GRAHAM testifies that the cotton mills have drawn heavily upon agricultural labor in the South, and that a man will buy a piece of land, rent it to another man, and come to the cotton factory to make the money to pay for it; not because factory labor is preferred, but he gets cash pay every Saturday night. The poor returns from farming and the large families help to induce the movement to factories. Mr. Graham says the movement to the factories has a bad effect in some instances, as where a man puts his family into the factory and spends his time loafing, but that is the exception. (435.)

Mr. NORRIS says Americans have an idea that speculation is more congenial to them than work on a farm; so they go into speculation and leave foreigners to do the work, "and the first thing they know they have speculated out and the German owns the farm," and the original owners move to town. The American has a family of children who think they are too nice to work with their hands, and must teach school or work in a store, or something of that kind. (323.)

Mr. M. F. GREELEY says so much improved machinery has been introduced in Minnesota and the Dakotas that there is very little steady employment, and farm laborers can not rely on employment the year round, so those who like to have steady employment go into other occupations. (928.)

Mr. NALL testifies that there is a tendency among the land owners of Kentucky to leave the land in the hands of tenants and drift to the cities, where most of them

buy houses. Mr. Nall attributes this tendency to the advantages of the schools and churches, and to the lack of household help in the country. A good many Kentucky farmers have moved into Louisville and other cities and towns to get the benefit of high schools for their children. (814.)

Mr. STEVENS attributes the tendency of the agricultural class of Georgia to drift into the cities largely to the better educational advantages in the towns, but says the young white man goes to the city because he believes he can make a larger fortune in a shorter time there than by farming, while the negro drifts into town by the promise of a little higher daily wages, forgetful of the fact that the increase in cash does not nearly make up the items furnished him free of cost on the farm. The result is that many become loafers, beggars, and criminals. (908, 915.)

Mr. MORAN, president of the National Grain Growers' Cooperative Association, says there is nothing in our school text-books that will show the farmer's boy the nobility of his calling and the greatness of the enterprise his father has engaged in; so instead of being proud of his occupation he seeks to throw off the yoke and go to the city to get away from the drudgery of the farm and enjoy city life. The hours of labor on the farm are long, from early dawn until dark, and often into the late hours of the night, and the remuneration very small. The boy on the farm is deprived of good clothing and of reasonable time for leisure or pleasure, and is deprived of schooling to work on the farm during the busy times of seeding and harvest. (709.)

3. Remedies.—Mr. HAMILTON believes that the introduction of a better quality of rural schools and of good roads would keep in the country many who would otherwise leave, and bring into the country from the towns and villages large numbers of the better class of people, who would prefer the country if it were made accessible and the comforts and conveniences could be had in the country. Such conveniences as good roads, inexpensive lighting apparatus, and the placing of water and heating apparatus in houses are taking many thousands of people out into the country. (365.)

Mr. STEVENS's remedy for the drift to the cities is better rural churches and schools, more attractive homes and tenant houses, improved roads, and better mail facilities. (906.)

The remedy Mr. NALL suggests for the migration of the colored laborers to the cities is to make them happier in the country; to recognize their social interests; to make their homes more comfortable, and regulate their morals; to establish schools and churches, and improve their condition and ambition, if possible, so as to encourage the better class to stay in the neighborhood of large farms. (804.)

Mr. HANLEY, being asked to suggest a remedy for the migration to the cities, expresses the belief that if farming can be made profitable the social conditions of the farmer will be reversed. He will have the necessities and some of the comforts of life, perhaps have his children educated in some of the accomplishments, and have books and papers in the house. (275.)

Mr. M. F. GREELEY, of South Dakota, thinks the only way to cure most of those who get "city struck" is to have them live in the city at a fair salary and find themselves in debt every Saturday night and at the end of the year. A few years of this generally sends them back to the farm in a frame of mind to appreciate it; but too frequently there is no farm to go back to. (934.)

Mr. POWERS says that to send a man who knows nothing of farming into the country as a farmer is to inflict a great injury upon the community and upon the man. The only way to take such people out to the farms is by giving them a schooling of 3 or 4 years. Whenever there is an overpopulation of the city and a deficiency in the country, however, a certain number of people can be utilized as farm laborers. (184.)

Mr. Powers thinks that so far as the tendency to seek other employment needs a remedy, it will be found in a wider education of farmers in the science and practice of agriculture. A wider knowledge of the factors of business success is needed on the farm. As the farmers are educated and acquire intelligence, foresight, and energy, and see that the farm gives opportunity for the exercise of these virtues, any undue movement to the cities will be checked. (172.)

4. Reaction from the movement.—Mr. SPEAR testifies that the great drift of people from the farm and from the State that has characterized the Eastern States in the past has largely passed away during the past decade. He thinks the opportunities in other lines of industry than agriculture are not as great as they were 30 or 40 years ago. (402.)

Mr. NORRIS, master of the New York State Grange, says that for a period of years beginning in 1890 there was a tendency for the brightest and best men in the rural districts of New York to go into railroading or move into the cities, on account of the demand for laborers and the attractive wages paid at that time; but since 1896 or 1897 there has been a tendency to return to the farms.

Mr. Norris has noticed that a great many people who have been living in towns

and cities, having abandoned farming and gone into something else a few years ago, have been returning to the country, renting farms or working them on shares. (320-322.)

Professor DAVENPORT says (1899) that there have been many indications in the last 3 or 4 years that the tendency of farmers' sons to leave the farm has received a check. He thinks there is a stronger tendency on the part of farmers' sons to remain on the land than 5 or 10 years ago. He knows a great many farmers' sons who have trained themselves for electrical engineering and other technical professions, and then quickly abandoned these professions and gone back to the land. (256, 257.)

Mr. WILSON testifies that the tide is turning from the city to the country. Workmen are going from the cities to the country in Illinois to work as farm laborers. Two such men came into Mr. Wilson's neighborhood in 1899. (245.)

Mr. BUDGE, of Grand Forks, N. Dak., says there is no disposition on the part of the farmers to leave the farms, and some people from the towns take up farming. He thinks more people are moving onto farms in his section than are moving away from them. (852.)

Mr. FROM, of Milton, N. Dak., testifies that in that neighborhood the young men do not seek other employment than agriculture, but remain on the farms, as a rule. (788.)

Mr. M. F. GREELEY, of South Dakota, says the disposition on the part of the farmers of that section to leave the farms for the cities is very rapidly growing less. (935.)

Mr. STREVENs thinks the tendency on the part of the agricultural class of Georgia to drift into the cities is possibly not as great as in the past. (915.)

C. Interstate migration.—1. The westward movement in the South.—Mr. GRAHAM, of North Carolina, says that when the Cherokee Indian lands—and afterwards Mississippi and Louisiana—were opened, a great many people in western North Carolina sold their land and went to those places, leaving a large number of abandoned fields. This emigration having ceased, the country has filled up with laborers, so that there is a much larger number engaged in agriculture than formerly. (435.)

Mr. NALL, Commissioner of Agriculture of Kentucky, testifies that for 10 or 15 years there has been a considerable tendency for Kentucky farmers to move West to cheaper lands in other States. (811.)

Mr. HALE, of Fort Valley, Ga., says there is very little migration from that section to other parts of the country, but a few farmers go to Texas and Arkansas, where they think the land is more fertile. (388.)

2. Migration from North to South.—Mr. AGER says that a great many of the farmers in Maryland are native Marylanders, but quite a number of Northern and Western men have come in during the past 20 years. (109.)

Mr. GAGE testifies that there has been a great deal of immigration from Northern States into the the Delta country. At first the Northern farmers operated their places as they did the grain farms of the Northwest, but they gradually worked into the customs of the men they employed. Those who have worked hard and lived economically have usually made a living. (493.)

Mr. BALCH testifies that in 1898 and 1899 there was considerable immigration from Nebraska to two or three counties of Arkansas. The farmers from the North are engaged in general agriculture. They turn a little more to grain and stock raising than the Southern farmer. (496.)

3. Migration to the Northwest and to Canada.—Mr. SMITH, director of the Michigan Experiment Station, testifies that the depression of agriculture in Michigan, following upon successive failures of the wheat and other crops, has become so great that agents of the Canadian Government and of railroad companies owning lands in the Dakotas and surrounding States have succeeded in securing a large migration of agriculturists westward. During the first few months of 1900 several hundred people, chiefly tenants and laborers, migrated from Shiawassee County alone; a train load went at one time and a considerable number of laboring men at another time. This migration renders the problem of securing sufficient help very serious. The Canadian Government maintains a general agent, in charge of special agents throughout the State, who are securing the migration of citizens to the Canadian Northwest. (566, 567.)

Mr. JUMPER testifies that 5 or 6 years ago many farmers migrated to Winnipeg and to northwestern Canada from South Dakota, but he thinks nearly all of them came back, and are now quite satisfied to remain. (734.)

Mr. BRIGHAM says that, compared with former times, there is now very little migration of farm laborers from Ohio to States farther west and northwest. (7.)

Mr. BUDGE says there are some settlers in North Dakota from the older States, nearly all farmers and good citizens. Some of them who were better off than the others when they came had some stock in cattle. Some Dunkards from Pennsylvania moved into settlements by themselves, and are doing very well. (847.)

D. Public lands.—1. *Working of the land laws in the past.* (See also *Foreign and Western competition*, I C 1, p. LXXXIV, and *Reasons for the decline in value of Eastern lands*, I E 5, p. LXXXIX.)—Dr. CROWELL explains the extraordinary development of American agriculture as due mainly to free land and the admission of foreign labor to occupy it. (338.)

Mr. PROM says the settlers of North Dakota generally acquire their titles under the homestead law, and in early days by the preemption and timber claims. Many men got three claims adjoining, making very valuable farms. The land was mainly sold by those who first took it up, or they piled up mortgages and took the money, and the lands went to the loan companies, who have now resold, however. (789.)

2. *Remaining National and State lands.*—Mr. MEAD submits a table showing that the 15 arid and semiarid States, having a total area of 959,213,440 acres, contain about 48,912,353 acres in Indian reservations, and 528,958,630 acres of the national domain still undisposed of and unreserved. (1063.)

Mr. POWERS says there is a larger amount of land available for cultivation and settlement than the pessimists can imagine, but less than some of the most hopeful people think. There is quite a large amount of railroad land, and some State lands, that have never been settled. In Minnesota there are large bodies of pine lands which will ultimately make good farms. (182.)

Alabama.—Mr. POOLE says there are in Alabama public lands open to settlement, and some State lands open under homestead laws. There are no very desirable lands left, but there are some swamp and overflow lands. Nothing has been done to reclaim the swamp and waste lands of Alabama. They remain subject to entry on payment of a small fee. (922, 924.)

Mississippi.—Mr. KYLE testifies that Congress originally donated a township of public land in Mississippi for seminary purposes, the proceeds of which were put to the credit of the University of Mississippi. More recently, while a member of Congress, Mr. Kyle got a bill through donating another township of public land, on the theory that the new States had received 2 townships. The State of Mississippi owns a good deal of land, chiefly forest, but not nearly as much as formerly. The practice is to sell it. (469.)

California.—Mr. NAFTZGER says that the larger part of the mountainous and hilly land of California is owned by the United States Government, and 2 sections in a township are school land. The Southern Pacific Railroad Company owns large bodies of land in the deserts and mountains, included in the grant made to promote the building of the road. Some regions are covered by Mexican grants, and there are some other very large estates. The Mexican grants are usually held by San Francisco people, seldom by residents upon the lands. They are largely owned by people who have acquired them by foreclosure, or by even cheaper methods. The original holders, being Mexicans, were improvident and squandered them in riotous living. Where there is water to irrigate these grants they are being cut up and put into diversified farming, fruit raising, etc. Very large areas of them, however, are grazing lands, originally granted about a pool, a spring, or a stream of water. (951, 952.)

State lands under lease.—Mr. MEAD submits a table showing that in 6 Western States the acreage of State lands under lease at the close of the last fiscal period ranged from 32,272 acres in Idaho to 1,969,945 acres in Wyoming, while the average rentals per acre ranged from 4.1 cents in Wyoming to 61.4 cents in Idaho. (1064.)

3. *Need of protection to grazing lands.*—It seems to Mr. WHITNEY that it will be necessary to adopt some legislation to protect the ranges of the West and prevent the destruction of property caused by close grazing where there is no restriction. Where range lands are rented for 5 cents an acre little expense can be devoted to their improvement; and where land is so cheaply rented or purchased and so carelessly used there is little chance to make any improvement in agricultural conditions. Much of the damage occurs on the public domain. (861.)

Mr. MEAD estimates that more than 400,000,000 acres of the public lands are valuable for pasturage alone, and predicts that it will be necessary for the Government to exercise some control over these lands in order to prevent controversy and preserve the grasses from destruction by overstocking. If a leasing system could be devised which would so unite the grazing and irrigable lands that each irrigator would have a right to lease a small area of the contiguous pasture land a larger income would be received from rentals and both the agricultural and grazing interests put on a more secure footing. (1063.)

Mr. Mead says the objection to the disposal of public land by absolute title is that some of the land so disposed of for grazing purposes may be irrigable. He thinks the better plan for the present as a tentative measure would be a lease system. He would limit the term to 5 years, and would have every tract of land leased remain subject to entry under the public land laws; otherwise it would be necessary to have an economic survey to distinguish between the irrigable and the pasture lands. There are between 300,000,000 and 400,000,000 acres of public grazing lands. (1066.)

1. Relative advantages of city and country.—**1. General advantages of country life.**—Mr. GEORGE thinks farmers make a mistake in allowing their sons to go to the village to stand around the street corners in search of opportunities. If they would organize they might have a much better social environment, and advance the intelligence of those in search of opportunities in agricultural districts. (222.)

Mr. MASON and Mr. EDMONDSON, prosperous colored farmers, think the opportunities for a young colored man better in the country than in the city. (500, 502.)

Mr. GODWIN thinks his tenants are in a condition to keep their families as comfortable as if they were laborers on city streets. (479.)

Mr. GREELEY says that if the farm laborer has children it is much better for them to live in the country. They are more than twice as apt to make strong, self-supporting citizens than if they grew up in idleness in crowded cities. (928.)

In Mr. MORAN's opinion young men do not better their condition by leaving the farm for the city, but make matters worse. "They seem to forget their training when they come to the cities," and fail to make themselves homes, as they would if they remained on the farm, for when the farmer dies his land is divided up among his family. The farmers raise their own things on the farm, except the clothes they wear, and do not look upon their living as costing anything. (709, 710.)

Mr. HANLEY says the lonesomeness, monotony, and mental anxiety endured by farmers' wives and daughters causes them to break down and contribute a large percentage to the inmates of insane asylums. On the other hand, the discontented young men and women, coming abruptly in contact with city associations and freed from the restraint of parental watchfulness, often become victims of low social conditions and vice.

Mr. Hanley thinks that the inferior social conditions of farm life are the result of unprofitable farming, and will not be improved as long as farming remains unprofitable. (286.)

Professor BAILEY, of Cornell University, declares that half the value of farm life is in the satisfaction of living it. If the farmer looks longingly toward the city, the city man often looks with equal longing toward the farm. The isolation of the farmer is disappearing under the influence of trolley roads, better wagon roads, neighborhood telephones, rural mail delivery, and books. The unattractiveness of the farm home is largely caused by the lack of opportunities for physical comfort, and much of this lack is remediable. The hard lot of the woman on the farm is also a serious cause of dissatisfaction. Her lot may be expected to improve, not merely with the economic status of the farmer, but with the introduction of a higher type of living quite independent of income. The condition of women on the farm is a fairly good index of the intellectual and social status of the community. (1013, 1014.)

2. Standard of living among farmers.—Mr. HOLMES maintains that in discussing the income of the farmer, the standard of living should be considered. The farmer is now, more than ever before, a citizen of the world; he has books and periodicals; he travels more than ever before; his children receive a better education than he received and dress better than he did at their age, and they are more frequently in contact with town life than he was; they have a top buggy instead of an old wagon. The farmer's food is more varied; more of it is bought and less raised on the farm than formerly. (157.)

Mr. POWERS says that it is unfair to compare the style of living of the uneducated farmer with that of the educated mechanic, but comparing it with that of the uneducated day laborer in the city, he thinks their living is about the same. The farmers are not as well off as city people who represent a higher type of life, but are comparable to mechanics and laborers with the same education, training, and thought. In the older sections of Minnesota there are as many pianos among the farmers as among the same grade of mechanics. In the newer section there are not so many pianos and organs, fine dresses, and fine wagons. Mr. Powers knows some farmers who live better than the average lawyer does. (174.)

Mr. GREELEY, of South Dakota, says the advanced agriculture of to-day warrants as much leisure and as tidy, up-to-date homes as any other profession. Rural mail delivery, telephones, and better roads and teachings all have much to do with this. (936.)

Mr. VAIL testifies that local telephones have been introduced in some sections of Vermont. He knows of one neighborhood which has a system of 10 or 12 miles of farm telephones, which cost the owners only about \$20 apiece to install, and he knows of no one thing that has done so much to put the farmers of that neighborhood in touch with the whole community as the introduction of that telephone. The women use it for visiting and arranging sociables and church matters, and in case of sickness a physician is called at a moment's notice. The telephone takes the place of the village. It requires but little repairing; some young man in the community will take

an interest in it, and some persons are as expert in the little things that need attention. There may be a few cents for repairs; but that is usually covered by the small rate charged for the delivery of messages from other telephone and telegraph lines. Mr. Vail has heard of wire fences being utilized for neighborhood telephones elsewhere, but that has not been done in Vermont. (415.)

Mr. Wilson says organized farmers have largely instituted the farm telephone, which he predicts is to be one of the greatest factors of civilization, bringing the farmer into closer relations with the world and keeping him in touch with the markets. Farm telephones are much in use in different sections of Illinois. By means of through reciprocal service with four systems Mr. Wilson, from his home in Magnolia, can talk to over 200 families. (250.)

Mr. STOCKWELL alludes to the wonderful development of electrical power during the past 20 years, and hints at the future possibilities of condensed and liquid air. (905.)

3. *Relative chances of economic success.*—Professor BAILEY believes that the proportion of successful men in farming is as great as in other callings, and probably even greater. (1014.)

Mr. HALE believes that with the same mental equipment there is a better chance to succeed in agriculture than in manufacturing or banking. If the young men in Yale, Harvard, and other high-class colleges would put the same energy and study into scientific agricultural education and apply it as farmers, their chances of making money and getting ahead would be greater than in the professions. (386, 397.)

Mr. KETCHUM knows of no occupation in which the average young man can be more certain of making a living than by buying a farm, if he can pay one-third or one-half down and is willing to work. If he will give close attention to farming he will perhaps succeed better than by putting his money into mechanical pursuits, if he is adapted for farming; if he is not, he might succeed better in another occupation. Mr. Ketchum thinks the inducements are as great for the ordinary farmer's son to remain on the farm as to go into the city. (136, 137.)

Professor DAVENPORT admits that the man able to control large interests is likely to come into that control more readily in the city than in the country, but says that farm laborers who would remain laborers, even of good grade, in the city, have a better opportunity of becoming men of influence in the country than in the city. (257.)

Mr. REDDING says the young man who goes to town will enjoy life, but unless he is well equipped he would probably do better in the end in agriculture. (451.)

Professor DAVENPORT says the land is kind to its occupants; one can go on a small piece of land and maintain existence with less effort than in any other calling. (259.)

Mr. CLOHAN, of West Virginia, thinks that in spite of the difference in the cost of living, an industrious and frugal young man can succeed better in the city than in the country. (591.)

Mr. GAGE, of Memphis, says a great many negro laborers leave the farms and go to Memphis. Thousands of them are on the street idle. Those who are employed on the streets by the street-car companies, Mr. Gage thinks, are paid \$1.50 a day; in building sewers, about \$1.25. Loading and unloading steamers on the levee by the hour is a large source of employment for negroes. Meat, flour, etc., cost less in the city if bought for cash than in the country, and Mr. Gage thinks a man can save more money in Memphis at \$1.50 a day than on a farm at 50 cents, with a house furnished; but the labor is harder in the city. He thinks the continuity of employment is about the same in either case. (494.)

Mr. BALCH, of Arkansas, finds that when a young negro is able to read and write and cipher he wants to go to town and shine shoes or get a position as a servant; many do not get employment and go to the bad. Mr. Balch thinks the farm is the place for the negro to get ahead; he has a better chance than the white man, because he is not expected to spend as much time and money in keeping up a position in society, and his wife and children work in the field. (497, 498.)

Mr. REDDING says the man who works on the farm can succeed only by producing something. Professional and business men in the city may live mainly by their wits, without producing anything or giving value received for what they get, largely by getting the advantage in trade, but the farmer can not get much the advantage of his laborers because they are already at handpan. (450.)

4. *Earnings of capital in agriculture.*—Mr. BRIGHAM believes that the earnings of capital in agriculture are from one-half to one-third less than in other pursuits. He does not believe that they average above 2 or 3 per cent, taking account on the one hand of the products used by farmers themselves, and on the other of their work. (14.)

Capital employed in agriculture does not seem to Mr. AGER to yield nearly as much profit as capital invested in other business. Capitalists seem to prefer bank-

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ing, etc., to investing in farms. Mr. Ager would rather have his capital invested in a farm than anything else, because he can manage it. Many farmers fail, but Mr. Ager does not believe the proportion of failures is as large as in mercantile business, where it is said to be 90 per cent. One trouble is that the farmers like to have their sons and daughters dress well and have as good horses and carriages as those in other business, and farms are often mortgaged for that purpose. Thirty per cent of the farms of Maryland, including many which were unencumbered 20 years ago, are now mortgaged. (110, 111.)

Mr. NORRIS thinks the earnings of capital in agriculture are not a quarter as great as in banking or mercantile pursuits, though taking the last 20 years as a whole perhaps as many have managed to live in agriculture as in any other business. (325, 326.)

Mr. WILSON, master of the Illinois State Grange, thinks the earnings of capital in agriculture are less than in other lines of business. (247.)

Mr. GEORGE, of Chicago, thinks the earnings of capital invested in agriculture are less than the earnings of capital invested in other industries. He estimates the average net earnings of capital in agriculture at 3 per cent. (221, 227.)

Mr. HANLEY says that grain and cotton, the great natural crops of the United States, are raised at a loss, as compared with other industrial occupations, because of a lack of proper legislation, and of organization and intelligent action on the part of farmers and workmen. The farmer is growing poorer each year. (274, 287.)

Mr. GREELEY, of South Dakota, believes that small investments in agriculture pay at least as well as anything else he knows of, and are safer; but that this is not true of investments in large farms by inexperienced men who farm them out. Mr. Greeley adds that the average farmer is determined not to count what he gets except the cash for the crops he sells in town; he does not reckon what he retains for home consumption. Reckoning these products and rent, etc., agriculture exceeds other occupations, and for certainty of returns it greatly surpasses the average business investment. When a farmer has for his family the best and freshest of all the land can produce, rent, livery, water, and sometimes fuel, he would be doing much better than many city people if he were not able to show any addition to his bank account; and this also any farmer who understands his business should be able to do. The certainty and permanency of his position should also be taken into consideration. (934.)

Professor DAVENPORT says profits from land will of course not compare with the profits of an eminently successful merchant, but the investment in land is more in the nature of a permanent investment and some income is certain. The farmer is not likely to lose his capital or impair it except by bad management, while some merchants lose all their capital very quickly. There are many excellent families with 80 acres of land who live successful lives, dress comfortably, and educate their children, and leave the sons better off than the fathers were at the start. Either we must reckon fairly large pay for the farmer's time, or a pretty large return on the capital invested, or else reduce the expense of living to a very small amount. Professor Davenport says he has never seen a student who has appreciated the value of landed possessions to a family. If a family can stay upon the land for 4 or 5 generations it becomes a power in its locality. (265, 266.)

Mr. HOLMES testifies that the agricultural products of the United States in 1889 were reported by the Eleventh Census to be worth \$2,500,000,000. The general opinion is that this statement is too low. It is doubtful if farmers in reporting the value of their products have included their living. The farmer probably omits his garden, which is worth \$25 or \$50, and certain farm products. On the other hand, there may be a duplication, because he may include so many bushels of corn, and also the steers fattened in the corn. Mr. J. R. Dodge, formerly Statistician of the Department of Agriculture, estimated the value of farm products in that year to be about \$3,500,000,000. Using the census figure, however, Mr. Holmes finds that the products were distributed as follows: Wages of agricultural laborers, \$645,500,000; commercial fertilizers, \$38,500,000; interest on mortgages, \$76,750,000; interest on crop liens, estimated at the rate of 40 per cent on the debt, \$120,000,000; taxes (estimated), \$116,666,000. Allowing theoretical interest on the remainder at 7.7 per cent, the average rate for farm mortgages in 1890, there remains only \$410,000,000 to be divided among nearly 5,500,000 farmers, giving them only \$6.33 a month as wages. On the other hand, allowing wages at the rate of \$22.61 per month would exactly absorb the remainder; thus it appears that allowing interest to the farmers on their farm capital, they earn substantially no wages, and allowing them no interest, they receive but \$22.61 a month as wages. (154.)

Dr. CROWELL submits a table compiled by Professor Emerick from the census of 1890, showing that the product of agriculture for each worker was only \$290, while

the product per capita in manufactures was \$893. This is declared to be a decisive argument in favor of moving to the city, so far as general averages are concerned. (338.)

New England.—Mr. STOCKWELL presents the results of an investigation by the Connecticut labor commissioner in 1888. The accounts of 693 farmers showed a total capital of \$3,810,742; the total receipts, including products consumed, \$707,153; expenses, including products consumed by the family, \$690,990; net profits, \$16,163, or, including the value of products consumed, \$143,325. (892.)

New Jersey.—There were in 1890 in New Jersey 30,288 farms of an average size of 86 acres, the total capital invested amounting to nearly \$184,000,000. Mr. DYE believes that the earnings of capital in farming are less than they were 40 years ago, and very much less than those of other lines of business. He quotes from an article by Dr. George H. Cook, which states that in 1870 the agricultural capital in New Jersey was \$265,000,000 and the value of agricultural products only \$46,000,000. In 1880 the agricultural capital had decreased to \$214,000,000 and the value of products to \$29,000,000. The capital invested in manufactures, on the other hand, was only \$80,000,000 in 1870, and the products \$169,000,000, while in 1880, with a capital of \$108,000,000, the products were \$254,000,000. (90.)

Mr. Dye believes, however, that with improved methods of fertilization and of cropping a farm can be made to pay fairly well in New Jersey at present, especially since the original investment, owing to the low price of land, is so small. (92.)

Mr. COLES, of Salem County, N. J., testifies that at the price at which farming land can be bought in that part of the State, farming, with careful attention and close economy, is fairly profitable. The farmer can live fairly well and pay the interest on the purchase price, and perhaps work off the principal a little at a time. The rate of interest is 6 per cent. (129, 130.)

Ohio.—Mr. MILLER thinks that for a period of years the condition of the Ohio farmer was as good as that of the merchants and manufacturers, but that at the time of his testimony (1900) it was perhaps not as good, because the conditions were then very favorable for the manufacturer and dealer, and very unfavorable for the Ohio farmer because of the loss of crops and the low prices prevailing for some agricultural products. (614, 615.)

Illinois.—Mr. WILSON says it requires just as good a man to run a 160-acre farm as to run any other business, but the grain farmers of Illinois, while they have made a living and educated their children, have, as a class, made very little money of late. (251.)

North Dakota.—Mr. BUDGE says that taking into consideration the price at which lands were bought in North Dakota, the capital invested in agriculture does very well as compared with investments in other lines, but the land which he bought at from \$2.50 to \$5 an acre he now considers worth from \$25 to \$40 an acre. (848.)

Mr. PROM, a banker of Milton, N. Dak., thinks agriculture is much more profitable than any business enterprise conducted in North Dakota. The banks pay 20 per cent dividend, but Mr. Prom's farm, which is worked on shares by tenants, pays better than that. (791.)

Mr. Prom adds that the farmers of the Red River Valley in North Dakota do not think it best to leave the farm and go into anything else; they stick closely to the farm. Those who came there in 1882 and 1883 are as independent as any rich man; they do not want all the luxuries, but they are progressing. (794.)

Kentucky.—Mr. NALL testifies that the people of Kentucky think capital employed in agriculture is not as profitable as that employed in other lines of business, and he is inclined to their way of thinking. (809.)

Georgia.—Mr. STEVENS states that of the \$435,000,000 of taxable property in Georgia \$185,000,000 are invested in agriculture, including the value of the lands, \$120,000,000; live stock, \$22,500,000; farm implements, \$5,250,000, and household furniture, \$16,250,000. The income from the farms is estimated for the year 1900 at \$83,179,000, or 50 per cent gross or 8 per cent net. The income is made up chiefly from cotton and corn, with smaller proportions, in the order named, from peaches, sirup, rice, apples, vegetables, sugar, and tobacco. (914.)

Generally speaking, Mr. Stevens says, well-managed Georgia farms pay from 8 to 10 per cent on the capital invested. The earnings from capital thus invested compare favorably with the earnings of mercantile and other similar lines of business. (915.)

Alabama.—Mr. POOLE intimates that the plantations of Alabama pay from 10 to 15 per cent on the investment. (922.)

Louisiana.—Dr. STUBBS, of Louisiana, concludes that as the banks lend the farmers money at a fair rate of interest, farming must be better than banking in a small way. It is certainly better than Southern railroads, most of whose stock is below par. The Illinois Central pays a dividend (Dr. Stubbs thinks 5 per cent), but he

does not think any of the Louisiana farmers could be induced to farm with as little as 5 per cent income. (782.)

5. Reasons for a low rate of profit.—Dr. CROWELL explains the comparatively low earnings of capital in agriculture substantially as follows: In agriculture the competitive principle governs prices, but in manufacturing, after a certain limit of competition is reached, the inevitable result is combination, which has come about on account of the difficulty of distributing or marketing the product so as to get an even, continuous return on the capital. In agriculture prices tend to remain near the cost of production, the lowest level of efficiency of capital being found in agriculture. Manufacturing interests, after they have spent their competitive energy, tend to combine and organize with a view of controlling production in the interest of more regular prices, and thus tend toward the maximum of return on capital and reward for labor. The principle that governs the distributive system, also, is the principle of combination. When the Eastern farmer produces for Europe and the Western farmer for the East, the distributive feature enters and the great profits arising are a temptation for labor and capital to go into that activity; so the distributive system increases until it grinds heavily upon the community, especially if it is favored by legislation, as, for example, by export premiums. Dr. Crowell says we seem to have arrived at a condition where the distributive system is a very important feature, and it seems to him that the wise line of policy to follow is to equalize the opportunities of capital in distribution and in production. (339.)

Dr. Crowell explains that the farmer is governed by the law of diminishing returns; that is, for every additional unit of capital and labor he will get less than a proportionate return in product. In manufacturing the law of increasing returns generally applies. Thus the farmer is limited by nature as the manufacturer is not. On the other hand, land which was supposed to have reached the point of diminishing returns may by some discovery or advance in agriculture be made to produce a much higher return than under the old methods of cultivation. (340.)

Mr. HOLMES explains the small income of farmers and farm laborers by saying that they do not produce enough wealth. The agricultural product in 1889 was only \$293 for each farmer and farm laborer. In the South Atlantic States it was only \$177; in the South Central States, \$211; in the North Central States, containing most of the great corn and wheat States, where machinery is much more in use than in the South, \$362; in the North Atlantic States, which are States of more dense population and diversified agriculture and better local markets, \$389; in the Western States, including the Pacific States, \$519. Mr. Holmes believes that this highest product of agricultural wealth in the Western States permits the comparatively high rate of farm wages in that part of the country. A larger value is produced in manufacturing than in agriculture, namely, \$896 per worker, and wages are very much higher in manufacturing industries than on the farm. (155.)

6. Disrepute of agriculture explained.—Professor DAVENPORT explains the feeling that agriculture is a degrading or menial occupation on historical grounds. During and after the Roman Empire, he says, agriculture was largely an occupation of the conquered and enslaved nations, so that there is a kind of inherited feeling that gentility goes with government and professional positions. Again, the farmers themselves have accepted and fostered the idea that agriculture is an inferior calling, and the feeling has been fostered sometimes by local politicians, who have informed the farmers that all the other occupations were combined against them. (258.)

Mr. REDDING, director of the Georgia Experiment Station, says there is never any disposition to look down on agriculture in the South, but laboring people associate the idea of field labor with negro labor, because most of the laborers in the lower part of Georgia and South Carolina are negroes, and if a white man went into the field he would have to work with them. (449.)

7. Debt of the city to the country.—Mr. POWERS says there are many debts of the city to the country. There is a constant movement of men and wealth to the city, exhausting the farm wealth. If they do not give something back to the sections from which they come, these sections will be pauperized and degraded. Their ability to make money must be kept up as the fertility of the farm is kept up. The money earned on the farm which has been moved to the city must be taxed to give a legitimate income back to the farm to expend for country schools and roads. (185.)

VI.—AGRICULTURAL EDUCATION AND RESEARCH.

A. In foreign countries.—Dr. TRUE, director of the Office of Experiment Stations of the United States Department of Agriculture, calls attention to a great world-wide movement for the organization of technical education in agriculture and scientific research along agricultural lines during the last half century. Among for-

eight countries the movement has reached its highest perfection, in some respects, in France, Germany, and Belgium, where the system of agricultural education includes schools of various grades, from the university to the elementary school. Russia, Australia, and Japan are developing quite complete system of agricultural education and investigation. Egypt has at least one very well organized agricultural college, in connection with which experiments are conducted, and the Sultan of Turkey has called upon the Secretary of Agriculture to recommend an expert to advise him how to organize agricultural education and experimentation in the Turkish Empire. The great commercial nations with which the United States is coming more and more into competition are every year increasing their efforts to perfect their system of agricultural education and investigation, and the United States can not afford to be behind the rest of the world in this respect. (138.)

1. **Germany.**—Mr. POWERS says Germany has led the world in bringing out all the possibilities of the soil through agricultural schools and experiment stations. This has been a monumental work of great benefit to German farmers. (177.)

2. **Great Britain.**—Dr. TRUE says Great Britain has no thoroughly organized agricultural education or experimentation, though there are a few agricultural colleges, and in recent years grants of money have been made to a number of institutions. Reports of the experiment stations of France, Germany, and Belgium are being constantly translated and made available to the English farmer, and the experiment station at Rothamsted, England, which has been at work over 50 years, has also given him much valuable information. The great societies of agriculture in England and Scotland have also had an important part in the development of British agriculture; in some things, however, the British farmer has not been able to hold his own. The farmer of Denmark, who, with the help of the Government, has organized the business of dairying on a scientific basis, is able to go into the English market with butter, and to some extent drive out the Englishman. Dr. True also explains the sale of Canadian cheese in England as a result of the very systematic and thorough work in agricultural education and investigation carried on in Canada, where the reports of the experiment stations are widely disseminated. (144, 145.)

Dr. WILEY says Sir John Lawes has given practically his whole private fortune, amounting to over \$500,000, in trust to continue the experimental work in agriculture which he conducted for 60 years in conjunction with Sir Henry Gilbert. Dr. WileY thinks this is the only instance in which a man has given his entire fortune for such a purpose without any hope of pecuniary gain. (643.)

3. **Seed control stations on the Continent.**—Dr. WileY says every European government (especially Germany and Russia, and to a less degree Austria and France) maintains seed control stations where experiments are conducted. The German seed control stations are about 15 in number, devoted entirely to determining experimental methods of improving the quality of beet and other seeds. (642.)

B. American agricultural colleges.—1. **History.**—Dr. TRUE says the agricultural colleges are organized under the land-grant act of 1862, which granted each State and Territory 30,000 acres of land for each Representative or Senator in Congress, the proceeds from the sale of which were to constitute a fund for the maintenance of colleges in which agriculture and the mechanic arts should be taught. Before 1862 only a very few States had agricultural colleges. Michigan was the first State to establish such a college. Maryland, Pennsylvania, and other States had made some movement in that direction. (139, 144.)

2. **Statistics.**—There are land-grant colleges, Dr. TRUE says, in all the States and Territories except Alaska. Some of the States have separate institutions for the colored people, so that the total number of such institutions in 1898 was 64, of which 61 maintained courses in agriculture. Their resources of funds, lands, buildings, and equipment were valued at more than \$53,500,000, and their incomes amounted to more than \$6,000,000. The value of the addition made to their buildings and equipment in 1898 was estimated at \$2,800,000, paid for, in large part, by State appropriations. There were 2,611 persons teaching in these institutions, and the total number of students as 31,658, of which number 4,181 were in agricultural courses. (140.)

3. **Character of work.**—Dr. TRUE says the agricultural college at Amherst, Mass., is the only purely agricultural college in this country. In 27 States and Territories the land-grant colleges are organized as agricultural and mechanical colleges. In 20 States they are the State universities, in which there is a department or school of agriculture. In all these institutions there is the regular college course in agriculture, shorter courses, commonly of 2 years' duration, and special courses in dairying, etc. There has been a great tendency of late years toward specialization. (139.)

Mr. HALE declares that the Government aid to agricultural colleges is misapplied. When the grant was made most of the States had not begun to realize that farming was anything more than digging something out of the soil. They turned the grant

over to their classical institutions, the management of which took no interest in agricultural education. Michigan was one of the States that saw the need of scientific instruction in agriculture. Mr. Hale declares that the Michigan Agricultural College is a marvellous success, and that Kansas and some other States have done exceedingly well. In general, the idea has been that if a boy or girl could get a little classical education he would be enabled to get a living without working. Mr. Hale declares that Congress ought to see that the money is used as it was intended to be. (386.)

Professor DAVENPORT says it was 20 years before the agricultural colleges succeeded to any reasonable degree in teaching the principles involved in agriculture. They first had to be discovered. At first the attempt was simply to recite the practice of the country as it existed, but there has developed an immense literature in agriculture, and there is now enough to base a strictly scientific course of study upon. The universities, where the educational problem was complex, were longer in recognizing the proper basis upon which agriculture should be studied than were the colleges, which had but one problem to work out; but of late quite a number of universities have caught the idea that agriculture is a thing to be studied by itself, and have put in very strong departments of agriculture. Students have responded about in proportion to the value of the instruction. Agriculture and the mechanic arts are the new studies in universities. Since the founding of the agricultural colleges and State universities we have gone through a most active period of mechanical industry, and the problems of mechanics being simpler than those of agriculture and capable of mathematical demonstration, they are more quickly worked out; and so in nearly all the schools the mechanic arts develop more rapidly than agriculture, which involves the nicest questions of chemistry, botany, biology, physics, and geology, as well as economics. It is only within a few years that really good instruction has been given in agriculture. In the end the universities ought to do better work in agriculture than the colleges, because the environment is better and the associations freer. Professor Davenport does not think there is any prejudice in the universities against agriculture. There is a growing respect for the subject. (259-261.)

Mr. MCKAY, a trustee of the University of Illinois, says that many of the land-grant colleges have developed into real universities, and have very largely met the local demands for instruction. When the institutions were established there was not much demand for scientific instruction in agriculture, especially in the Western States, because by simply turning over the soil of the prairies and cultivating it very indifferently a man could raise a crop of 50 or 60 bushels of corn to the acre. The time has now arrived when it is necessary that each acre of land should produce the best possible results, and there is arising a demand for scientific agriculture. Mr. McKay believes that these institutions will meet the demand. The board of trustees of the University of Illinois have asked for large appropriations for the college of agriculture. (534.)

Dr. TRUE says the general plan of teaching in agricultural colleges and schools of this country has not been well organized. The Association of Agricultural Colleges and Experiment Stations is studying the methods of teaching agriculture with a view to their improvement. Dr. True does not think, however, that the best plan is to have the students spend a considerable part of their time on the farm. The farm should be used as a laboratory is, though incidentally the student will get a certain amount of practice from this use. The aversion of farmers to "book learning" is a very great obstacle, but the number of farmers who read and profit by the literature available to them is increasing yearly. (145.)

4. *Agricultural colleges in various States.*—*Vermont.*—Mr. SPEAR testifies that the Vermont Agricultural College is gradually gaining in students and effectiveness, and is regarded with good favor by the people of the State. During the past few years there has been a dairy school, lasting a month or 6 weeks each winter. (404.)

New Jersey.—Mr. DYE says the New Jersey Agricultural College owns a farm, dairy, etc., which are made self-supporting, and on which valuable experiments are being made. Farmers are invited to visit and inspect the farm, and numerous farmers cooperate with the institution by conducting experiments on their own farms. (89.)

Ohio.—Mr. MILLER says the Ohio State University has short, intermediate, and long courses in agriculture, as well as veterinary, dairy, and other special courses. Degrees are conferred in the full agricultural course, in the veterinary course, and, perhaps, in the dairy course. Some years ago there was general complaint against the State University, which is the successor of the old Agricultural and Mechanical College, but recently the College of Agriculture has been so improved and enlarged that it is generally satisfactory to the people and is growing in patronage, though it is not yet well patronized for a State with the agricultural population of Ohio. The expenses have not been reduced to so low a point as at many of the other institutions in the State, and this discourages the attendance of the poorer farmers' sons.

Not much attention has been given to the dormitory facilities. The students who seek employment on the university farm are paid a certain amount an hour for such work as there is to do, and some students have been self-supporting. The classics overshadow the agricultural department, however. Perhaps the greater number of those who enter the agricultural classes change their course and graduate in one of the other departments, drifting into the professions. (609, 610.)

Illinois.—Mr. MCKAY testifies that the University of Illinois consists of colleges of agriculture, science, engineering, arts, law, and medicine. He thinks the College of Arts has always had a larger number of students than any of the others, but there are very few students studying Latin and Greek. (535.)

Professor DAVENPORT says we should do better in America than the European agricultural school, which aims chiefly to train students in methods of practice. We must turn out well-trained citizens. At the University of Illinois a man graduates in agriculture when he offers the same number of credits that would entitle him to graduation from any other course. One-third of these must be in technical agricultural subjects, one-third in science, and the other third from anything the university offers. In practice the students generally take more agriculture than is required. (284.)

North Dakota.—Mr. FROM, of Milton, N. Dak., says there is an agricultural college at Fargo, which does much good in that State. There is a growing interest in the education of the farmer in North Dakota, and the farm boys are getting a better education. Mr. From thinks the improvement has a tendency to keep the boys on the farm and make farm work more interesting. President Hill, of the Great Northern Railroad, sends a train through the country during the summer and invites the farmers to ride over to Fargo to visit the Agricultural College and return without any charge. This is taken advantage of by the farmers, with the best results. (790, 791.)

Mr. BUDGE testifies that a good many farmers' sons go to the agricultural college during the winter. There are probably 300 students. A great many young men who have farms go to the college to study up on farming during the winter, when they have not much to do. Some also go to learn how to run thrashing machines, etc. Men 18, 20, and 26 years of age go there and take the course in farming; then there are longer courses for the boys who go through. (847.)

South Dakota.—Mr. GREELEY says the South Dakota Agricultural College has what is called an agricultural course, but he regrets that there is a great tendency in most agricultural schools to make universities of them and forget the practical—to make scholars and not farmers of those who go there. (931.)

Minnesota.—Mr. GREELEY adds that the agricultural college in Minnesota is having the same trouble that of South Dakota is, but not quite so much so, principally because the agricultural school and the State university are together, as is the case also in Nebraska, while in South Dakota and other States the university is in one town and the agricultural school in another. (932.) (See also *Separation from universities*. VI B 8, p. CLXVII.)

Mr. POWERS testifies that President Hill of the Great Northern Railway brings every year, from every county along his road in Minnesota, and sometimes from Dakota, two persons from every township to Minneapolis, transportation free, to stay three days in the city, with the understanding that they shall spend one day at the State School of Agriculture and Experiment Station. Mr. Hill says this is not philanthropy, it is business; and explains that the profit of his road can come only from the added prosperity of the farmer, which can come only by a higher knowledge of agriculture, and improved methods. For several years he has brought the equivalent of 10 train loads of people a year a distance of from 150 to 300 miles. A great many of these will be interested in sending their boys and girls to the agricultural school. (183.)

Maryland.—Mr. AGER, master of the Maryland State Grange, testifies that the mechanic arts, horticulture, and dairying are taught at the Maryland Agricultural College, as well as agriculture. He thinks more of the pupils are educated in the classics than for agriculture. (107.)

Kentucky.—Mr. NALL testifies that the Kentucky Agricultural College is getting to be very well supported by the farmers. The number of students is about 360, of which number 7 take the agricultural course alone. (812.)

North Carolina.—Mr. WHITE says there is an agricultural and mechanical college at Raleigh for the whites, and one on a much smaller scale for the colored people at Greensboro. (425.)

Mr. GRAHAM criticises the equal division of the agricultural and mechanical college fund of North Carolina between the two races, arguing that there are twice as many whites as negroes in the State, and that the same amount of money does not

get the same number of teachers in the white college as in the colored college, because the teachers are of higher grade. (439.)

South Carolina.—Mr. HAMMOND says that Clemson College is an excellent technical school, with professors and a full equipment of laboratories and workshops, including a large and complete technical school. It is supported partly by the State, and partly by a fund created by the General Government. There is also a negro school at Orangeburg supported in the same way. Mr. Hammond does not think that the graduates of the agricultural colleges as a rule go back to farming. They go into all sorts of positions where knowledge of chemistry and engineering is required. Actual instruction in agriculture, if it is to be practically applied, must be given in the common schools. (824, 830.)

Georgia.—Mr. REDDING testifies that there is a State agricultural college in Georgia, but few students take the agricultural course. (451.)

Mr. BROWN testifies that the money devoted to the agricultural and mechanical college in Georgia has largely been used in teaching Greek and Latin and similar subjects. Nevertheless a beginning is being made toward industrial education. There are separate industrial schools, supported by the State, for white boys, white girls, and colored persons. (64.)

Mr. HALE testifies that the State University of Georgia, which receives aid from the Government under the acts of 1862 and 1890, is a classical institution, but aims to give enough agricultural and mechanical education to be enabled to receive the money. Agricultural education is not magnified as it ought to be. The leading agriculturists and the State Agricultural Society have agitated the question of making the agricultural college a distinct school, but the graduates of the university are in the law offices and newspaper offices, and control public opinion. Mr. Hale says there are two or three other technical institutions of a moderate degree of efficiency in Georgia. (385, 386.)

Alabama.—Mr. POOLE testifies that the Agricultural and Mechanical College at Auburn, Ala., has been in existence 30 years. Agriculture is taught in all its branches. Tuition is free, except for incidental fees of perhaps \$10 or \$12 a year. An experiment station is connected with the school.

There are also in Alabama 9 district agricultural colleges, 1 in each Congressional district, drawing \$2,500 a year from the State Department of Agriculture, which contributes also to 2 colored agricultural schools—Booker Washington's, at Tuskegee, and another near Montgomery under Professor Patterson. (920.)

Louisiana.—Dr. SUMMS testifies that the 2 agricultural and mechanical colleges of Louisiana, for white and colored students respectively, were established under the land-grant act and the Morrill bill granting \$25,000 (\$15,000 at first) to each State and Territory. The college for whites is associated with the old Louisiana State University at Baton Rouge. It is very prosperous, having nearly 400 students, males exclusively. The university has a literary and scientific course, covering general science, as well as agricultural and mechanical subjects. It also includes the Audubon Sugar School. (779.)

5. Special schools and special courses.—*New York State College of Forestry.*—Professor FERNOW, director of the New York State College of Forestry, says that this college was established in 1898, by act of the legislature of New York, for two objects: to educate foresters, and to make a demonstration of practical forest management on a tract of timber land in the Adirondacks. It is an integral part of Cornell University. The course of instruction is one of 4 years. Four students were registered the first year, 17 the second, and 26 the third. Certain courses in the college have been taken by much larger numbers of students from other departments of the university. The students will find employment after graduation with forest commissions of New York and other States, with the United States Bureau of Forestry, and with lumber firms and managers of large estates which include forest properties. Probably, also, other colleges of forestry will be established and will need teaching forces. (1000, 1001.)

Dairy school, Wisconsin.—Dr. TRUE testifies that the special dairy school at the University of Wisconsin has already (1899) sent out about 800 trained butter and cheese makers, and has taught between 1,000 and 2,000 young men butter making on the farm as distinguished from that in the creamery. There is also at this institution a short course in agriculture, having 190 students in 1898-99. Professor Henry, dean of the college, says that places have been found on farms in this one year for more than 50 young men, who got from \$2 to \$10 a month more because of their special training. (139.)

Audubon Sugar School.—Dr. TRUE says a school for training sugar experts has been in operation a number of years at Audubon Park, New Orleans, in connection with the experiment station, and more recently at Baton Rouge, in connection with the State university, which has proved useful and has received financial support from the Sugar Planters' Association. (139, 140.)

Dr. STUBBS says the Audubon Sugar School, which was started under his direction, was established by the sugar planters of Louisiana, and after 4 or 5 years the State adopted it. There is a 5-year's course. The students spend 6 months in studying the sciences and in the workshops of the Agricultural and Mechanical College; then for 3 months in the year they work practically in the sugarhouse, the sugar fields, and the laboratories of the sugar experiment station. Every boy who attends the school is required to plow, plant, hoe, ditch, cut cane, run the boilers and machinery of the sugarhouse, and do everything that is done on the place. Dr. Stubbs has kept a millionaire's son on a 4-mule plow while the thermometer was ninety-odd degrees in the shade. (778, 779.)

Dr. Stubbs says there were a dozen Cubans in the sugar school when the war broke out. Science knows no political boundaries, and when the school was first opened the question arose what should be done with applications from foreigners. The people decided that all they could do was to charge an increased tuition, which was done until the State took charge. The State law prohibits any charge at all for any instruction the State gives, and hence foreigners are educated at the sugar school without payment of fees. (780.)

6. Occupation of graduates.—Dr. CROWELL's observation leads him to believe that pupils instructed in agricultural colleges, etc., do not go back to the farms, and for that reason he thinks distinctively agricultural institutions have not yet found their normal function. (337.)

Mr. BRIGHAM says that unfortunately a considerable proportion of the farmers' sons who are able to go to college desire to take up some other work than farming, though this tendency is becoming less marked. (12.)

Mr. WHITNEY remarks that few of the young men who go to college attempt to fit themselves for farm work. He instances the small number of students who have taken the agricultural course at Yale University, which has had a permanent endowment for agricultural education. He also says that at Harvard, which has both an agricultural and a technical school, there is a much greater attendance at the technical school, and also in the classical college, than in the agricultural course. (868.)

Mr. HALE knows of a number of successful farmers in Massachusetts, Connecticut, Michigan, and New York who are graduates of agricultural colleges. He says the graduates of these colleges far outstrip other farmers, if they have a love of the soil and the same business ability. (387.)

Mr. NORRIS says many young men are getting much benefit from the agricultural courses at Cornell, especially the short courses of 10 or 20 weeks in dairying, fruit growing, and practical agriculture. As a rule, he thinks they are content to go back to the farm, but as farmers some young men would be complete failures, "because they never were born that way." A man will not be a success in anything he does not like. Mr. Norris thinks every man should be allowed his natural inclination; if he has an eye for mechanics, he ought to take a course in that line. (324.)

New Jersey.—Mr. DYE says that a very small proportion of the graduates of the New Jersey Agricultural College go back to the farms. (88.)

Mr. COLES, of New Jersey, testifies that some of the students of the agricultural college return to the farms, and some have gone on to a higher education and found more profitable business. The influence of the agricultural college on agriculture is felt more through the dissemination of information among farmers than in the education of farmers' sons. (126.)

Ohio.—Mr. MILLER testifies that the graduates of the College of Agriculture of the Ohio State University go back to the farm as a rule. Among them are some of the very best lecturers and workers in agricultural lines. (610.)

Michigan.—Professor DAVENPORT testifies that the Michigan Agricultural College, which graduated its first class in 1861, took a census of its graduates 25 or 30 years after its establishment and found that a little more than 50 per cent of them were in agriculture. A careful study was made of the proportion of graduates of purely technical schools, such as lawyers, doctors, and ministers, who follow through life the calling they were educated for, and it was found to be below 50 per cent. Professor Davenport has known many men who came to the college without any idea of going onto the land, because it was a cheap course to take, who afterward did go upon the land. It takes capital to own and operate land, and is more difficult to acquire a farm than to go into a profession, so there has been a great tendency for the graduates to teach school for a time or do something else in which they could make more money than by doing ordinary farm labor. The Michigan Agricultural College found that of the 50 per cent not on the land, a large proportion of the graduates of long standing were landowners, and that nearly all the recent graduates looked forward to owning land as soon as they could afford it. There is now a tendency for young men who are up in agriculture to rent farms. (261.)

Illinois.—Mr. MCKAY testifies that the percentage of those taking an agricultural

course in the University of Illinois who have gone back to farming has been very small. A young man taking a 4 years course in the university obtains a fairly liberal education. If he takes the regular course in agriculture, he gets more than simply the technical agricultural subjects; he has considerable literature, modern languages and a good knowledge of chemistry, physics, and biology. A number of the graduates are now deans of colleges of agriculture, or professors of agriculture; some are directors of experiment stations. They went into these positions because they could earn more than they could on the farm. (535.)

Professor DAVENPORT explains that the teaching of agriculture in the universities is more technical than in the colleges of agriculture, and that students do not take the course unless they expect to go upon the land. The agricultural students at the University of Illinois will all go upon the land, except an occasional one who is picked out for an instructor somewhere. (262.)

Minnesota.—Mr. POWERS says boys are sometimes educated just enough to take them away from the farms, and the agricultural colleges sometimes educate them in wrong lines. The Minnesota School of Agriculture, however, is educating them to stay at home. They go back and become important factors in the elevation of farmers, spreading abroad a knowledge of the science of agriculture. None of the other western institutions have so large a proportion of graduates who go back to the farms. (172, 183.)

North Dakota.—Mr. BUDGE says a great many of the graduates of the North Dakota Agricultural College leave the farms and seek the professions. Some go from the agricultural college to the university, and some go to the University of Minnesota. The university boys are a little older than the agricultural college boys. The older students at the agricultural college study for the improvement of their own farms, but the young boys go there because they can get in when they can not get into a college; then in a year or two they go to the higher schools. (847, 848.)

Kentucky.—Mr. NALL says a good many of the graduates of the Kentucky Agricultural College return to the farms, and they make very intelligent farmers. They are the entering wedge for better farming in Kentucky. Quite a number have gone into other pursuits. (812, 813.)

Audubon Sugar School, Louisiana.—Dr. STUBBS says the Audubon Sugar School has graduated quite a number of young men who are now filling positions wherever cane sugar is grown—probably 15 or 20 are in Hawaii, including the director of the experiment station there. The director of the experiment station in Queensland, who was formerly one of Dr. Stubbs's assistants, went out there on a 5-year contract at \$15,000 a year, to teach sugar growing and manufacture. Another graduate and former assistant is director of the experiment station of the Hawaiian Planters' Association, at Honolulu, getting \$5,000 a year and expenses. The boys are doing well everywhere. They have also added to the Louisiana sugarhouses, a fair proportion of which are run by the graduates of the school. A dozen or more are in Cuba; others are in Mexico, Porto Rico, the Danish West Indies, French Martinique, Guadeloupe, and Mauritius. (779, 780.)

Wholesome influence of college-trained farmers.—Dr. TRUE says agricultural colleges are sending out every year young men thoroughly trained in agricultural lines whose influence will be very great in promoting the progress of agriculture. (140.)

Professor DAVENPORT testifies that the graduates of the Michigan Agricultural College engaged in agriculture have been much more successful than the average farmer, and that recent graduates especially have become centers of better methods in their own communities. The sentiment against "book farming" has entirely changed during the last decade, and now if a man knows a thing, the farmers are glad to learn it from him. (262.)

7. *Beneficial effect of the agricultural colleges upon agriculture.*—Mr. STOCKWELL says the State agricultural colleges are doing a grand work in sending out lecturers and teachers by example, as well as in institute work. There has been a great advance within 20 or even 10 years, largely due to the technical and experimental education in agriculture. (887.)

Mr. DYER says the various agricultural colleges in this country have done much to lay the foundation for better farming. It was about 1840 that chemistry began to be applied to the study of agriculture, the needs of soils, etc., and the effects have been very beneficial. The laboratory discovers principles which are of practical importance to the farm, but the chemical analysis of soils to determine the proportion of plant foods which they contain and the needs of fertilizers is not in itself sufficient; it must be accompanied by careful experimenting with different crops and fertilizers. This is being done with very beneficial results by the State experiment station in New Jersey and by similar stations elsewhere. (88, 89.)

Mr. POWERS says the agricultural colleges of the West are doing a great work. He is satisfied that the work of the agricultural colleges and schools in the West is add-

ing as much as or more than any single factor to the prosperity of the farmers. (183.)

Professor DAVENPORT thinks the support of agricultural colleges is the best investment of money the Government ever made, considering the good to the farmers, the maintenance of fertility, the upbuilding of agriculture, and the cheapening of products which result. He says, the tendency to support agricultural colleges is much greater than formerly. (262.)

8. Proposed changes in organization and courses of study.—*Separation from universities.*—Mr. BRIGHAM considers that agricultural and mechanical colleges should be kept entirely distinct from other universities. In many cases the State universities have secured funds from the State and national governments, nominally for education in agriculture, and have spent them in teaching the classics and similar subjects. In the separate instruction there would be more likely to exist a sentiment as to the honorable nature of work and a pride and enthusiasm for agriculture. (13.) (See also VI B 4, Minnesota, p. CLXII.)

Modification of curriculum.—Mr. BACHELDER says that the various agricultural colleges in New England devote relatively more attention to mechanical arts than to agriculture. A large proportion of the farmers' boys who go through the course enter other occupations and do not return to the farm. Mr. Bachelder believes that the courses should be so modified as to develop enthusiasm for agriculture and thus tend to raise the standard of farming and of rural life. (44.)

Domestic training.—Miss EMMA SICKELS, secretary of the National Pure Food Association and of the National Domestic Science Association, says that comparatively small opportunity is given for education in the normal, healthful vocations of life, such as the best methods of conducting a farm, a business, or a home. Education is designed to meet abnormal conditions, which are actually developed by the facilities provided for meeting them, while the means for best promoting normal conditions are neglected. This is especially true of women's work. The only opportunities for a thorough education lie in some profession or other field of men's work. It is easier for a woman to be a physician, a lawyer, or a chemist than to be a cook in the broadest sense of the word. It is easier to learn anatomy, botany, or astronomy than to learn the principles of combinations of food materials and the right use of foods. There is no place in which domestic science is taught in the systematic way in which almost every science is taught. For 20 years Miss Sickels has been trying to find an opportunity for making as thorough and systematic a study of the laws for the preservation of health as is afforded in the schools of medicine for its restoration, but has found no place in any school or university where the simple necessary rules of life are efficiently and effectually taught. (519.)

Miss Sickels says the agricultural colleges of Minnesota, Iowa, Ohio, Illinois, and Kansas (Professor Davenport adds South Dakota and Michigan) are now giving some attention to the preparation and use of foods, but they are handicapped by lack of system and lack of funds. Some uniform system should be developed applicable to all of them, and their reports systematized by the Department of Agriculture, as recommended by the subcommission on domestic science of the Senate Committee on Agriculture. The teaching of cooking in the public schools would naturally follow from this work in the universities. In 1899 an appropriation of \$15,000 was made for investigating the nutrition of food; but the investigations now made are almost solely as to a balanced ration, while in practical application the methods of preparation have the greatest value and importance. In most cases the use of stimulants is due to lack of nutritious food. Miss Sickels says there is a lack of text-books on this subject. (520, 521.)

Mr. Greeley thinks no girls' school, particularly a normal school, should ever permit a girl to go out from it until she is a thorough housekeeper and cook, well acquainted with plain nursing, and trained to regard these things as among the highest womanly accomplishments. (931.)

C. Primary and secondary schools.—**1. Need of practical training in farm work.**—Mr. WHITNEY criticises the agricultural institutions for not being satisfied to remain schools, but aspiring to the dignity of colleges and universities. Abroad, he says, it is much more frequent to see primary or high schools in agriculture in farming districts. A young man educated in such an institution is likely to be much more contented to follow agriculture than one who goes to a university, where the agricultural course is looked down upon by the other students and is supposed not to maintain the rigorous training that the classical and mathematical studies are thought to offer. It seems to Mr. Whitney that the opportunities are not presented to train people in the particular knowledge required in any line of agriculture. He thinks there is need for more agricultural schools and not for more agricultural colleges. The schools should be right out on the farm lands where the boys work. If

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such a school were established in an agricultural center like Lancaster County, Pa., under the splendid agricultural conditions prevailing there, and if boys could see the methods pursued and learn how to handle stock and crops, they would acquire information that would fit them admirably to take charge of estates or lands of their own elsewhere. If Mr. Whitney wanted to educate a young man to be a tobacco expert, he would send him to Florida, where the industry has been developed along really scientific lines by practical men. A man familiar with the details of the work, though not otherwise educated, will command a salary of from \$2,000 to \$4,000. (869, 870.)

Mr. GREELEY, secretary of the Board of Regents of Education of South Dakota, says the best agricultural school for a boy is to spend a year with a thorough-going up-to-date stockman and farmer, and to live in daily touch with first-class stock raising and farming. The nearer the agricultural schools can come to this the more successful they will be. (931.)

2. Existing schools of agriculture.—Dr. TRUE says there is connected with the University of Minnesota a School of Agriculture of high-school grade, organized separately from the College of Agriculture, and reporting in 1898 an attendance of 275 young men and 50 young women. Nearly all the graduates are said to return to farm homes. One branch of the institution is a dairy school, with an attendance of about 100 young men with some previous experience in butter and cheese making, who desire a more technical knowledge of the subject. A similar school has been started at the University of Nebraska, with an attendance (1899) of 60 boys, reported to be direct from the farm and with the intention of going back. Hampton Institute, Virginia, and Tuskegee Institute, Alabama, are developing agricultural courses along high-school lines. There is a school at Doylestown, Pa., under Jewish auspices, understood to be endowed by the Baron Hirsch fund, which has a farm school on the European pattern, the boys living on the farm and having practical instruction in agriculture. Dr. True also understands that the Miller Manual Training School of Virginia gives some training in agriculture in this way. He regards this as simply the beginning of a movement for secondary agricultural education, and believes that there is needed the development of secondary schools of agriculture in this country as they have been developed in Europe. (140.)

Glenwood School for Boys.—Mr. GEORGE founded the Glenwood School for Boys near Chicago about 1889, for the purpose of educating boys in agriculture. (224.)

Briarcliff Manor.—Mr. FLANDERS, of New York, says that a school has been established at Briarcliff under private auspices in the hope of doing something to turn the tide of young men from the city back toward the farm. It was an outcome of an investigation of the scarcity of farm laborers made by the New York Association for Improving the Condition of the Poor. (998.)

Hampton and Tuskegee.—Dr. TRUE says the education in agriculture at Hampton and Tuskegee is decidedly practical, though it has not gone very far. The experiment stations and agricultural colleges in the South are also teaching a great deal of value to the farmer. (145.)

Mr. POOLE says the advantages to the colored man of such schools as that of Booker Washington's are simply wonderful. Mr. Washington is a great man and doing a great work for his race. At the State fair at Birmingham in October, 1900, the agricultural and mechanical exhibit from the institute would have done credit to any college. Mr. Washington and his assistant, Mr. W. B. Counsel, encourage their pupils to go into agricultural pursuits, but that is done very little; young negroes take to the professions, especially preaching. Tuskegee Institute receives \$1,500 from the State department of agriculture, and certain other moneys from the public-school fund. (923.)

Mr. HALE thinks Mr. Washington is doing wonderful work. A number of very bright young men from Tuskegee have come to his fruit farm as tramp laborers looking for work. He found that they came to get a practical knowledge of a well-managed fruit farm, rather than for the wages. In some instances they have been disappointing, but as a rule they are satisfactory. (401.)

Calhoun Colored School.—Mr. DILLINGHAM says that Lowndes County, Ala., is a typical Black Belt county, selected by Mr. Booker Washington when the Calhoun School was started, about 1892. There is at Calhoun a sort of farm village, having at the center a graded school running from the kindergarten up to the primary and grammar grades, giving agricultural training for boys and domestic training for girls. There are 18 workers at the school, about one-third educated blacks from Hampton and the rest educated whites from the North. They are trying to build up a neighborhood with an institutional object lesson at the center, consisting of a farm, a home, a school, and a church. The school is under no denominational control, but is supported by voluntary contributions almost entirely. The students range in age from 5 to 21 years. Only 1 of the graduates has disappointed the teachers; the others all promise well. Some are buying farms, and that is the ambition of all; one is a level-

headed preacher in the neighborhood. They are trying to go on with their education and to educate those around them. They show energy, determination, and industry. The school has shown the people how they can raise a bale of cotton to the acre instead of a third of a bale, the average yield for the county by intensive farming and by using the cotton seed as a fertilizer, and how they can get 25 bushels of corn to the acre instead of 15. Manual training has been developed out of the repair shop. (164, 167-169.)

Mr. Dillingham says there is at Calhoun a neighborhood of farms and homes grouped about a civilizing center, with a school, church, etc., endeavoring to overcome the poverty and isolation of the farmer's life. He looks to the farm village especially to protect the life of children. A short time before the Calhoun School was founded there was a race war in Lowndes County, but now the feeling between the races is pleasant, and white and colored people are working together at Calhoun. A Southern white man sold one of his plantations to the school, and is practically the agent of the school. (165.)

Mr. Dillingham says a farmers' conference is held each month, which is a school in farming for the older people. The economic gospel taught is to raise food and buy land. The black farmers of the farm village are buying some 3,600 acres. (166.)

Other industrial schools in Alabama.—Mr. DILLINGHAM says that besides the Tuskegee Normal and Agricultural Institute there is a manual-labor school at Huntsville, Ala., and the Calhoun School is trying to establish branch schools. (168.)

D. Agricultural instruction for adults.—1. *Farmers' institutes.*—Dr. TRUE testifies that in some States the farmers' institutes are managed by the agricultural college or experiment station; more frequently they are under the direction of the State board or commissioner of agriculture, and in a few States there is a special State officer known as the Superintendent of Farmers' Institutes. There has been a rapid increase in the number of institutes held. Dr. True estimates that they are now regularly held in about 30 States, and that during the year 1898-99 there were some 2,000 institutes, with a total attendance of about 500,000. When the institutes were first organized the farmers liked best to hear the successful farmers who had had experience in their immediate vicinity, but now the demand is more and more for experts who have made a wide study of agricultural problems. The institute workers have thus far been drawn largely from the colleges and experiment stations, but their staffs are getting overworked, and in one or two places at least there is the beginning of a movement to organize a special corps of institute workers. Dr. True thinks there should be in this country men corresponding to what in France are called traveling professors, who could ascertain what the needs of the farmers are, find out what is being done in the experiment station and in the department of agriculture, and disseminate the information at farmers' institutes and other farmers' meetings. In Wisconsin there are now held annually 120 institutes, with an average attendance of more than 50,000. The best addresses are published in the annual institute bulletin, of which 60,000 copies are distributed, a copy being put in every school library in the State. The State makes an appropriation of \$12,000 annually for this work. Massachusetts, Minnesota, Indiana, Michigan, Pennsylvania, Ohio, and New York are also mentioned as States in which the institute movement has been especially successful. (141, 142.)

Vermont.—Mr. SPEAR testifies that Vermont has a good system of farmers' institutes, from 30 to 40 meetings being held in different localities during 3 months of each winter, under the direction of the board of agriculture, and largely under the auspices of the local granges. (404, 405.)

Massachusetts.—Mr. STOCKWELL says the Massachusetts Board of Agriculture secures for institute lecturers the best talent it can obtain, securing practical men from the colleges and experiment stations and the most successful and progressive agriculturists to discuss their specialties. There is no connection between the institutes and the agricultural college, but all the professors are on the list of institute speakers. The State provides one speaker for each institute. The list of institute speakers and their subjects is sent to every agricultural society in the State, and the institute committee or the member of the Board of Agriculture representing the society selects the speaker and subject best suited to their needs. One or two ladies are among the lecturers, and improved household conditions are discussed, as well as agriculture proper. The people usually meet in the morning and have some topic discussed by local agriculturists, or, if they please, they may select a local lecturer and pay him. The speaker sent by the Board of Agriculture follows in the afternoon; the rest of the programme is made up by the society. This induces a local interest which results in a large attendance. The average attendance in the winter of 1899-1900 was 91, in spite of storms and other drawbacks. Never before had there been such a demand for lecturers.

Mr. Stockwell explains that each of the 34 agricultural societies, in order to receive the \$600 bounty from the State, is obliged to hold 3 farmers' institutes. Where there is no agricultural society, lectures are furnished to granges or farmers' clubs, so that every section of the State is supplied, though the call is greater than can be supplied under the present appropriation. On an average there are at least 8 institutes to a county each year. (893, 895.)

Pennsylvania.—Mr. HAMILTON testifies that the Deputy Secretary of Agriculture organizes farmers' institutes in the various counties of Pennsylvania, providing lecturers on the latest and most improved methods of scientific agriculture. The State makes an annual appropriation for the payment of the expenses of speakers, the rent of halls, etc. The Deputy Secretary has a committee in each county, which meets in June to select the places and dates at which they desire to have institutes held the following season. The State is divided into 5 districts, in each of which the State provides 3 lecturers who are expected to be present at every institute held in their section. The chairman of this board of representatives is an intelligent practical farmer of experience, energy, and judgment, well informed on agricultural topics, and able to express himself clearly. The second man is a scientist, supplied of late years by the State college. The third man is selected because he has succeeded in some special line of agriculture, and is changed from time to time for men who are experts in other lines. The first 2 men are kept throughout the entire season. A pamphlet is published giving the names of the State lecturers, the topics they discuss, and short biographies, so that the local managers can see what line of work each individual is capable of treating, and can select one of the topics put down under the lecturer's name. Local committees are authorized to select persons in the neighborhood who have succeeded in some line of agriculture to lecture or read papers. Institutes generally continue for 2 days, beginning in the afternoon of one day and ending in the evening of the second day. The evening session of the first day is devoted to the interests of the education of farmers and their children, and to it are invited the county superintendent, school-teachers, and school children. Another prescribed session is a woman's session, devoted to the interests of country homes, the care of children, the cooking of food, the science of nutrition, decoration, heating, lighting, and ventilation of country homes, flower gardening, etc. The local managers choose what they desire to have discussed at the other sessions. After each lecture there is an opportunity given for asking questions, which is regarded as the most important feature of the work. Institutes are held in Horticultural Hall, Philadelphia, among the best florists, and the institute workers are expected to stand criticism from the best men in the country. The work is of high grade, and the interest has been very great. The difficulty is to secure halls of sufficient size. As a rule the available buildings are entirely inadequate to hold the audiences. Country churches and sometimes country schoolhouses are used. In 1898-99 about 60,000 farming people were reached in the institute work. (347-349.)

Mr. Hamilton testifies that the farmers' institutes have discouraged the discussion of controverted questions, such as the tariff and the money question, leaving them to orators sent out by the political parties. These questions are thought to distract attention from the real object of the institute work, which is to give information upon practical subjects. (374.)

Ohio.—Mr. MILLER testifies that farmers' institute work was begun in Ohio in 1880 the State Board of Agriculture making an allowance of \$1,000 to cover expenses. After 2 or 3 years the appropriation was gradually increased, and the general assembly came to the aid of the board, so that it was possible to devote from \$3,000 to \$5,000 to institute work. In 1890 a general law was passed, providing for a per capita allowance of 5 mills from the various counties, 3 mills to be used for local expenses of the farmers' institutes held in the county, and 2 mills to be available by the State board of agriculture for its share of the expenses in furnishing speakers, etc. In 1896 the law was amended, making the per capita allowance from the county funds 6 mills, with a maximum of \$250, so that the State board now receives from \$60 to \$250 a year from each county, or about \$8,300 in all, and the local societies receive an equal amount for expenditure at home.

From 1 to 4 institutes are held annually in each county.

Local farmers' institute societies organize under the laws of Ohio by petitioning the State Board of Agriculture, and receiving authority from it. The local societies have a free hand in the conduct of the institutes, under certain regulations adopted by the board. Partisan and religious questions must not be discussed, but the work must be confined to the farm and its interest. Many of the best papers are by women. The employment of woman speakers by the local societies is encouraged; the State board has not yet seen its way clear to employ them. The State board furnishes 2 speakers to each institute, and the speakers travel in pairs, but no two of them work

together more than a week. In some other States the whole work is done from the institute bureau, from 4 to 7 speakers being sent out and conducting the meetings from beginning to end. Some States have 1 or 2 women who lecture on domestic science, etc. There is an average of 38 speakers on the Ohio list, each having from 5 to 15 topics he can discuss intelligently. Each institute consists of 5 sessions, continuing 2 days and 1 evening, and each speaker is usually on for 5 lectures. There is also a State institute at the capital, just previous to the annual meeting of the board of agriculture in the middle of January, at which addresses are delivered by the best men available in the Union, as well as by members of the Ohio corps of lecturers. The interest in the institute work is growing remarkably. The board has applications for several times the number of institutes that it can grant, and many independent meetings are held under the rules of the board. The work is increasingly valuable. Farmers are being encouraged and their work systematized. The average attendance is about 400.

A committee selects the best papers obtainable from the local speakers, with some from the employed speakers, and publishes annually a full institute report, largely made up of the lectures delivered. Of this report 10,000 copies are published for distribution from the Department of Agriculture. It also goes into the general year-book of the department, of which 24,000 copies are printed, of which 19,000 are allotted to members of the general assembly, and 5,000, besides those not used by representatives from the larger cities, are distributed by the department of agriculture. Mr. Miller has asked the committee of the assembly to give the department 25,000 copies, reducing the number available for members of the assembly.

Most of the lecturers are farmers. There are also 5 professors from the agricultural college of the Ohio State University and 5 from the staff of the Ohio Experiment Station. The speakers are selected with a view to their capacity for educating and bringing out valuable discussions among farmers themselves. Mr. Miller emphasizes the importance of the latter feature, and says the very best information and thought has been found in localities which have felt the great need of farmers' institutes. (605-607.)

Minnesota.—Mr. M. F. GREELEY, editor of the *Dakota Farmer*, testifies that Minnesota is the leading State in the Union for farmers' institutes, showing much the largest audiences and a correspondingly advanced condition of agriculture. Frequently the largest hall or opera house will not seat the audience. The average attendance last winter was about 557. Minnesota employs the best and most practical speakers to be found. It seems to be very difficult to get clear-cut speakers on subjects the farmers are interested in who have a practical knowledge of what they talk about. Mr. Greeley says that in communities where institutes have been held there are better stock, better tilled fields, better handling of crops, more contented farmers, and more boys and girls who are satisfied with, and proud of, their independent farm life than across the line in another State where they have not been held. (929, 931.)

North Dakota.—Mr. PROM says the greatest benefit the farmers of North Dakota derive from the agricultural college is through the professors' tours through the State holding institutes during the winter, when the farmers are not too busy to attend and get the best results of the experiments at the college. In December, 1900, 3 professors from the college held an institute in Milton and lectured on the handling of the soil, giving the results of their experiments in the growing of wheat in different ways on different plots of ground, fertilized and unfertilized. The first institute at Milton was held the year before, a very dry year, and the farmers went to get the benefit of instruction from the professors, who had raised a crop during the dry year while the others did not. The institutes are made as attractive as possible, and they are very well attended. (790.)

Mr. PROM says questions concerning elevator service or the grading of grain are not discussed at the farmers' institutes of North Dakota. They are discussed among the farmers only in private conversation, and the farmers have taken no political action to protect themselves. (800.)

Mr. BUDGE testifies that the farmers' institutes of North Dakota are well patronized and the results are good. The president of the agricultural college and 1 or 2 of the professors generally go out to them. The president of the Great Northern Railroad goes to a good many of the meetings. Stock raising and general farming are discussed. (848, 849.)

Maryland.—Mr. AGER testifies that through the efforts of members of the Grange and of the Maryland Agricultural College an appropriation of \$4,000 has been secured for farmers' institutes in Maryland. The Director of Farmers' Institutes secures speakers and gives notice of the meetings and of the subject to be discussed, choosing the

subjects according to the principal agricultural interest of the locality. At the close of the address anyone is at liberty to ask questions. The funds have not been sufficient to permit the sessions to be held longer than 1 day at a time. Mr. Ager thinks the institutes have had a very beneficial effect, but the farmers who need instruction most do not attend the meetings. The attendance, however, is better than formerly. (110, 114.)

Kentucky.—Mr. NALL testifies that attempts have been made heretofore to hold farmers' institutes in Kentucky by appointment of dates, and when the lecturers went to the designated place they would find no one there, or perhaps 2 or 3 or a dozen people. Mr. Nall has had a good attendance at the institutes he has held, because he has had the local backing of a club to work up interest. His plan is to have the local club make local arrangements, appoint a time, and arrange a local programme. He has almost determined not to go among the farmers until they are organized to hold institutes. The professors of the Agricultural College go with Mr. Nall, the State Department of Agriculture paying the expenses. Mr. Nall takes down the gist of what is said, catching all the arguments pro and con on each subject, writes them up, and publishes them in a supplement to an agricultural paper. The supplement is printed by the public printer and sent out to the Kentucky circulation of the paper under an arrangement with the publishers. The Commissioner of Agriculture also buys about 2,000 extra copies of the paper to be sent gratis with the supplement to persons in the sections where few papers are taken. In this way what is said is in the hands of the farmers within 10 days or 2 weeks. Mr. Nall finds that this plan works well, and is stirring up a great deal of interest. He believes it the most successful way of getting the farmers to read and study on these subjects. (812.)

North and South Carolina.—Mr. WHITE says farmers' institutes are held in various parts of North Carolina under the auspices of the State Department of Agriculture, but they are for the whites, and the colored man is not expected to attend. (425.)

Mr. HAMMOND says that farmers' institutes in South Carolina are conducted by a single lecturer, sent out on application by Clemson College. They usually last only 1 or 2 days. One was held in Mr. Hammond's neighborhood and aroused much interest. (828, 829.)

Georgia.—Mr. REDDING says the State of Georgia does not recognize the necessity of farmers' institutes. They have been held in an irregular way, but there are no funds to pay the expenses of managers and speakers. Nothing is being done to improve the condition of the farmer except by organized institutions, such as the experiment station, and to some extent by institutions like the State Agricultural Society. (447.)

Alabama.—Dr. STUBBS says farmers' institutes or agricultural meetings have been held in all parts of Alabama. (769.)

Mr. POOLE, as Commissioner of Agriculture of Alabama, directs the holding of farmers' institutes, being assisted by the professors from Auburn. Mr. Poole's intention is to invite progressive farmers, also, to go with him. (920, 921.)

Louisiana.—Dr. STUBBS testifies that the Louisiana State Board of Agriculture and Immigration organized farmers' institutes some years ago, and they are now held in 50 of the 59 parishes of the State. The farmers meet and discuss agricultural questions under the guidance of a director, who is usually either the Commissioner of Agriculture or Dr. Stubbs himself, or one of their associates, and who takes to them all the information he can relating to the subjects nearest to the farmers of that immediate vicinity. At every institute an attempt is made to select two or three local men to take part. (782, 783.)

Need of farmers' institutes in the South.—Mr. HALE suggests that the agricultural college funds could be used to better advantage in the Southern States in the support of farmers' institutes. (386.)

One great need of the farmers of Georgia, according to Mr. STEVENS, is for the formation of a farmers' institute or club in every county in which the best methods of agriculture, the best machines for labor saving, and other industries of the farmer might be discussed. Industrial education is as necessary to the farmer as to the mechanic, and the farmer can not afford to be behind the age any more than any other man. (918.)

2. Traveling schools.—Dr. TRUE says that besides the ordinary farmers' institutes, men from the agricultural colleges and experiment stations sometimes take up a particular line of instruction in a special locality in such a way that those in attendance get a more systematic survey of the subject than at the ordinary institute. Only a beginning has been made in this work in this country, but it has been attempted abroad to a considerable extent. In England a number of traveling dairy schools are in operation each season. (142.)

3. Reading courses for farmers.—Dr. TRUE speaks of the attempt of Pennsylvania

and some other States to organize regular courses of home reading for farmers. The Pennsylvania State College, which was the first to do this in any thorough way, has enrolled (1899) between 400 and 500 persons who are pursuing these reading courses. A syllabus of the course is sent to each of these students; certain books are recommended, and questions are asked. The answers to the questions in many instances show a surprising degree of proficiency. The work is growing rapidly and taxes the resources of the college. (142.)

4. The agricultural press.—Dr. HOWARD says that the agricultural press has done a great deal of good in connection with injurious insects. Some of the papers have started entomological investigations by soliciting information on certain subjects. The press is also anxious to get hold of results, and disseminates them very rapidly. Many agricultural newspapers are sent to the working officials of the Department of Agriculture without charge. The Division of Entomology receives 75 or 80 every week, from which items bearing upon the work of the division are clipped. (763.)

E. Experiment stations.—**1. History and statistics.**—Dr. TRUE says that experimenting in agriculture began in a regular way in this country with the establishment of agricultural colleges. The first regularly organized experiment station was started in Connecticut nearly 25 years ago. Soon after, stations were organized in California and other States, until in 1887 there were 17 experiment stations in 14 different States. In that year Congress passed the Hatch Act, giving to each State and Territory \$15,000 a year for the maintenance of an experiment station, which must be in connection with a land-grant college, except where stations were already organized. The pioneer stations were largely occupied in organizing the control of commercial fertilizers and demonstrating the necessity of basing their purchase on the manufacturers' guaranty of their chemical composition; but they also made sufficient scientific investigations to indicate that with broadened resources they might render much more service. The organization of new stations under the Hatch Act was therefore taken up with enthusiasm, and stations were soon in operation in every State and Territory. It was easy to find in the faculties of the agricultural colleges men competent to undertake agricultural investigations, and the equipment of the colleges could also be used. The lines of work had already been marked out to a considerable extent by the older stations, by some institutions in Europe, and by the United States Department of Agriculture, the scientific divisions of which already constituted a great experiment station. It was therefore possible for the new stations almost immediately to undertake useful investigations and begin the publication of information. In 10 years more than \$10,000,000 have been expended in the maintenance of experiment stations, of which about \$7,000,000 came from the Federal Government. The total expenditure is calculated to be \$1 for every \$3,000 worth of agricultural products. During the same period the stations have published 3,000 bulletins, exclusive of press bulletins, and 500 annual reports. Their bulletins are sent regularly to more than 500,000 farmers, and about 5,000,000 copies are annually distributed. Separate stations are supported in some of the States, so that the total number of stations in the United States, not counting branch stations, is 54, of which 52 receive appropriations under the Hatch Act. The total income of these stations for the fiscal year 1898 was a little more than \$1,200,000, of which \$720,000 was from the National Treasury. Small revenues are derived from the farms. Sales of farm products by the stations in 1898 amounted to \$65,356.25. The Office of Experiment Stations also had an appropriation of \$35,000 for its work, including \$5,000 for an investigation in Alaska. Experiment station work has been begun in Alaska under the direct supervision of the Department of Agriculture. There is also a very successful experiment station in the Hawaiian Islands, under private auspices, but under the direction of a man formerly connected with the Department of Agriculture and with the Louisiana Experiment Station. (146, 147.)

Dr. True says the experiment stations employed in 1898 in the work of administration and inquiry 669 persons, including 75 directors, 148 chemists, 71 agriculturists, 10 experts in animal husbandry, 77 horticulturists, 29 farm foremen, 21 dairymen, 50 botanists, 46 etymologists, 26 veterinarians, 20 meteorologists, 11 biologists, 11 physicists, 6 geologists, 19 mycologists and bacteriologists, 7 irrigation engineers, 15 in charge of substations, 23 secretaries and treasurers, 10 librarians, and 46 clerks. During 1898 the stations published 406 annual reports and bulletins, besides press bulletins, which were widely reproduced. The mailing lists of the stations aggregated half a million names. There is a steady increase in the correspondence with farmers and in the number of calls upon station officers for public addresses at institute meetings and other meetings of farmers. The station officers contribute many articles to agricultural and scientific journals, and have written a number of books on agricultural subjects. (148.)

2. Character of work.—Dr. TRUE classifies the work of experiment stations under

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four heads: (a) Police duties connected with the control of fertilizers, dairy products, etc.; (b) study of the natural conditions and resources of the States; (c) demonstration experiments showing how the results of science can be adapted to local conditions; (d) scientific investigations to discover new truths and new applications of old principles. The experiment stations conduct a wide range of scientific research in the laboratory, the plant house, the field, the orchard, the stable, and the dairy. Dr. True mentions the following subjects as among those to which several stations have devoted attention: Soil investigations; drainage, seepage, and irrigation; fertilizers; methods of cultivation, varieties, etc., of the more important crops; feeding stuffs; dairying; chemical and botanical work; horticulture; forestry; injurious insects; animal diseases; bee culture; poultry culture. (146, 147.)

Protection against fraud.—Dr. TRUE says the experiment stations, especially in the East, have been engaged in the investigation and inspection of commercial fertilizers, and have largely prevented the sale of fraudulent goods. In the State of New York alone over 900 brands of fertilizers were examined in 1898. The stations have also done much to expose extravagant claims made for fertilizers and to show the advantage of home-made fertilizers. The stations have also inspected adulterated foods, especially dairy products, butter increasers and preservatives, concentrated feeding stuffs, quack medicines for stock—especially hog cholera remedies—and have exposed frauds in creamery construction and equipment and in dairy apparatus. (148.)

Removal of obstacles to agricultural industries.—Dr. TRUE speaks of the important work of the experiment stations in investigating injurious insects and plant diseases, and says that the Wisconsin station, by discovering an effective curd test, has provided an effective means of detecting tainted or defective milk at cheese factories, which had caused a loss of from \$100,000 to \$200,000 each summer in that State alone. (148, 149.)

Dr. SALMON testifies that the principal experiment stations have permanent veterinarians and staffs of investigators. He thinks the disposition to investigate the diseases of animals is constantly increasing. (753.)

Influence upon legislation.—Dr. TRUE says:

"The agricultural colleges and stations have been largely instrumental in securing State laws for the inspection of fertilizers, nursery stock, dairy products, falsified foods, and feeding stuffs, creamery glassware, Paris green, and for the suppression of plant diseases and injurious insects. They have also aided in the passage of laws establishing farmers' institutes, fixing a milk standard, organizing associations for the promotion of agriculture, quarantining animals for contagious diseases, sale of oleomargarine, the apportionment and measurement of water for irrigation, State aid for highway improvement, etc." (148.)

Development of existing methods, crops, and industries.—Dr. TRUE gives a number of instances in which experiment stations have aided in the development of existing methods, crops, or industries in the various States. The Louisiana Experiment Station, by developing new methods of sugar making, has reduced or removed previous losses, and has helped the sugar industry also by improving the cultivation of sugar cane. In Connecticut the quality of the wrapper-leaf tobacco has been improved. In New York animal industry and dairying have been helped. The Missouri station bulletin on the draft of wagons with broad tires was thought so highly of by the League of American Wheelmen that a large edition was republished by the league. In Connecticut the Storrs station has studied the nutritive value of forage crops, and conducted cooperative experiments with fertilizers and with nitrogenous feeding stuffs. The Ohio station seems to have shown that more stock food per acre can be secured in Ohio from corn than from sugar beets, and has shown the superiority of shallow over deep cultivation of corn in Ohio. The Mississippi station has done an important work for the South in developing the growth of forage plants and the live-stock industries, together with a demonstration of the value of cotton seed and its products for stock. In Utah the methods of tillage have been improved with reference to the conservation of moisture, and studies of alfalfa have been made. The Nebraska station has promoted the growing of alfalfa and winter wheat instead of spring wheat, so that the State has become a large wheat producer, and its investigations of subsoil have resulted in increasing the yield of corn in some cases 10 to 30 bushels an acre. In Vermont there have been investigations of sap flow, as related to the maple-sugar industry. In California seeds and plants of improved varieties have been distributed, and the wine and olive industries have been helped. In Oklahoma effective investigations have been made in the culture of Kafir corn. In Rhode Island there have been important investigations in the feeding and breeding of ducks and geese. In Arkansas there have been experiments on economical methods of producing beef in connection with the raising of cotton. (149, 150.)

Introduction of new methods, crops, and industries.—Dr. TRUE says:

"The Wisconsin station has been instrumental in introducing a variety of barley known as the Mansbury barley. This increased the average yield several bushels per acre in Wisconsin with a

result worth millions of dollars annually to the State alone. This station and the Minnesota station have been largely instrumental in introducing the growing of rape in these States, and it is now grown on thousands of farms to the advantage of the farmer. The Wisconsin station was fortunate enough, after several other stations had made imperfect successes, to perfect a reliable milk tester—the Babcock milk tester—and that has very largely revolutionized the business of dairying in this country."

The Pennsylvania station and many other stations have investigated sugar beets. Their work, in connection with that of the Department of Agriculture, has shown definitely where good sugar beets can be grown. The Maine station has shown that apples can be raised in Aroostook County. The Storrs station, in Connecticut, has made important investigations in nutrition. The Ohio station has originated a method of watering greenhouses by subirrigation. In Florida the introduction of the velvet bean has resulted in the saving of thousands of dollars on fertilizers. Cassava is another new crop, from which starch can be made cheaply. The California station has been engaged in soil investigations, especially on alkali lands, resulting in bringing into agricultural use large tracts of land which were thought to be useless. Kafir corn was introduced into Kansas by the Department of Agriculture, and taken up by the Kansas station. In 1898 over half a million acres of this corn, valued at \$6,000,000, were grown in Kansas. It is a dry-soil plant, which is a great advantage for certain regions. (150.)

3. *Work of certain stations.*—*Massachusetts.*—Mr. STOCKWELL says the Massachusetts Experiment Station could not take up all the lines of experiments called for when it was started, but chose those which seemed most pressing, and has obtained exceedingly good results. Before the establishment of the experiment stations experiments by private individuals were often widely advertised as demonstrating some particular truth, but were afterwards found to be the results of 3 or 4 years of continued peculiar conditions. The experiment stations take no chances, but make such conditions that the result of the experiment is assured. The Massachusetts station is at work testing fertilizers and seeds, the relative value and productiveness of grasses and forage crops, insecticides, and remedies for diseases of trees and plants, the sterilizing of soils to promote plant growth, stock feeding, and the relative value and productiveness of grasses, fruits, and vegetables for market. All the experiment stations in New England are doing a very great deal for agriculture. (894.)

Mr. Stockwell testifies that the agricultural college and experiment station are separate organizations, but work in harmony. (895.)

New Jersey.—Mr. COLLS testifies that the agricultural college and experiment station have been of great benefit to the farming community of New Jersey as a whole, though perhaps half the farmers do not realize it. The experiment station has forced manufacturers of commercial fertilizers to give a better grade of fertilizers for the money. A farmer can send a sample of a fertilizer to the station and have it analyzed. (126, 127, 130.)

Ohio.—Mr. MILLER says the Ohio Experiment Station conducts experiments as to crop production, fertilizers, and the enemies of agriculture, and has given very much needed information. Fertilizer experiments are made by the application of fertilizers on plots of ground on which various products are growing, and making very careful determinations and deductions. The station is criticised by those who are not given to scientific investigation, but the spirit of cooperation with it is very greatly increasing. There are two branch stations—one in the northwest and one in the northeast of the State—the principal station being in Wayne County, in the central part. The station is not connected with the agricultural college. It has the franking privilege and distributes bulletins. (610.)

Minnesota.—Mr. POWERS says there was originally but 1 experiment station in Minnesota, but subsequently 3 more have been opened, all connected with the college of agriculture. One is located in the northern part of the State to investigate the character of the farming best suited to the northern pine lands, which have a different kind of soil from the south or the Red River Valley. (183.)

Mr. Powers says the agricultural experiment stations which show the possibilities of agriculture in the various States have done most for the farmers. The Minnesota station has been one of these. While the farmers were changing from an almost exclusive cultivation of wheat to a diversified system of agriculture, the experiment station was finding out what system of diversified farming was best suited to each section of the State. Mr. Powers does not think that any of the Eastern States are doing enough practical work in this line. (177.)

North Dakota.—Mr. PROM says there is an experiment station connected with the North Dakota Agricultural College which is doing good work along practical lines. The bulletins can be had by sending for them, and the professors state their results at the farmers' institutes. (791.)

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Mr. BUDGE says the North Dakota Experiment Station makes tests on seeds, stock, soil, fruits, etc. It is of great advantage to the farmer who visits it. (848.)

South Dakota.—Mr. GREELEY testifies that the South Dakota Experiment Station is doing very hard, thorough work, but largely along lines of little practical value to a large part of the State, owing principally to its situation in the southeast corner of the State, in a section of country very much like Minnesota and Iowa, where there is nearly always ample moisture, which nearly two-thirds of the State lack except for certain kinds of stocking and farming. The experiments, also, are similar to those carried on in Iowa and Minnesota, and there is not the best kind of feeling toward the station on the part of the farmers of the central and western parts of the State.

Several years ago Mr. Greeley introduced in the State legislature a measure asking for a substation to be located at Highmore. Afterwards the Government sent a man to the station and allowed it to be under the care of the director of the experiment station at Brookings. The State appropriation in 1901 was \$1,000. This is a drought-resisting forage substation, established to look after the interests of the drier sections of the State. Experiments are conducted for drought-resisting forage plants only—those supposed to grow without irrigation. Mr. Greeley pleads for a more elastic interpretation of the experiment-station law, which would permit part of the fund to go to this substation, which seems to the stockmen of the State the more important of the two. The question how to get drought-resisting forage crops means everything to nearly one-half of the State and very much to nearly all of it. (932.)

Maryland.—Mr. AGER testifies that the Maryland Experiment Station has been a great help to the farmers of the State. In some cases various kinds of crops have been experimented with in different portions of the State. The professors lecture at farmers' institutes and at grange meetings. In 1898 the average yield of wheat in Maryland was not more than 20 bushels an acre, but at the agricultural college they produced 40 bushels an acre. After a warm spell, early in April, it turned cold, and the plants were weakened; but at the agricultural college they used 100 pounds of nitrate of soda per acre, and the professor of agriculture attributed the large yield to that cause. The members of the Maryland Grange mix their own fertilizers according to the formula given by Professor Patterson. Some of the members used soda and phosphate under his direction for early potatoes, leaving some rows without the fertilizer. Where the soda was used there was a good crop, and where it was not used there were hardly any marketable potatoes. The fertilizer made a difference of several hundred dollars to those who used it. (107, 108.)

West Virginia.—Mr. CLOHAN, of West Virginia, says:

"Our experimental station has spent a good deal of its time in what a great many of us thought was foolishness, proving that lettuce could be raised successfully under electric lights, and mushrooms could be grown under certain conditions, and that cucumbers could be made in a hothouse—you could raise them to have them all winter—and a great deal of that which we all think would be a great deal of benefit if we were all retired millionaires and were running our conservatories, but we do not exactly see where it interests the fellow who has bought a farm and only paid \$1,000 on a \$5,000 or \$6,000 farm. We do not see how it is going to help that fellow out."

Mr. Clohan does not think the benefits derived from experiment stations quite equal their cost, but he says the farmers of West Virginia have a far better feeling toward the experiment station than at any previous time. Since farmers' institutes have been introduced, and members of the station staff have come into actual contact with the farmers and found what kind of experiments they wanted conducted, their work is coming to give much better satisfaction. When disease breaks out among plants, or anything goes wrong, these men will come to the farm and conduct their experiments where everyone can see that it is a benefit; but when they are conducted in the laboratory the average farmer can not be made to believe that it is not all tomfoolery. (595, 602, 603.)

Mr. Clohan testifies that the West Virginia Experiment Station makes experiments in the growing of grain by distributing new varieties and sending out fertilizers to be used, suggesting different methods, and having careful experiments made as to the results. He regards this as practicable and beneficial. In both of the panhandles of West Virginia, which are fruit-growing sections, the farmers are being guided a great deal by the experiment station with respect to the codling moth and spraying. (595, 602, 603.)

Kentucky.—Mr. NALL testifies that the Kentucky Experiment Station is under the direction of Professor Scovell, a very competent man, who, by going out to the farmers' institutes and mixing with the farmers, finds out where improvement is needed, and also keeps in touch with the National Department of Agriculture, getting the newer varieties of seeds and plants and testing them, and testing all kinds of fertilizers by having alternate rows with and without fertilizers. The results of

his experiments are sent to the farmers in bulletin form. There are also professors of entomology, agrostology, and geology, who come to the farmers' institutes and find out what the people want. Professor Scovell, by experiments, shows the farmers what is lacking in the soil. Sometimes he shows where there has been a failure in the use of fertilizers, tells them what the trouble is and how to remedy it. (812.)

Georgia.—Mr. REDDING, the director of the Georgia Experiment Station, says the experiment station is for investigation and research primarily, and it attempts to get the farmers to follow the methods found to be best. The great freeze of February, 1899, killed the oats, except as they were planted where the experiment station directed. The farmers are adopting methods by which they can save themselves further destruction by frost. (447.)

Alabama.—Mr. WHITNEY says some important experiments in the culture of soil bacteria have been made at the Alabama Experiment Station at Auburn. (882.)

Louisiana.—Dr. STUBBS says there are 3 experiment stations in Louisiana, one at Audubon Park, New Orleans, one in connection with the Agricultural and Mechanical College at Baton Rouge, and one at Calhoun, in the northern part of the State. There is a noticeable interest in experimental work in Louisiana. The State contributes \$25,000 a year to the stations, besides the amount received from the United States Government—probably a larger appropriation for experimental work than any other State except New York.

When the sugar planters started the station at Audubon Park, it proved of such benefit that when the Hatch bill was passed establishing a station in every State and Territory, the State legislature determined to divide the \$15,000 a year into 3 parts, giving one-third to the sugar experiment station already established by the sugar planters, one-third to the station at Baton Rouge, and the other third to the hill farmers in northern Louisiana, and directed the Board of Agriculture to secure a location for the third station. Bids were invited from the different parishes, and the competition resulted in the parish giving all the lands, buildings, mules, and equipment. The station has become a very valuable ally to the small farmers.

The station in northern Louisiana has become a social factor of great prominence. The agricultural camp meetings and other meetings of the Northern Louisiana Agricultural Society are held there. The station has revolutionized the agriculture among the small farmers of that section. It has introduced new methods, new plants, and new seeds, and the study of experiments in the field has been an object lesson and a revelation, widening the mental horizon of the farmers. Modern dairy methods have been introduced, and the farmers are now competing in the market with first-class butter, though they never sold butter before. The station has a fine dairy, and has different varieties of sheep and hogs; also orchards and gardens and a tobacco barn. The main gain has been to take the farmers' attention away from cotton as the sole money crop. They formerly raised a little corn, but their lives were primitive. Their butter was a white product, but now they make first-class butter. They are as up-to-date as any farmers in any part of the country. They can discuss agricultural topics with great intelligence. (780, 781.)

Dr. Stubbs, director of the Louisiana experiment stations, after having been in the State 16 years, supposes he can shake hands with and be recognized by almost every farmer in the State. (769.)

Sugar experiment station.—Dr. STUBBS says the planters of Louisiana established the sugar experiment station over which he presides 15 or 16 years ago, and have spent over \$100,000 for equipment. They have found it profitable, because they continue to support it. The improvements and better methods that are being adopted in the cultivation of sugar cane are largely due to the experiment station and sugar school. A good many beet-sugar men, also, have been educated there, and are scattered all through the beet-sugar factories of the West. Dr. Stubbs says the experiment station is more practically beneficial to the sugar industry than the school, because it is 6 years before the boy can put his knowledge into practice, while the station's methods are taken hold of by the planter at once and carried into his field or sugar house. (780.)

4. *Distribution of bulletins.*—Dr. HOWARD says that in several States the experiment-station bulletins are published in large editions of 20,000 copies, and very widely distributed under frank. (763.)

5. *Coordination of work.*—Dr. TRUE says the experiment stations are brought into intimate relations with each other and made to constitute organic parts of a national system through the Association of American Agricultural Colleges and Experiment Stations and the Office of Experiment Stations of the United States Department of Agriculture. The association holds annual meetings, at which questions of general policy and management are discussed, and papers on special topics read. Its proceedings are published by the Department of Agriculture. The Office of Experiment Stations examines the work and expenditures of all the stations, publishes popular

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and technical summaries of their investigations, collects and disseminates information regarding the work of similar institutions throughout the world, suggests lines of inquiry, aids cooperative enterprises, and, in general, aims to assist the stations in developing and strengthening their work. Nearly 1,000,000 copies of its publications are distributed in a year. (148.)

6. Criticism and valuation.—Dr. TRUE says there has been to a considerable extent a failure to understand the real purpose of the experiment stations and disappointment that they have not undertaken more farming operations. The act under which they operate was framed with reference to the needs of institutions where science was to be used for the benefit of agriculture; so that the stations work from the scientific to the practical, and do not carry on farming operations to show what good farming is, after the manner of the model farm. If the stations are to do their best work, the investigators must be allowed to pursue their investigations according to the methods demanded by the work, and must not be hampered by outside duties. Dr. True says, also, that political influence has worked too actively in the organization of the stations. In most of the States the board is appointed by the governor of the State, and the membership can be more or less shifted for political purposes. There have been shifting policies in the management of the institutions, and the officers have been changed too frequently. There has been a lack of proper organization. At times the workers have been too independent of each other; at other times there has been too much meddling on the part of the board of management. The lack of thoroughly trained men has been one difficulty, and there has been a haste for immediate results and the demand for too many kinds of work. (150, 151.)

Dr. True adds, however, that the experiment stations have every year a better equipment and better trained men; they divide their work more thoroughly among specialists and introduce new lines of work. There is being made a clearer distinction between the educational work which the college can properly do and the experimental work which the station ought to do. Finally, the stations have in an increased measure the cordial support of Congress, State legislatures, and the people. (151.)

"The American experiment station," Dr. True says, "is the most complete and comprehensive system of agricultural research which the world has ever known. Its publications reach farther and come home more closely to great masses of our farmers than is the case in any other country. If any farmer in the United States is not acquainted with the latest information which agricultural science has to give him regarding the means for improving his art, it is because he has neglected to avail himself of the public agencies created for his benefit." (148.)

F. General education as affecting agriculture.—1. **Inadequate public school facilities in rural districts.**—Dr. CROWELL, formerly president of Trinity College, North Carolina, declares that the agricultural people are the most poorly educated people in the country. In Pennsylvania the rural districts get about half as much per pupil as is paid in Philadelphia. If the educational facilities of the country districts were transferred to Philadelphia, New York, or Boston, the people would move away in a mass, or, if obliged to remain, would abandon the school system. No public-school system could exist in the city if it did not maintain a higher grade of educational facilities than is maintained in the country. (336.)

2. **School facilities and school age in various States.**—*New Hampshire.*—Mr. BACHELDER says that in New Hampshire children are required to attend school from 5 to 14 years of age, and at least 12 weeks in the year. Usually they continue to attend until 16 to 18 years of age. The schoolhouses and instruction are not satisfactory, although there is much improvement going on. The course of study is too short and there is not proper supervision. (43.)

Vermont.—Mr. SPEAR testifies that the school age in Vermont is from 5 to 18 years and that every child in the State who can reach the schools is provided for. The curriculum is not arranged with any particular reference to agriculture or any other business. (404.)

Compulsory education, free text-books and transportation in Massachusetts.—Mr. STOCKWELL says the compulsory age in Massachusetts is from 7 to 14 years and the law is very well enforced by the State board of education and State police. The public-school facilities are generally sufficient, though they are not of the best in some of the hill towns. There are high-school privileges in every town, or if there is no high school in a town transportation is furnished to the nearest high school. (887.)

Mr. Stockwell testifies the State of Massachusetts compels the towns and cities to have 40 weeks of schooling each year. There is no distinction on account of color. Colored pupils are permitted to go to the white schools. The State also compels the towns and cities to provide free text-books for all, including the high schools, as well as to have 40 weeks of schooling each year. A bill before the legislature of

1901 provided that the text-books should become the property of the pupils. Mr. Stockwell favors the bill, saying that the old text-books which he studied are the ones he now refers to.

Massachusetts has an old school fund, the interest of which is distributed to the schools, and a small fund raised by taxation each year. The dog tax is added to the school fund, and in Sutton the fund is augmented by an old parish gift. The funds are distributed as far as may be to the weaker schools and the towns where taxation for schooling is most burdensome. The total for support of schools and buildings is \$13,826,243.41; the local taxation burden is \$13,550,395.78; the whole number of children attending the schools is 474,891; the average membership is 399,423; the average taxation cost of support for each child in the average membership is \$26.06; the average cost of support and buildings for each child in the average membership is \$33.92. Some have felt that the amount distributed to the towns should be increased and have asked for an additional half-mill tax in favor of the country towns, to be distributed on the basis of average attendance. That proposition was carried through the legislature 3 years ago and was vetoed by the governor. The richer towns would under this bill get less than they would contribute. Boston would contribute annually about \$500,000 for the benefit of the State at large; but Boston is constantly drawing to itself not only the money of the State, but the best manhood and womanhood of the State. (891.)

Mr. Stockwell says Massachusetts as a State gives less in proportion for schools than any other State in the Union except New Hampshire, while the towns go beyond their ability. Mr. Stockwell submits statistics showing great inequalities in the taxes raised for school purposes between the different towns of the State. (890.)

Township high schools in Massachusetts and Pennsylvania.—Mr. HAMILTON says Massachusetts has township high schools, and outside of a certain zone the scholars are carried to and from school at the expense of the township. The Pennsylvania law also authorizes the establishment of township high schools, providing that where a 2-year course is established the school shall have \$400 from the State fund; where a 3-year course is provided, \$600, and for a 4-year course, \$800; but the law requires an appropriation to carry it into effect, and this has not yet been secured (January, 1900). There are in Pennsylvania, however, several township high schools which are the result of local enterprise. (352.)

New York.—Mr. NORRIS thinks the public school facilities in New York State are very good and growing better. The qualifications of teachers are becoming more exacting; some of those who taught school several years ago can not get a certificate to-day. (324.)

New Jersey.—Mr. COLES testifies that the educational facilities in New Jersey are good. There are excellent public schools and free text-books. (124.)

Mr. DYE says the age of allowable school attendance in New Jersey is from 5 to 18, and of compulsory attendance from 7 to 12 or 16, for 20 weeks in the year. The school facilities are fairly satisfactory, although not sufficient attention is given to the principles of agriculture and to nature study and other practical branches. Compulsory attendance is not vigorously enforced in some localities. (87, 88.)

Ohio.—Mr. BRIGHAM says the public schools of Ohio, even in the country districts, are very satisfactory. The buildings are good and the teaching of a high grade. Few children fail to attend. Up to the age of from 12 to 14 the boys usually attend fully 6 months in the year. After that they may be taken out during the summer months to work on the farm, but will continue during the winter until 16 or 18, and thereafter may go to some higher school. (11, 12.)

Illinois.—Mr. WILSON testifies that the school facilities of Illinois are good compared with other States, but not good compared with what they ought to be. The school age is from 6 to 21. In his own county 80 per cent of the children of school age are enrolled; he presumes this is above the average, as it is a rural county, without cities. The schoolhouses are better than they were 10 years ago. The examinations for teachers Mr. Wilson does not think as severe as they should be in most of the schools. Illinois has a compulsory educational law. Probably 80 or 90 per cent of the children in the agricultural districts receive only a common country school education. Some go to State institutions. There are a few township schools in the State which, he understands, work very satisfactorily, but the system is not general. (246, 247.)

Free text-books in Minnesota.—Mr. POWERS says Minnesota has a free text-book law, the application of which is left optional with the various districts, and has been adopted in a little more than half the State. By its adoption there has been a material advance in the average attendance. Minnesota has a compulsory education law, but the compulsory feature is not enforced. (180, 182.)

North Dakota.—Mr. FROM, of North Dakota, says the school facilities of that State

are very good and the schools well attended, but there are not many children of school age, because the State is populated by young married people. A gray-haired man is seldom seen. (790.)

Mr. BUDGE testifies that the public schools of North Dakota compare favorably with those of any State in the Union, and are being improved as fast as possible. The condition of the schoolhouses is good. The superintendent of public instruction is elected by the people. (847.)

The West generally.—Mr. GREELEY, of South Dakota, says that with the State institutions, church institutions, and ordinary public schools there are really more schools than are needed in many sections of the West. (930.)

Maryland.—Mr. AGER says the school age of children in Maryland is from 6 years to about 20. He considers the school facilities for white children sufficient, but says there is a lack of schools for colored children. The condition of the schoolhouses for both white and colored children is generally good, and there are very good teachers, many of them graduates of normal schools. Free text-books are furnished by the State under a recent law. (106, 107.)

West Virginia.—Mr. CLOHAN, of Martinsburg, W. Va., says there has been an improvement in school accommodations in the last 15 or 20 years, and the length of the school term has perhaps been increased 1 month in his county. The schools are open from 6 to 8 months for all between the ages of 6 and 21. (592, 593.)

Kentucky.—Mr. NALL says nearly every county in Kentucky has one or more graded schools, including the high-school course. Kentucky has a free-school system supported by taxation. It has not a free-schoolbook system, but each county, through the county judge, may expend \$200 annually for books for indigent children. The school trustees in Kentucky are required to ascertain the number in each family from 6 to 20 years of age. About 80 per cent of the children are enrolled in the schools. The Kentucky schoolhouses are in fairly good condition, and improving. He thinks the teachers are as well qualified as in other States. High schools are found only in the cities, towns, and larger villages, and pupils who do not reside in the cities or towns must pay tuition. (813, 814.)

North Carolina.—Mr. GRAHAM, of North Carolina, says the public-school system of that State has existed since 1840. He quotes the State superintendent of public instruction as saying that the rate of taxation on property for educational purposes in 1860 was greater in North Carolina than in Massachusetts. In North Carolina it is the duty of the committee in each school district to take a school census every year, so the number of children of each race of school age (6 to 21 years) is known, and the tax is divided between the two races according to numbers. The educational board makes special appropriations for the small districts, and the schools are kept open the same time in every district, without regard to the number of pupils. The poorer farmers can not spare their children 8 or 9 months; from the age of 8 they work on the farms. Another difficulty is the price of schoolbooks. Sunday schools get for 8 cents what in the public schools costs \$1.50. Mr. Graham says the State should contract for the text-books and furnish them either free or at cost. Whether it is advisable for the State to publish its own books, as California and a few other States do, is a question of economy. The schools in North Carolina begin in December and run through the winter from less than 3 to over 4 months. Mr. Graham suggests that there should be a term in the summer time; there are 6 weeks after the crops are laid by in July when the children could go to school. There is no distinction between white and colored teachers in the matter of wages. (438, 439.)

Mr. WHITE testifies that the school facilities of North Carolina are poor; there is an insufficiency of funds, and the average school term in the State is about 62 days a year. A good many cities have graded schools open from 6 to 9 months in the year. An extra fund being raised by special tax, but in a great many rural districts the schools run perhaps only 30 or 40 days in the year. There are a great many parochial and other private schools in the cities and towns; a great many people, both white and colored, do not care to have their children mix with the children who go to the public school. In the rural districts, in some cases, the school is run as a subscription school for a month or two after the regular term, in the same building and with the same teacher. There was a statute making it discretionary with each school district to levy an extra tax to run the school a longer term, but very few took advantage of it. Even with the short school term, it is a rare thing to find a young man or young woman of 20 years of age who can not read and write and cipher. (424-427.)

South Carolina.—Mr. HAMMOND says that in South Carolina the school fund is raised by a State tax of 3 mills on property and by a \$1 poll tax. The poll tax is expended in the district in which it is raised, and the 3-mill tax is divided in the county. Each school district is allowed to levy a maximum tax of 4 per cent on property for the schools. The State guarantees \$3 for each pupil enrolled in case

the school taxes do not produce so much. The State fund is apportioned among the districts according to the enrollment. The school districts may by law contain not less than 9 and not more than 40 square miles. The schoolhouses are generally very poor. An ordinary white schoolhouse is a weatherboarded building without ceilings, costing with seats and desks about \$200. The negro schoolhouses are about one-third as large. The teachers are not at all well qualified. There are competitive examinations; but the county trustees are indifferent, and the county superintendents are absolutely inefficient. The county superintendents are paid only \$400 or \$500 a year, and are generally political characters without any culture whatever. There is no compulsory education law in the State. The State does not provide books, but regulates their prices, and provides that they shall not be changed oftener than once in 5 years. (824-826.)

Mr. HAMMOND thinks that less per capita is spent upon education in South Carolina than was spent when the schools were voluntarily supported. The parents think the State must do everything and they need do nothing. The only expense put upon them is the purchase of books, and they complain at that. (825.)

Georgia.—Mr. REDDING testifies that the school facilities in the rural districts of Georgia are not as good as 30 or 40 years ago, though they have improved somewhat of late. The teachers in the public schools are not as good as in the private schools. The schools are open 5 months in the year. In the cities and towns they are open 9 months. (451.)

Mr. NUNNALLY says a school term of 5 months is provided and paid for by the State of Georgia. That covers all the time that can be taken from the farms. Some progress is being made in the education of the masses. Both races have the same privileges in the common schools. (455.)

Mr. BARRETT says that the appropriations for school purposes in Georgia have nearly doubled during the past 10 years, but there is still complaint that the school term is not long enough. This, however, arises from the inability of the people to pay heavier taxes. The school age is from 6 to 18. In the cities the children usually attend regularly, but in the country districts they do not. Illiteracy among the whites is 16 per cent; among the negroes, 67 per cent. Augusta is the most illiterate city in the United States, and this is attributed to the influence of politics in the public schools. (53.)

Mr. STEVENS says free tuition in the public schools of Georgia is provided for during 5 months of the year in the agricultural districts, and local taxation is levied to support public schools in the towns and cities for another 4 months of the year, making the urban school year 9 months. This applies to the colored schools as well as to the white; no distinction is made. One superintendent has charge of the whole system of white and colored schools. The teachers in the colored schools are colored, and from an educational standpoint are considered to have the same qualifications as the white teachers. One has to come up to a certain standard before he gets a license to teach. He is examined by the county school commissioner, and is given a license when found qualified. The patrons of the colored schools have the right to recommend some person that they desire for a teacher, and if the person recommended can secure a license to teach he is selected. Sixty-six per cent of the children of school age (which runs from 6 to 18) are enrolled in the schools. (913, 914.)

Mr. HALE says the public-school facilities of his section of Georgia for both whites and blacks are very good, considering the amount of money spent upon them, and are steadily improving. He estimates that not more than 60 per cent of the blacks of school age attend school for more than a very short session, if at all, but a much larger proportion of the white children attend. At one time Mr. Hale had a private school on his fruit farm. (385.)

Alabama.—Mr. DILLINGHAM, of Lowndes County, Ala., says he lives in the land of one-room cabins, inhabited by mere crop-mortgaged cotton peasants. The schools are kept in tumble-down log huts, with no desks, blackboards, or maps, by ignorant teachers, and lasts only 3 months a year. (165.)

Mississippi.—Mr. KYLE says that in some of the towns of Mississippi there are now separate school districts which levy a tax to supplement the amount contributed by the State, and run the schools about 9 months in the year. The legislature appropriates \$1,000,000 a year, which will run the schools for 4 or 5 months, at the end of which time the school is closed unless there is a local tax or a contribution made by the citizens. There is no compulsory attendance law. Mr. Kyle thinks the schools are taught in the winter and in the summer, when it is convenient for children from the farms to go to school. (468, 471.)

Louisiana.—Dr. STUBBS says the public-school facilities of Louisiana are increasing

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and the schools improving rapidly. The citizens are taxing themselves very heavily for public schools. (778.)

Dr. Stubbs adds that besides the Agricultural and Mechanical College, Louisiana has two industrial schools, one in the extreme north and the other in the extreme south of the State, both entirely supported by the State, and largely attended. The pupils are taught all the industries, besides the sciences leading up to them. There are also normal schools and denominational schools. The Catholics, Methodists, and Baptists all have colleges in Louisiana. (783.)

3. **Common-school curriculum criticized.**—According to Professor DAVENPORT, farmers say that the family life on a farm is so closely identified with the business life that the child learns all the business hardships, and when he goes to school he is given to read the story of the few phenomenally successful men in other than agricultural lines; so the feeling is that they should be better instructed in the normal features of country life. The farmer complains that when he sends his child to school he goes into an artificial world, having absolutely no reference to rural life, and asks that part of the instruction should deal with the affairs of the country and be coordinated with his experience. The demand seems to be for technical instruction in agriculture, which it will be impossible to get for an indefinite time owing to the lack of teachers; but Professor Davenport believes that the demand when analyzed is not so much for agricultural instruction as for a curriculum which would come closer to the life of the student. This has been introduced in a tentative way in the nature-study work of New York. (264, 265.)

Mr. WHITNEY says that very little or no information about crops and plant and animal foods is taught in any of the common schools that he is familiar with, even in agricultural districts. The ambitions of the pupils are led into other pursuits than agriculture. Mr. Whitney thinks that the curriculum could be changed to advantage in some cases. (870.)

Mr. HAMILTON, Secretary of Agriculture of Pennsylvania, considers that the school curriculum is very poorly adapted to the future needs of those who are to make farming their occupation. The ordinary common school teaches reading, writing, arithmetic, geography, and some English grammar, and physiology is now required in Pennsylvania. No instruction is given, as a rule, upon common-sense lines relating to the natural objects surrounding the children. Mr. Hamilton feels that the system of education in the common schools of Pennsylvania tends to send children into the towns and cities. The education given is quite elementary, and any boy or girl desiring to secure a fair education must go into some town, where the education and surroundings effectually educate him away from the country. Mr. Hamilton thinks this accounts for the overpopulation of cities. He suggests as a remedy the teaching of nature topics, as is done in France and Germany, to some extent in Canada, and, within a few years, in New York. (351.)

Mr. MORAN, of Minnesota, complains that farming is scarcely mentioned in the common schools, and that there is nothing in the schoolbooks to encourage a boy, stimulate him, or train his mind to look upon the occupation of farming as being honorable. (709.)

Mr. PROM, of North Dakota, says the course of study in the public schools is, of course, not sufficient for the needs of agriculturists. (790.)

Mr. STOCKWELL, of Massachusetts, says actual hard work does not enter into the school curriculum, so that honest hand labor is something the boy and girl do not know until they are 15, and after that they do not think it wise to take it up; so hard manual labor is falling into disuse, and is replaced by costly athletics, except at the agricultural college, and even there sports must be encouraged or the college will lose its students. (887.)

Mr. GREELEY, Secretary of the Board of Regents of Education of South Dakota, thinks there is too much book learning and too little of the practical in the schools. "The bread and butter part of it is neglected." Too many boys and girls go back to the farm, if they go back at all, full of facts and figures, but with no mental, moral, or physical muscle with which to take hold of the business of life. Just when they are considered perfectly educated they are sometimes almost perfectly helpless. Mr. Greeley thinks it would greatly benefit the girls to know more about housekeeping, cooking, nursing, etc., and the boys to learn how to handle stock and get the most out of the soil. The practical part should be worked in with the other part so that each would make the other more available. (931.)

Dr. STUBBS says the course of study in the common schools of Louisiana is not well adapted to agricultural people. It is the same which prevails almost everywhere in the United States. The public schools are not adapted to the wants of any agricultural community whatever. After a great many speeches before farmers and educational organizations, a great many parishes in the State have been about per-

suaded to amend the public-school curriculum by adding agricultural and natural sciences. Three-fourths of the boys and girls in the public schools in the hill section never get beyond the public schools, and become farmers without having studied any kind of science and without the slightest knowledge of the composition of the soil they are going to work, and with no idea of the nutrition of animals, of plants, or of fertilizers. They are called upon to spend a lifetime working at a profession of which they have not learned a word at school. This, Dr. Stubbs declares, is a great blunder, the greatest monstrosity of the present age. They have been taught history, grammar, and the three R's, but nothing about their future life work. Louisiana is now adopting measures, however, which will give the rural schools a course of nature studies in addition to the other branches. In several parishes this has already been inaugurated. (779.)

Mr. BROWN believes that the lack of prosperity of Southern farmers and Southern people generally is due to the lack of education in practical lines. White boys have been educated with the idea that they would not have to work. In the common schools, high schools, and colleges industrial education and agricultural training should be introduced. (62.)

Mr. DILLINGHAM expresses the fear that the public schools have a tendency to unfit negroes for the struggle for existence, tending to make them think they can go through life without working. (167.)

Mr. WILSON does not regard the common-school curriculum as sufficient for the needs of an agricultural people, but says there is a tendency to improve. He believes that the technical education of agriculturists should be encouraged. (247.)

Mr. POWERS thinks the adaptation of the public-school curriculum to the needs of the agricultural people is improving. (183.)

4. Agricultural education and nature study in common schools.—Mr. BRIGHAM believes that the public schools in country districts should give some instruction in the elementary principles of agriculture, such as the character of soils, the means of maintaining their fertility, the chemistry of farming to some degree, and the proper method of feeding stock. (12.)

Mr. JONES adds that the National Grange is advocating such instruction. (29.)

Besides agricultural schools after the plan of those in Minnesota and Nebraska, of which there should be a number in different parts of a State, Dr. TRUE suggests the introduction of outline courses in the theory and practice of agriculture in the high schools in or near rural communities. The cities are constantly developing their schools in manual and technical training, and the same thing ought to be done for agriculture. Many high schools already have at least 1 teacher, chosen because of his ability to teach natural science. This teacher might just as well be a person who has studied scientific agriculture, and could offer an optional course in agriculture. Dr. True doubts the expediency of teaching agriculture in the larger cities, but thinks it might well be taught in a great many cities which are intimately associated with rural communities. There are cities of 50,000 to 60,000 inhabitants which are really rural centers as well of agricultural population. In a city like Des Moines, for instance, there are probably in the high school quite a large number of students who have come in from the rural schools to finish their education, and in such a school it would be very appropriate to have an optional course in agriculture. (140-144.)

Dr. TRUE says that the teaching of agriculture in elementary schools has been undertaken in some European countries, in some cases with considerable success. He has heard a teacher in a village school in Belgium giving instruction on milk to children 12 and 14 years old, who were much interested. The demand for the introduction of new studies into elementary schools, growing out of the broadening of human knowledge, makes it difficult to determine how far any special subject like agriculture can be wisely introduced. This kind of work requires special training and adaptability on the part of the teacher, and it has been difficult to find teachers who are properly trained. Generally speaking, Dr. True does not believe that the formal teaching of agriculture can be introduced into common schools under present conditions; but nature study can be introduced into the common schools, and in the rural schools the subjects which will naturally be selected will very largely be subjects relating to agriculture. This movement for nature study has begun very successfully in New York, and has spread into other States. This seems to Dr. True to be the coming movement for the improvement of rural schools in a direction to benefit agriculture. The State of New York makes an appropriation of \$35,000 to the College of Agriculture of Cornell University for extension work. A part of the money is to be spent in some experiments in different parts of the State, and a good deal of it is used in the preparation and dissemination of leaflets on nature subjects, which may be used by teachers in preparing simple lessons for use in elementary schools.

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The instructors in the agricultural college attend teachers' institutes and farmers' meetings to explain this movement. This work is so popular that it becomes an embarrassment to those in charge of it. The city schools see in it an opportunity to improve their course of study, and the demand for the leaflets has come to a considerable extent from city teachers. One of the greatest difficulties in such movements grows out of the conservatism of the farming population. (142, 143.)

Mr. STROCKWELL says the knowledge required of the farmer is so general that the common schools can supply only the foundation. No one needs a more technical and thorough knowledge than the farmer. Each farmer has different kinds of soil, and to know what fertilizers and crops will make the best returns requires an education that can have only its foundation in the public schools. (887.)

Mr. AGEH, master of the Maryland State Grange, thinks that nature studies and agriculture should be taught in the schools. He believes it as important that the boy should be taught agriculture as that a young man should be taught any other profession which he intends to follow. Agricultural chemistry should be taught in order that farmers may be able to analyze soils and fertilizers and know their value. The first principles of agriculture should be taught in the primary schools, and wherever possible prospective farmers should go to agricultural colleges and have practical instruction. In dairying it is very important that one should be able to ascertain the amount of butter fat in milk and know how to select a good cow. (107.)

Mr. CLOHAN, of West Virginia, would like to see some branches taken out of the public schools and replaced by something more directly pertaining to agriculture. He thinks botany and agricultural chemistry would be far better for the average farm boy than the languages. He would like to see these subjects taught experimentally and in a way to make them interesting. (594, 595.)

Mr. DILLINGHAM advocates elementary agricultural training in the common schools, such as is given to some extent in Ireland, where schoolhouses have plots of ground in which the children cultivate the staple crops. Russia and Austria, he says, are doing similar work. (167.)

Mr. COLES is of the opinion that the elements of agricultural chemistry should be taught in the public schools. He says Professor Voorhees, of the New Jersey Experiment Station, has published a book which is being introduced into the public schools of that State, and predicts that it will pave the way for more advanced education in that line. (124.)

Mr. NALL, of Kentucky,

"would suggest for rural sections that the system should embrace something that bears upon agriculture, give the children a love for the occupation, make children believe that they are growing up to be farmers, keep them from leaving the farms, and make them realize that they ought to understand more about that subject than their fathers do or grandfathers did." (813.)

Mr. DYE also believes that the public schools should give more training in practical branches relating to agriculture. There should be more nature study and training of the hands and eyes. (88.)

Mr. HANLEY believes that there is too much theoretical and not enough practical knowledge taught to children; in the country there is not enough education of any kind. He believes that in the agricultural districts subjects related to agriculture should be taught, such as the nature of plants and animals. He would give the boys some idea of theoretical farming, and the girls education in sewing, baking, and other useful employments which they will probably be called upon to carry out, instead of the notion that labor is disreputable. (277, 278.)

Dr. CROWELL says the children in every agricultural community should be taught among the first things they learn what the resources of the family and of the community are and how the utilization of the resources of the community can be improved. (336.)

Mr. KETCHUM, who was formerly engaged in farming, is not an enthusiast on the subject of introducing the elements of agriculture into the public schools, for the reason that the majority of the schools, even in the country districts, are located in villages and towns and made up of as many pupils who are not the children of farmers as those who are. (134.)

Nature study.—Mr. HAMILTON thinks the schools ought as rapidly as possible to adopt nature study; that normal schools should begin at once to prepare teachers for giving that sort of instruction, and that reading books used in the public schools ought to have a considerable amount of matter devoted to natural-science objects, so that the children will become familiar with things the agriculturist needs to know. (352.)

Mr. STEVENS, Commissioner of Agriculture of Georgia, says the curriculum of the public schools is not specially adapted to agriculture, but there is a move on foot to require the schools in the rural districts to teach nature studies, including agricul-

ture. The State department of agriculture from time to time has recommended legislation on this subject. There is a school of technology in Atlanta and there are technical schools in Savannah, Macon, Columbus, and Sandersville. (914.)

Mr. GREELEY, secretary of the Board of Regents of Education of South Dakota, says that if nature study is brought into the schools it must come in a practical form, and we must be very careful who is employed to teach it. He does not think it possible to do very much in this line, but hopes something may come of it. (932.)

Nature study in New York, Pennsylvania, and Massachusetts.—Mr. HAMILTON testifies that Cornell University is putting out teachers' nature-study leaflets, prepared by the best natural-science scholars the country has, in simple language. The teacher reads these over and gives talks to the children on the subjects treated, getting them to search for the things mentioned and perhaps write an article upon what they see. In many of the common country schools junior natural-science clubs are being formed among the children, who collect samples of the plants and insects of the neighborhood, write descriptions of them, and send the papers and specimens to Cornell University, where they are examined and the writers graded upon their descriptions. Thus great interest is excited in nature study. Teachers make excursions with the children and call attention to natural objects of interest, and in some instances raise plants in the schoolroom. Pupils make drawings of these plants and write essays upon them instead of on abstract questions. Thus they are taught observation and interested in the wonderful things about them, in the hope that they will stay in the country.

The Pennsylvania State College has also begun the publication of a series of nature-study leaflets to be sent out to the school teachers, who are required to pass an examination on each topic before securing a leaflet on a different subject and also to make some statement as to the use made of it in school. The cities are doing more in the way of teaching nature topics than the country, because the teachers are better paid and of higher grade. (351, 352.)

Mr. STOCKWELL says nature studies are now being introduced in the Massachusetts schools. Nature-study leaflets are being sent out to the schools in such numbers as they desire. Within 2 or 3 years there has been a marked advance in the matter of interesting children in nature studies with good results. (887.)

Teachers' classes in New York.—Dr. TRUE says that the State of New York gives to every high school that organizes a teachers' class with a certain number of students a subsidy, varying according to the number of students. This enables the high school to get a teacher who has had instruction in the normal school to give an outline course in teaching. Dr. True thinks this plan might be applied to the teaching of agriculture in high schools. (141.)

Need of suitable text-books.—Mr. MORAN, of Minnesota, president of the National Grain Growers' Cooperative Association, advocates the compulsory use of a text-book on practical farming. He says the General Government should ask specialists to prepare brief articles on all subjects connected with farming, showing the extent of the industry and the importance of understanding the mysteries of nature and the character of plants. He would have the text-book furnished under the direction of the Department of Agriculture for use in country and village district schools, and also in as many town and city schools and colleges and universities as possible. (708.)

Mr. HALE says the need of the South in the common schools, both black and white, is for simple text-books in the line of agriculture, such as the Rural Science Series. One or a number of these books ought to go into the rural schools of every section, but there is more need of it in the South than elsewhere. Professor Hilgard's work on Leguminous Plants and Nitrogen is particularly important in the South. (385.)

5. *Township high schools advocated.*—Mr. HAMILTON believes the most important thing after the introduction of nature study is the establishment of township graded and high schools in country districts, so that country children could be educated in the country, kept in contact with their home people and home duties, and so protected from town life until they are of sufficient age to understand the relative value of different kinds of life. (352.)

6. *National aid advocated.*—Mr. NUNNALLY, of Georgia, knows of no legislation that would benefit the South more than an appropriation to aid the common-school system. The small pay of the teachers shows that more money is needed. (455.)

7. *Influence of education upon agriculture.*—Professor BAILEY says the only fundamental remedy for poor farming is education, and he thinks that the actual progress in that direction most encouraging. "Many of the questions that farmers discuss to-day were wholly unknown to them a generation ago. Farmers' meetings are well attended, and the discussions are clear-cut, practical, and pointed. Anyone who is familiar with the present attitude of farmers will have no doubt of the future.

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Present-day farming is full of vim and vitality, and it is constantly improving." (1013.)

Dr. CROWELL, formerly president of Trinity College, North Carolina, says the application of science to agricultural processes is necessary. The farmer will take to technical education in agriculture rightly planned and taught, but technical education run mad, consisting in feeding 70 different kinds of food to 90 different kinds of pigs, he will not take much stock in. (336.)

Mr. POWERS thinks the basis of technical education in agriculture must be among the farmers, and will begin by developing among them a knowledge of better methods of agriculture. (183.)

Mr. REDDING thinks it very desirable for a young man going on a farm to know how to do everything on the farm in an expert manner. (451.)

Mr. WIETING, Commissioner of Agriculture of New York, says that the idea that education unfits a man for farm life is passing away in New York. Many educated young men are devoting their knowledge and energies with pride and satisfaction to agricultural pursuits. Such farmers become business men, keeping books in which the results of their operations are definitely determined. The State of New York is doing what it can to spread the knowledge of scientific agriculture throughout the whole farming community. It is trying to lead the people out of the old ruts into the production of more profitable crops. It hopes to stem the tide toward the city and perhaps turn it back toward the farm. (994.)

G. The application of science to agriculture.—1. **Agricultural education and research in America.**—Dr. TRUE sums up the general results of the movement for agricultural education and research in the United States substantially as follows: (1) A body of trained leaders and experts; (2) an up-to-date American literature on American agriculture; (3) free distribution of a vast amount of accurate and useful information; (4) a breaking down of the tradition that agriculture is of necessity a nonprogressive art; (5) the colleges and stations have been an important factor in making the state of the ignorant, shiftless, and nonprogressive farmer worse than formerly. It is becoming clearer every year that to be successful in agriculture, as in other arts, one must be progressive and seek up-to-date information and ideas. (151, 152.)

Mr. MORAN, president of the National Grain Growers' Cooperative Association, advocates a more generous Government aid to State agricultural colleges and experiment stations. (708.)

2. **The farmer's attitude toward the scientist.**—Dr. HOWARD, Chief Entomologist of the United States Department of Agriculture, says there is a very rapidly growing appreciation by the farmer of science as applied to agriculture. In Dr. Howard's early experience before farmers' conventions he was listened to with indifference; the farmers regarded a man who talked about the application of science to agriculture as a theoretical fellow who had not the necessary practical experience, but the results which have been achieved by the Department of Agriculture have been so great that the farmers have changed their attitude entirely. Now when one of the specialists addresses a farmers' meeting he is listened to with respect, and after he finishes his talk is kept on his feet for another hour to answer questions. The State agricultural experiment station men reported a similar experience. (762.)

3. **Particular uses of scientific agriculture.**—Dr. TRUE thinks that impoverished soil can not be reclaimed or made profitable without the use of scientific agriculture in the broad sense of the term. (145.)

Mr. DYE says that chemical study of the capacities of soils, their proportions of plant food, etc., has been of great advantage in enabling farmers to adjust their crops to the soils, to use fertilizers, and otherwise work their lands properly. (88, 89, 93.)

Professor DAVENPORT testifies that as a result of the invention of the Babcock test, by which the actual butter production of each cow can be ascertained, farmers have often destroyed 25 per cent of their cows and obtained more profit from the remainder than from the whole herd. Those neglecting to cull out their bad cows will be unable to produce in competition with those who do. (260.)

While Mr. HANLEY has not much regard for theoretical farming, he concedes that the work of professional men in checking animal diseases and insect pests is of immense advantage to agriculture. (282.)

4. **Scientific agriculture in New York.**—Mr. FLANDERS, Assistant Commissioner of Agriculture of New York, states that the use of scientific methods of farming is increasing in that State, and he attributes the change to the teaching of the agricultural schools and colleges and to the instruction given at farmers' institutes, of which 300 or 400 are held under the care of the State authorities every year. The attitude of the farmers toward the agricultural college is favorable, and many of the successful farmers of the State are sticking closely to scientific principles. (995, 998.)

VII. DEPRECIATION AND IMPROVEMENT OF SOILS.

A. Exhaustion and maintenance of fertility.—1. The problem stated.—

Professor DAVENPORT says the race has been in the habit of going west upon new lands ever since it started from India, but is now about done going west. The problem in agriculture is now not so much how to produce crops a cent or two a bushel cheaper, as it is how to maintain the fertility of the soil for a few years and what class of men shall control the land. Under a system of farming by an American peasantry, the fertility of the soil would be lost; but with good management agriculturally good land will become more productive. Until recently American farming has meant raising cheap crops without much reference to the effect upon the land; but a farmer can get as much income while improving the soil as he can while letting it deteriorate. (232, 233.)

Professor Davenport adds that there is no way of maintaining indefinitely under agricultural operations all the fertility in extremely fertile lands. After 15 or 20 years, or 30 or 40 years on the very best land, the fertility begins to fail, and the question of fertility must be considered. (269, 270.)

Dr. WILEY says there is no crop which can be grown *ad libitum* on the native fertility of any soil whatever, and any radical system of agriculture—growing beets, cotton, or any other crop—must look to a period when the land must be fed. When the wheat-growing regions of the Northwest were first opened they were able to grow 30 or 40 bushels to the acre; now the yield is 15 bushels on the same fields. A system of agriculture which robs the soil is not just; a man who leaves a farm poorer than he found it has committed a crime against society. Any system of agriculture which impoverishes the soil is a false one; a rational system of agriculture increases the fertility of the soil. The population of the earth is constantly increasing; the area which is subject to culture is practically exhausted; but scientific agriculture will increase the fertility of land. It is far better to grow a less area, and get a larger yield than to impoverish the soil. Scientific agriculture will show how to conserve plant food so as to make it cheap and accessible to every farmer. This has already been largely accomplished, and every agricultural product will feel the effect of properly feeding the soil. A country which merely plows, sows, and sells will become bankrupt sooner or later; that country will remain rich in agriculture which feeds its land. (647, 648.)

2. Exhaustion of soils in certain localities.—New England.—Professor DAVENPORT explains the depreciation in fertility of New England farm lands by saying that the American has never taken kindly to the use of manure, and gives his land hard usage. In the Mohawk Valley the manure used to be dumped into the river to get rid of it. The tendency has been for the typical farmer to retire from poorer land to better land, rather than put more labor on naturally unfertile land. (263.)

Mr. STROCKWELL, of Massachusetts, says too many farmers are mercenary from necessity. The need of the present dollar taxes all their present energies, and the future of the farm must be forgotten because of present necessities. (892.)

New York.—Mr. NORRIS, of Sodus, N. Y., says that when the soil of his section of New York was in its virgin state it produced from 30 to 40 bushels of wheat without any fertilizers, but to-day, with fertilizers and a high state of cultivation, the average yield has decreased to about 25 bushels. While not doubting that the cost of production has been reduced in the West, Mr. Norris says the cost of growing a crop in the older sections has increased, because it is necessary to use artificial fertilizers and keep up a better state of cultivation than when the soil was in the virgin state. The productivity of the soil has diminished one-third, and in many cases more than one-half in New York. No one thinks of using less than a ton of fertilizer to an acre of wheat or barley, and that costs \$25 an acre. When the soil was in its virgin state it produced large crops without any fertilizers whatever. To-day the farmer must use improved methods and machinery, as well as fertilizers. (325, 327, 331.)

Western States.—Dr. CROWELL says the farmers on the rich prairie lands of the West have had the same advantages of soil as the Pennsylvania Dutch, but have exhausted the soil until they have been obliged to rotate crops in order to get a return on their capital. (334.)

Virginia.—Mr. WHITNEY, Chief of the Bureau (formerly Division) of Soils in the Department of Agriculture, attributes the deterioration of the tobacco lands of Virginia primarily to the methods of cultivation, which have not regarded the maintenance of fertility. It is almost universally believed in Maryland and Virginia that tobacco is a very exhausting crop; but in Ohio, Kentucky, Pennsylvania, and Connecticut it is the one crop which is valued as a renovator for the soil. That is due, in Mr. Whitney's opinion, to the care taken of the tobacco lands, which has improved

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the land in spite of the removal of plant food. The Virginia farmers plant tobacco with little or no fertilizer, give the land a clean cultivation, and leave it exposed for a large part of the year. The result is that the soil is said to be worn out. (875.)

Mr. WEDDERBURN says the impoverishment of the soil in Virginia is the result of most outrageous cultivation: continuous cropping and putting nothing back. Up to a few years before the war, when Peruvian guano was introduced, nothing was known about fertilizers; only stable manure was used. The ground was planted in tobacco until it ceased to grow tobacco, then planted in wheat for 2 or 3 years, and then in corn and oats, until the land was killed. (822.)

Georgia.—Mr. LOVEJOY says there is a great deal of worn-out land in Georgia. (79.)

Decomposition of bare soils in the South.—Mr. GEORGE says one reason why the Southern States are sterile is because the humidity and continual warmth decompose the soil. The cotton and corn cover the land only a part of the year, so that the organic elements of the soil are eliminated by exposure. (223.)

Erosion and terracing.—Mr. KYLE says the people of the South are beginning to learn to protect the soil from washing away by side hill ditches and terracing. (465.)

3. *Abundance of plant food in Eastern and Southern soils.*—Mr. WHITNEY, Chief of the Bureau of Soils in the United States Department of Agriculture, has never seen a case in which the exhaustion of soil was probably due to the actual removal of plant food. He knows of no evidence to show that the New England soils have any less plant food than when they were first cultivated. They have all of the essential ingredients for crop production, but the land of the New England States is generally rough, hilly, and often stony, and the expense of clearing and cultivation is considerable.

Mr. Whitney considers it perfectly safe to say that the condition of the so-called worn-out soils of the South is due to conditions which make the plant food unavailable to the plants. Fertility must be restored to the soil, not necessarily by the addition of plant food, but by bringing about such changes in the physical conditions or the chemical combinations as will encourage the natural weathering of the soil, which makes the plant food available. The soil, to be productive, must render annually a sufficient amount of food material in a form available to the plants. The soil is composed mostly of silicates and aluminates, or difficultly soluble compounds of silica, alumina, potash, soda, and lime, which through atmospheric agencies are rendered more or less soluble and available to plants. A fertile soil is one in which the weathering effects render a sufficient amount of plant food available.

Mr. Whitney calls attention to cases in which soils have been cultivated constantly for hundreds and thousands of years with the same crops. The soils of India, which tradition says have been cultivated for 2,000 years, under primitive methods, without artificial fertilizing, still give fair returns. In Egypt, lands which have been cultivated since history began are as fertile as ever. In Europe there are records of cultivation of soils for 500 years. In England historic experiments have been going on for the past 50 years in growing wheat continuously without fertilization; the yield has fallen to about 12 or 13 bushels to the acre, but for the past 20 years there has been little or no difference in the yield, except slight fluctuations due to seasonal conditions. So far as is known, the soil will produce 12 or 13 bushels to the acre annually for hundreds of years. By the use of fertilizers, however, the yield of adjacent plots has been increased to an average of about 30 bushels to the acre, the production being economically increased by this forcing of the crop. (859, 866.)

Mr. Whitney concludes from the results of the English experiments that on a given soil a certain yield can be maintained for a good many years, or perhaps indefinitely. (874.)

Mr. HALE, of Georgia and Connecticut, while admitting that the soil of the East and part of the South is desolate-looking land, says that below the surface it is rich in the mineral elements needed for plant protection. It is lacking in nitrogenous matter, but by growing leguminous crops all the nitrogen that is needed may be gathered from the air. The cowpea, the Japanese soy bean, and the velvet bean, which is said to be the best of all, are grown in Georgia to a moderate extent, and by plowing under the plants they give wonderful crops. Corn has been grown on the same land for 50 years without any fertilizer except cowpeas sown between the rows of corn. (389.)

Mr. Hale believes that the most of the land in America has mineral elements enough to last for centuries, and that by supplying nitrogen, preferably by taking it from the air, the fertility of much of the so-called worn-out land in the Atlantic coast States can be increased. Rotation of crops will strengthen the land, but even cotton and tobacco, which take a great deal of potash, can be grown continuously on the same land and the fertility of the soil maintained. In the Connecticut Valley, where tobacco has been grown for many years with commercial fertilizers, the land

is more fertile than it was 30 or 40 years ago. Mr. Hale went South with the intention of using many thousands of tons of fertilizers a year, but found that there was fertility enough in the land to grow beautiful trees and fruit, if he only stirred it up so as to bring the particles together to get the chemical action, and it seemed unwise to buy phosphoric acid and potash when there was enough in the land to last a hundred years. (392.)

Mr. Hale says, in brief, that the soil of the South has never been tilled very thoroughly, and there is yet great fertility in much of the subsoil; only the surface is scratched off. Many people have a 1-horse plow and a weak mule, and only 2 or 3 inches of the surface are turned over. The opening up of the soil with modern implement, or subsoiling where necessary, brings out an abundance of plant food. (380.)

4. Depreciation of land due to social conditions and poor management.—Mr. WHITNEY says the reputed exhaustion of the soils in Maryland and Virginia and the Southern States generally is unquestionably due to improper and injudicious methods of cultivation. Other causes contributing to the abandonment or depreciation of these lands have been the cheaper production in the West, with reduced cost of transportation, the development of special industries, such as the production of white burley tobacco in other localities, and the changes in social conditions due to the civil war. In many portions of Maryland it has been found possible to obtain a fair profit, but impossible to make a living from the land and also pay the interest on the mortgages which have been running ever since the war. There are otherwise prosperous communities in southern Maryland where families could be maintained with a fair degree of comfort, except that nearly all the farms are mortgaged. Areas are now being abandoned from that cause throughout Maryland and the South. One of the most important causes of deterioration, Mr. Whitney says, is the method of agriculture which prevails throughout this region. The soils of Maryland are not exhausted, for there is sufficient plant food for innumerable crops; but they have been abused, and are not as productive as they should be. Probably about 40 per cent of the area of St. Mary County, Md., has a certain soil with a heavy subsoil, as valuable in its way and in much the same way as the limestone soil of Pennsylvania; yet it sells for from \$1 to \$3 an acre in forest and about \$10 an acre in cultivation, while the soils of Lancaster County, Pa., sell at from \$125 to \$250 an acre. The same limestone soil and essentially the same climatic conditions extend down through the Shenandoah Valley of Virginia, yet the land sells there at \$10 to \$20 an acre, rarely more than \$40 or \$50 an acre. In a certain area in St. Mary County, Md., there have been several good farms well kept up which grow from 15 to 20 bushels of wheat to the acre. The Pennsylvania farmer grows from 25 to 35 bushels of wheat, and a larger yield of tobacco than the Maryland farmer.

Mr. Whitney thinks that the soils of southern Maryland ought to have a higher value, and that the reason they have not is because of the social conditions and the methods of farming. The Maryland farm is seldom worked by the owner. There is usually an overseer, and frequently a tenant farmer who farms in his own way for a portion of the crop, or occasionally for a money consideration. The crops grown are the ordinary staple crops of general agriculture—corn, wheat, and tobacco. Western competition and low prices make them scarcely profitable. The corn is fed mainly to the work stock; the wheat is sold and sent off the farm in exchange for flour, which is bought at a considerable increase in cost over what it would cost if it could be ground in the neighborhood. The farmer buys his meat, groceries, and frequently vegetables that he should have raised in his garden. There is no comparison between the improvident methods that prevail in some of the Maryland or Virginia communities and the thrifty methods of Lancaster County, Pa., and other Northern communities.

The Lancaster County farmer has on his table an abundance and great variety of food. The chances are that the meat was raised by himself, the vegetables grown in his garden, the preserves made by the family from the product of the garden, and even the sugar produced on the place; and nothing but the tea, coffee, salt, and pepper purchased. As a rule, the families are large. The boys and girls are brought up to work on the farm, and it is rare for any of them to leave it. They commonly settle on a portion of it, or on some neighboring farm. The farms are small and the labor is all done by the owner and his family. The girls are brought up to look after the house, and there is no expense for service. Very few products except tobacco and stock are sold from Lancaster County. Not only is all the corn and hay grown there fed to the stock, but it is often imported, so that more beef and mutton can be produced. The wheat is ground in near-by mills, and most of the products of the farm are either used on the farm or manufactured there into a product that is used in the district. In Lancaster and the other towns there is a ready market for

everything produced in the county, and the supply and demand are so nearly equal that very little is sent out or brought into the county. The result is a happy, contented, and prosperous community, which people seldom think of leaving.

Mr. Whitney concedes that the system which has prevailed so long in the South was satisfactory under the conditions of some years ago, but declares that with the rapid improvement in industrial lines and in transportation facilities the old methods are no longer applicable. It seems to him that the trouble with the South is lack of business methods and lack of appreciation of changed conditions and opportunities. Other causes have operated in the same direction. The clean cultivation of cotton has caused a great oxidation and loss of organic matter, leaving the soil poor in the organic substances necessary for the normal weathering of the soil, which would make the plant food available. In many areas it has also caused destructive erosion. Climatic conditions unfavorable for grain crops have also prevailed. The normal yield of grain in the South is about one-third of what it is in the North, probably because the greater humidity favors extensive leaf development at the expense of seed. (871-873.)

B. Principal methods of maintaining fertility (see also *Intensive and extensive culture*, VII D, p. cxciv).—1. *Practice in various places.*—*China.*—Professor KENZIE, of the Michigan Agricultural College, says that according to Chinese tradition the soils of China have been in continuous cultivation for more than 4,000 years; but they are still rich and productive, because everything is returned to the soil. The excrement of every kind of animal and of human beings is saved as if it were gold, to go back upon the land, and the consequence is that the soil has not fallen off in productiveness. (540.)

France and Germany.—Mr. DYE says that in Germany and France fertilization by means of root and other crops and manure has been practiced for more than a century with great advantage. (93.)

Dr. WILEY says:

"Fifty years ago the yield of wheat in northern France—and that is the granary of France—was about 17 bushels to the acre. To-day the average yield of wheat on these same fields is 23 bushels to the acre. Now, there is a system of agriculture which increases the yield of the crop and at the same time enriches the soil. The soil of France, to-day, is more fertile than it was at the time of Cæsar, and will produce a larger yield."

Dr. Wiley attributes the increase to improvements in scientific agriculture made in the last 50 years. While the land of Germany is not so rich, and the yield not so large, the increase has been proportionately as great. (648.)

New England.—Mr. BATCHELDER says the more progressive farmers of New England are taking special pains to maintain the fertility of the soil. The Grange and other organizations have paid special attention to the use of different kinds of fertilizers, and have encouraged farmers to experiment with them. (41.)

New Jersey.—Mr. KETCHUM thinks the productive condition of the soil is being kept up on most of the farms in New Jersey. (135.)

Mr. DYE says that in New Jersey, as long as 40 years ago, many of what had been considered the best lands had been abandoned to pasturage on account of exhaustion, but by the use of improved methods these soils have been restored to fertility.

Michigan.—Professor KENZIE mentions a farm in Michigan which has been cultivated for 40 years, with constantly increasing fertility, without a pound of commercial fertilizers. Only finished products have been sold from the farm. The hay, corn, corn stalks, and all coarser material have been kept and fed to the stock, and only the stock, wool, butter, cheese, and occasionally a little wheat, have been sold. (549.)

Illinois.—Mr. GEORGE thinks the soil of Illinois, where it has been properly managed, is more fertile now than when the prairie was first broken, and that this promises well for the perpetual productiveness of the West. (223.)

Mr. WILSON testifies that there has been no decline in the producing capacity of the soil in northern and central Illinois, and he thinks there is none in southern Illinois. In central Illinois there is an increase rather than a decrease, due to rotation of crops, cultivation of clover, careful till'ng, and use of fertilizers. No commercial fertilizers are used in the State, so far as he knows. Many farms have been increased in productiveness one-fourth, and some one-half, merely by tilling. (249.)

North and South Dakota.—Mr. BUDGE says there is no decline in the productive power of the soil of North Dakota if it is handled rightly. The soil in the Red River Valley is black loam to a depth of about 1 foot to a foot and a half, with a heavy clay subsoil. Outside of the valley the soil is lighter. As a rule, the soil has not been fertilized. Mr. Budge fertilized one piece of ground close to town, and raised 36 bushels to the acre on it. Improved farming and careful management are growing

in favor. A good many farmers rest one-third of their land while they cultivate the other two-thirds. (849, 850.)

Mr. PROM says the soil of North Dakota is not declining in productiveness if it is taken care of, and it is being taken care of. There are farms that have been sowed to wheat for 15 years in succession; that is hard treatment, but the last year's production was wonderfully large, showing great strength and richness of the soil. The soil is a rich, black, heavy clay loam, about 24 inches deep, on a clay subsoil. It is easily brought up when run down. The only way it is rested is by summer fallowing—laying it over one year and letting weeds grow, then turning them down in August before they go to seed. Clover is not raised. (791.)

Mr. GREELEY, of South Dakota, says the very large farms are running out, but a few of the farmers are maintaining the productive condition of the soil by keeping stock and rotating crops. Clovers can not be raised to any great advantage in the Dakotas, but in Minnesota the clover plant ranks with the stock in keeping up fertility. (937.)

Virginia.—Mr. WEDDERBURN thinks that where the soil of Virginia has been properly cultivated and fertilized the yield is larger than it has been in the past. He knows from his own experience that it is possible to increase the yield largely by proper cultivation and fertilizing. (622.)

Kentucky.—Mr. NALL does not think there has been any very great decline, on the whole, in the productive condition of Kentucky soils, generally speaking. The fertility has been kept up to about what it was 30 years ago. (811.)

2. *Rotation of crops.*—Mr. WHITNEY says there is no question but that, in general, a rotation or change of crops is of value in preventing undue waste of certain elements of plant food and undue tendency toward a particular manner of cultivation, yet in some instances a single crop has been grown on the same land for many years without any apparent deleterious effect, as on the eastern side of the Connecticut River, near Hartford, where the broad-leaf tobacco has been grown continuously for 25 years, and the yield and quality are claimed to be as good as at the beginning, or better. The land, however, is fertilized. (874, 875.)

Mr. Whitney adds that clover is one of the best renovators of the soil where it can be grown, but the most generally useful crop is the cowpea of the South, which is now being used to a considerable extent in the North. (883.)

Mr. Whitney refers to the enormous yields of potatoes obtained at Greeley, Colo., where rotation is practiced. (884.)

Mr. GEORGE testifies that clover, blue grass, or timothy, in rotation with other crops, increases the fertility of the soil. Clover does not grow in the Southern States, but for the Northern States there is nothing equal to it. The thick foliage shades the soil and prevents its rapid decomposition. It also takes nitrogen from the air and deposits it in the soil. (223.)

Mr. DILLINGHAM believes in the cultivation of leguminous plants, such as beans and peas, in the South. (169.)

Mr. COLES, of Salem County, N. J., explains the local custom as to rotation of crops to be as follows: The first year fertilizers are used and potatoes are planted; the potato crop pays for the fertilizer. Potatoes are followed first by wheat, and then by clover and timothy, which are mowed the first year and generally used for pasture the second year. Where there is plenty of stock the land is improving. It does not improve very much with the fertilizer alone. (128.)

Professor DAVENPORT testifies that there is a piece of land at the University of Illinois on which corn has been produced continuously for more than 20 years without fertilizing, and the yield per acre is only about 50 per cent of that of other unmanured land which has been devoted to diversified farming. The cost of raising corn at the institution varied in 1898 from 15 to 45 cents a bushel, according to the previous treatment of the land. (260.)

Dr. CROWELL says the custom of plowing in clover for fertilizing the soil, practiced among the Pennsylvania Dutch, is also growing very rapidly in North Carolina, in the Piedmont section as well as in the eastern section between Raleigh and Goldsboro. He thinks this might be done, with clover or some substitute for clover, in all parts of the United States. (335.)

Mr. GRAHAM says the farmers of North Carolina have improved their methods within a few years, and large areas have been sown in pease, not only for forage, but to improve the land for the cotton crop. This has reduced the amount of fertilizers needed. The pease supply the ammonia, and it is a simple matter to supply the phosphoric acid and potash. (433, 434.)

Mr. NALL says the Kentucky farmers have increased their wheat yield by the use of stimulants, such as phosphate, etc., and that gives a chance to improve the land by some leguminous crop. Stock pease are used, and lately the United States Depart-

ment of Agriculture has introduced a legume known as the soy bean, which the people are beginning to like very much as a forage plant and renovator of the soil. It grows vigorously on poor land, and the experiments with it have been very satisfactory. (811.)

3. *Culture of soil bacteria.*—Mr. WHITNEY says that leguminous crops have tubercles on their roots containing large numbers of bacteria, and by inoculation pure cultures can be made. Such cultures are for sale in Germany, and to a limited extent in this country. Many of the leguminous crops, e. g. clover, will not grow unless these bacteria are in the soil, and by sowing pure culture over the land the yield may be doubled or more than doubled. It is only within 30 or 40 years that the soil bacteria have been recognized and their importance understood. (882.)

Mr. Whitney says the newly discovered nitrogen is really a pure culture of bacteria, which by their activities in the soil have rendered the plant food available by increasing the weathering, and also added nitrogen from the air. (874.)

4. *Artificial supply of needed elements of plant food.*—Professor KEDZIE says that exhausted fertility can be restored to the soil to some extent by leguminous plants, but lost potash and phosphoric acid must be returned by some form of commercial fertilizers. There is a natural development of fertility by the chemical changes which take place in the soil under natural conditions, making the elements of plant food more and more available; by adding to this the fertility of the soil may be built up. (549.)

Mr. WHITNEY says that the primary object of fertilization is the adaptation of soils to any desired crop or crops. Frequently the natural fertility is so low that it is unprofitable to raise a particular crop. Frequently, again, even on very rich soil, the aim is to force the crop, a process which Mr. Whitney compares to the fattening of stock with concentrated food. This is done especially with truck crops. The effect of fertilization is, first, the addition of plant food to the soil in such a form that the crops can immediately use it; secondly, an increase of decomposition of the soil particles—that is, an increase in the weathering power.

One object is to improve the texture of the soil. Frequently a wet clay can be made more pliable and the drainage improved, or loose soil may be made more compact and retentive of moisture. At times, again, the fertilizers balance the ratio of soil constituents. In Maryland and in Pennsylvania there are small areas of soil derived from the disintegration of serpentine rocks, carrying a large proportion of magnesia, on which the application of lime sufficient to reverse the ratio restores the fertility. Again, soil is frequently acid. The soils of Rhode Island are very generally so, and the addition of lime neutralizes this acidity and promotes fertility in a very marked degree. Acidity of the soil is much more prevalent than has heretofore been supposed. (874.)

Limitations of soil analysis.—Mr. WHITNEY says one can not ordinarily tell simply by the examination of the soil what is required to make it more productive. That is a very embarrassing question to answer, because deterioration is quite as often due to lack of good management on the part of the farmers as to chemical or physical causes. The kind of crop a soil is adapted to can often be determined, but the chemical analysis does not clearly indicate whether it is fertile in its existing condition. (882.)

Mr. CLOHAN has had samples of soils analyzed, but does not think soil analysis yields practical results, because there are so many different conditions in one field. He thinks the character of soils can be determined by the eye. Where there is a luxuriant growth there is an abundance of nitrogen in the soil; if the fruit does not color well potash or phosphoric acid is needed. (595.)

C. *Fertilizers.*—1. *Muck.*—Mr. WHITNEY thinks that it would be feasible to reclaim some of these so-called worn-out farms of Maryland and Virginia by the application of muck from the low places, but the cost would be too great unless these low places were adjacent to the land to be treated. The cheapest methods in other cases is to grow cowpeas and other green crops, which are sure to improve the land. (883.)

2. *Horse manure.*—Mr. AGER, master of the Maryland State Grange, says that the price of manure in Washington, D. C., is about 75 cents to \$1 for a 2-horse load. When a farmer pays \$1 a load and hauls it out, he is paying a pretty good price, for, according to Professor Voorhees, of the New Jersey Experiment Station, the average ton of horse manure does not contain more than 28 pounds of plant food. With the improved stables the liquid portion goes into the sewer, and about all the farmer gets is dirty straw. Mr. Ager believes that if gardeners would work less land at a time and enrich their land with leguminous crops, they would make more money than by hauling so much manure. (106.)

3. *Use of commercial fertilizers in various localities.*—*Massachusetts.*—Mr. STOCKWELL

says that the Massachusetts farmers, having been educated by the farmers' institutes and otherwise, now buy the needed elements of plant food very carefully, and do not waste money on fertilizers. (895.)

New Jersey.—Mr. COLES, of Salem County, N. J., testifies that commercial fertilizers are used a great deal in that section. (127.)

Ohio.—Mr. MILLER estimates that there were sold and consumed in Ohio in 1899 fully 200,000 tons of commercial fertilizers. The average cost to the farmer was about \$17 a ton. Fertilizers are very much used in some sections of the State, and very little in others. Mr. Miller's estimate for 1896 was 150,000 tons, showing an increase of 33½ per cent in 3 years. (611.)

North Carolina.—Mr. WHITE testifies that commercial fertilizers are used a great deal in North Carolina near the cities and towns, but in the remote rural districts composts and lime are used. (423.)

Lower Mississippi Valley.—Mr. KYLE, of Mississippi, testifies that no fertilizer is used in the Delta, and very little in the hill country.

Fertilizer policy for the South. (See also *Methods of intensive culture without commercial fertilizers*, VII D 2, p. cxcv.)—Mr. HALE declares that far too little fertilizer is used to the acre in the South, and that the use of low-grade fertilizers is a very serious hindrance to successful agriculture. The South does not understand the economic value of using the highest grade, and high prices are charged for inferior goods. (380.)

Western States.—Mr. WHITNEY says the farmers of the West are not using fertilizers to any great extent, though the practice has increased a very little. (883.)

4. *Effect upon the yield.*—Mr. COLES, of Salem County, N. J., testifies that farmers in that section do not use more than 700 or 800 pounds of fertilizer to the acre for early potatoes. With this treatment there should be from 150 to 200 bushels an acre. The first potatoes are sold for about \$3 a barrel of 2½ or 2¾ bushels, prices ranging from there down to \$1 a barrel, and sometimes lower; the average for the season is not much more than \$1.50. At these prices early potatoes are a profitable crop in a good season. (128.)

Mr. LOVEJOY, of Georgia, believes that if the farmers would put the same amount of money into making a fertilizer that they put into commercial fertilizers, the results would be better. (79.)

In Mr. HAMMOND's opinion the fertilizer business has been an unmitigated curse to the South. The people have been led to pay out their money for fertilizer when they ought to have kept stock and made their own manure upon the farm. (834.)

Mr. WHITNEY agrees with Mr. Hammond that the use of fertilizers tends to make the farmer less careful. (882.)

Mr. AGER testifies that some of the farmers of Maryland have used nitrate of soda on their hay crop. The use of 100 pounds of nitrate of soda to the acre, just as the grass was starting, has often increased the crop 1,200 to 1,500 pounds per acre. (108.)

Mr. WEDDERBURN says he has a little property within 12 miles of Washington, formerly pine land. After cutting down the pines he fertilized liberally with phosphate and potash and leaves and muck, and can produce a very good crop. Other men who raise wheat in Fairfax County have done the same thing and produced as high as 30 and 35 bushels to the acre. A still better system would be to sow the land to black-eyed peas, rye, or other green crops, to improve the land. A Government employee bought a field of 30 acres adjoining Mr. Wedderburn's land, fertilized it, set out fruit trees, and planted crimson clover and peas between the trees, and in 4 years had a magnificent orchard. (622.)

Mr. POOLE, Commissioner of Agriculture of Alabama, says that where lands are not fertilized they deteriorate very much, but the productiveness of the Alabama soils has been increased by the use of fertilizers. Lands which 25 years ago were not producing a bale of cotton to 5 acres now make a bale to the acre. (924.)

5. *Composition and sources of supply.*—Mr. HALE explains that a complete fertilizer contains phosphoric acid, potash, and nitrogen. The phosphoric acid comes largely from the South Carolina rock phosphate, which is probably the cheapest source of phosphate in the South. In the South the nitrogen is supplied by cotton-seed meal, but it is a low grade of fertilizer. Nitrogen is the most expensive element of plant food, costing from 16 to 20 cents a pound, against 5 cents for potash and kainite and 7 cents cents for phosphoric acid. (380, 389.)

Mr. MILLER says the sources of supply of fertilizing ingredients are mainly Chicago, Omaha, and Kansas City for animal substances, and Florida, South Carolina, and Tennessee for minerals, while the potash comes wholly from Germany. Fertilizers are manufactured more largely on the seacoast than in any other particular part of the United States; next in order, perhaps, would be Chicago, the cattle center. (611.)

Mr. HAMMOND, of South Carolina, says that the phosphate industry of his State

has declined in recent years because of the discovery of the Tennessee and Florida phosphates. (834.)

Dr. STUBBS says that the fertilizers which are used very largely in sugar cane culture in Louisiana are usually nitrogenous—cotton-seed meal and tankage (refuse from slaughterhouses), with small additions of acid phosphate. Dr. Stubbs explains that everything that can not be used otherwise in the slaughterhouses is put into the refuse house, and after the oil is extracted from it the residual tankage, consisting usually of scrapings, blood, bone, meat, hides, and hoofs, is sent down to be used as fertilizer. Condemed animals are used for soap, not for tankage. Dr. Stubbs understands that the saving of tankage constitutes a large part of the profit of slaughterhouses. (774.)

6. *Prices of fertilizers.*—Mr. MILLER, of Ohio, says there has been no marked difference in the price of fertilizers in Ohio since 1895. There was a little increase on certain ingredients in 1899, but the phosphates have been growing a little cheaper because of the enlarged territory from which mineral phosphates are derived. (611.)

Mr. GRAHAM believes that the advance in the price of fertilizers can not be due to anything but a trust. The raw material is controlled wholly or in part by the companies making the fertilizers. At the time of his testimony Mr. Graham was on a committee which expected to be able to show that the companies owned the phosphate rock. Potash is imported 12 months ahead from Germany. The price of fertilizers was suddenly advanced from 15 to 25 per cent early in 1900, although there is 50 per cent more phosphoric rock apparent in the world than was ever known before. The price is higher in Wilmington than 100 miles inland. The prices are arranged according to the competition. Mr. Graham enumerates a number of fertilizer works in North Carolina, and says the Acme works at Wilmington are independent. (437.)

7. *Fertilizer laws.*—*Massachusetts.*—Mr. STOCKWELL says it was the Massachusetts Experiment Station which first showed how the farmers were being cheated in fertilizers. The law on that subject, which was the first of its kind, was secured under the lead of Dr. Goessmann, and has been followed by many other States. (894.)

Ohio.—Mr. MILLER says the law of Ohio provides that manufacturers and dealers in commercial fertilizers shall apply annually for licenses and pay fees of \$20 for each brand offered for sale in Ohio. The license is issued by the secretary of the State Board of Agriculture. Each package offered for sale must be tagged to show the amount of nitrogen or its equivalent in ammonia and of phosphoric acid and potash. There have been several prosecutions under the law, but no convictions, because the manufacturers in every case have paid the penalty and promised to be good. (611.)

Mr. Miller, as secretary of the Ohio State Board of Agriculture, is charged with the duty of analyzing commercial fertilizers, and not being a chemist he employs Professor Lord, of the Ohio State University, to make the analyses. Deputy inspectors of commercial fertilizers are constantly traveling over the State and securing samples from the open market and from the consumers for analysis in comparison with the samples submitted by manufacturers when applying for licenses. The actual amount of different ingredients in each fertilizer is published and the report widely distributed. (610.)

Alabama.—Mr. POOLE testifies that there is a tax of 50 cents a ton on fertilizers sold in Alabama. Before offering his goods for sale the manufacturer applies to the Commissioner of Agriculture for tags, filing an analysis of his fertilizers, and the tags are supplied to him at the prescribed rate. The State Chemist at the agricultural college at Auburn analyzes all the fertilizers offered for sale, thus securing to the farmers the genuineness of the goods offered. On every sack of fertilizers is an analysis showing its constituents. The receipts from the tag tax are steadily increasing and now amount to about \$100,000 a year. (920.)

Desirability of uniform legislation.—Mr. WHITNEY alludes to the rather stringent laws governing the inspection and sale of fertilizers in most of the Eastern States, and says the subject has been taken up by the Department of Agriculture with the idea of having a more uniform system of laws, if possible, and of having national laws for the interstate trade. (874.)

8. *Sewage and garbage.*—Mr. DYE believes that sewage and garbage from cities would be of very great advantage if utilized upon the land. (93.)

Sewage irrigation a subject for future investigation.—Mr. WHITNEY, chief of the Bureau of Soils in the United States Department of Agriculture, says he has never investigated sewage irrigation except quite incidentally. (883.)

D. *Intensive and extensive culture.*—1. *Economic considerations.*—Dr. TRUB explains the success of the British farmer, notwithstanding the high rentals paid for land, by the nearness of the market, and by the farmers having learned by experience the necessity for careful culture. (144.)

Dr. CROWELL thinks that as a rule American farmers have adopted intensive methods as fast as the demand has justified. They would not succeed if they put as much capital into the land as the English farmer does. (341.)

Mr. WHITNEY says there will be danger of the soils of the West becoming barren if the owners persist in cultivating the same crop year after year, as is now done in the Red River Valley and in some of the Central States; but by rotation of crops or by more intensive methods when the soils begin to wear out their fertility can be maintained and improved. The Western farmers say, very justly, that while they are getting 12 or 15 bushels of wheat to the acre at a cost of 20 cents a bushel they do not care what becomes of the land; it is going to last the lifetime of the present generation and they are not concerned as to what becomes of it afterwards. Mr. Whitney thinks it likely that a yield of 12 or 15 bushels can be maintained in the Red River Valley for a long series of years. The soils are almost identical with the fertile wheat lands of Russia which have produced wheat for many generations. Yet he predicts that the time will come when the yield will be less than now and when the farmers will feel the need of fertilizing the soil better or of changing the crops and introducing more intensive methods. With reference to present conditions he says that farmers can not spend much money in maintaining the fertility of cheap lands. It is an economic question, not an agricultural one; they can not afford the expense of maintaining the fertility of these lands until the lands become more valuable. (883.)

Mr. STEVENS testifies that intensive farming is claiming the attention of the people of Georgia more than heretofore, and the utilization of manure has increased, with a favorable effect on production. Wages are increased because crops are more directly profitable. (915.)

2. Methods of intensive culture without commercial fertilizers.—Mr. WHITNEY says that the lands of Eastern countries have been cultivated for hundreds and thousands of years. The farmers have saved all of the litter, excrement, and waste of the farm and put them back on the soil. They have had small holdings and use intensive cultivation. We use large areas—too large to manure with the ordinary waste from the farm—and rely upon commercial fertilizers, which have been introduced comparatively recently and are lacking in organic matter. Mr. Whitney thinks that much harm has been done by constant and excessive use of commercial fertilizers without the intensive methods which should be employed with them. (882, 883.)

Thorough tillage.—Mr. HALE contrasts a farm of 40,000 acres in the Sacramento Valley, where 8 furrows at a time are turned over by gang plows run by steam, with a little corner of 500 acres taken out of the same farm and owned by a woman, which is plowed by a single team of mules, harrowed and cross plowed, and again harrowed and smoothed down. For a number of years the average yield of wheat has been 15 bushels an acre on the large farm and 35 bushels on the small farm. No fertilizers are used in either case. (392.)

Raising of tobacco and pineapples under cover.—Mr. WHITNEY testifies that even with the initial expense of \$500 an acre for covering the field with cheesecloth, the profit from the cultivation of Sumatra tobacco in the Connecticut Valley is likely to be large. A crop of \$1,400 worth is expected this year (1901) from an experimental plot of one-third of an acre. The same method has been used very successfully in the cultivation of pineapples in Florida, to protect them against frost, and seems to be coming into very extensive use in intensive farming; e. g., for the protection of truck crops from the frost and from drought on sandy soils. It is the intense heat of the middle of the day that hurts tender vegetables, unless they have plenty of moisture. When under cover they have a diffused and less intense sunlight. (876, 877.)

E. Size of farms.—**1. Size of farms in various localities.**—*New Jersey.*—Mr. COLES estimates the average size of farms in Salem County, N. J., at a little less than 100 acres. (130.)

West Virginia.—Mr. CLOHAN, of West Virginia, says that in Berkeley and Jefferson counties a farm of 300 acres is counted a large farm. Some of the farms are being divided up into smaller ones. (593.)

Georgia.—Mr. HALE says there is no bonanza farming in Georgia, though there are some large cotton planters and some very large fruit and vegetable farms. (390.)

Mr. STEVENS says no particular number of acres is required for a farm in Georgia. Forty acres can be cultivated with 1 horse or 1 mule, and 80 acres is usually regarded as a 2-horse farm. The farms run all the way from 1 to 100 plows; Mr. Stevens himself has run 100 at once. The land is usually a light, loamy soil that is easily cultivated. (910.)

Alabama.—Mr. DILLINGHAM, of Alabama, says the average farmer in his neighborhood has about 25 acres and raises about 8 bales of cotton, or on an average a little less, which, with a little corn, represents his total income.

Southern States.—Mr. POWERS says farms are as large in the South as they are in the North, outside of the great grain-raising country. The South formerly had more large farms than the North, but many of the original large plantations are now divided up into a great many small ones. (171.)

Tennessee.—Mr. HILL, of Memphis, says that land in that vicinity is not owned in large tracts as much as formerly; it is being cut up into smaller farms. (503.)

Mr. NORFLEET, of Memphis, says there are a good many large plantations in that vicinity. By a large planter he means one who makes 600 to 2,500 bales of cotton. In the delta the planters make an average of about 10 or 12 bales of cotton to the mule; for 1,000 bales of cotton they use something like seventy-odd mules. (488.)

Mississippi.—Mr. NORFLEET testifies that the negro can maintain his family splendidly on 40 acres of Mississippi bottom land. They do not cultivate as large an acreage in the Delta as on the hills. (486.)

Mr. KYLE says the land of Mississippi is still owned in large tracts, though in many cases not so large as before the war. That section of the country was formerly owned by large planters having large numbers of slaves; since the war the lands have been divided up. (465.)

2. Advantages of the small farm.—There is no question in Mr. POWERS' mind that small farms are better than large farms. Where one man can direct the labor of others wisely, there are ten men who can direct their own labor wisely. (187, 188.)

Mr. GEORGE thinks small farms have an advantage over large farms in more thorough cultivation and are more successful. Large farms are usually farmed in a slipshod manner. (221.)

Mr. WILSON considers small farms a benefit so far as school advantages and social advantages are concerned, and also a great benefit to the country at large. He thinks the large farm has no advantages over the small one; the small farmer is the only one he knows of who has made any money of late. (249.)

Mr. POOLE says the smaller farmers in the sandy counties of Alabama are more progressive than the large farmers. Mr. Poole thinks that if the farmers could be induced to sell off their lands in smaller tracts (than 320 to 2,000 acres) it would be much better for the country as a whole, but the person who owns property paying from 10 to 15 per cent on the investment is very loath to part with it. (921, 922.)

Mr. GREELEY, of South Dakota, says there is still a good deal of unoccupied land in that part of the country, and often one man has too much land. When he has a great deal too much the superabundance generally ruins him, and the land is then distributed properly. When the farms are smaller, the yield and the population can be doubled. (930.)

Mr. HAMMOND, a cotton planter of South Carolina, declares:

"I know of no record in history where a race of small proprietors has been prosperous. Everywhere they seem to form the wretched residuum of labor after all other occupations are supplied." (840.)

3. Bonanza farms.—Mr. BRIGHAM says the competition of Western farmers with the East has been a serious injury, but bonanza farmers do not compete more injuriously than small farmers would do. Many of the large farmers of the West lose money. They exhaust the soil and fail to take advantage of the rotation of crops. (17, 18.)

Mr. JONES adds that owing to the tendency of bonanza farmers to produce only one crop, subdivision of their farms might lessen competition in that particular product, but it would increase the pressure of competition as to other products, so that there would be no material difference. While production on a large scale is economical in manufacturing, the intense application and personal interest of the farmer as to his own farm make small farming more economical than bonanza farming. (38.)

Mr. WILSON testifies that Sullivan's farm in Ford and Champaign counties and other bonanza farms in Illinois have been broken up, but he thinks the size of the ordinary farm has increased in the last 25 years. (249.)

Mr. BUDGE says there are several big farms in North Dakota, and mentions one of about 7,000 acres. He adds that he would like to see them all out of the way. They take up so much space that they hurt the school districts. The owners ship in their supplies and ship their wheat out, and ship their men in and out. The plowing is done with gang plows, and 4 horses or mules to each plow. One man with such a team can plow about 5 acres a day, or with good soil a little more. Gang plows operated by steam have been tried, but do not work. One man can handle 160 acres on a farm of that kind. The employees are generally single men. The farm owners hire a crew in the spring and let them go in the fall, except one or two to take care of the farm. Mr. Budge thinks some of the big farms are profitable and some are not, depending on how they are handled. The land has grown in value, and money is made in that way. He mentions in particular the Grandin and Dalrymple farms as having made money. (850, 851.)

Mr. PROM says the effect of bonanza farming is not good. The bonanza farmers do not patronize the villages, but ship in goods from the East, and act as wholesale grocery houses for themselves. They are also probably a drawback in the way of school privileges, which they do not need, and if there are small farms wedged in between bonanza farms the occupants suffer. The bonanza farms are divided up into different parts, with a foreman for each part. Each has a little village of its own. The hired help are usually single men; only the foreman is married. The bonanza farms are well conducted upon strictly business principles, the farming is done more scientifically and economically than on the small farms, and the percentage of profit is larger; but the general results to the people of the country are not good, and the people would generally favor the abolition of bonanza farming. (791, 792.)

Mr. GREELEY, of South Dakota, considers bonanza farming a curse to the country and to the man who tries it. If carried too far, after the population gets more dense, it will keep thousands of men from having homes of their own. It employs men in squads, thus eliminating their individuality and independence. Those employed on these farms have to work with the worst kind of men. The soil is abused, and then goes to other people in small holdings to be built up by careful rotation, stock farming, and tillage. The bonanza farms are owned largely by men who spend their money in the cities or in other States. They rob the public schools, and detract much from the social life of the country. Mr. Greeley does not know of one very large farm that has been running for some time that is now paying, and says bonanza farming is on the decrease. (934.)

Mr. HANLEY considers the bonanza farm a detriment to the community, and believes that they are profitable only because of advantages in the direct shipping of grain. (279.)

Mr. DYE, of New Jersey, believes that the subdivision of bonanza farms into small tracts would be beneficial by increasing the population and giving employment to more people. The opportunity to use improved machinery on a very large scale on these farms tends to make their competition disastrous to Eastern farmers. (94, 96.)

Mr. POWERS says all the big farms, including the Dalrymple farm in Dakota, are in the market for breaking up, just as the big farms of southern Minnesota have been cut up. (188.)

F. Reclamation of swamp lands.—1. Tide marshes.—Mr. WHITNEY says it is estimated that there are 168,000 acres of tide marshes along the Atlantic and Gulf coasts and several million acres along the Pacific coast, which, if protected from the tide and drained, would be of value in agriculture. Marshes have also an effect upon the value of adjacent land because of the prevalence of mosquitoes and disease. The Department of Agriculture has been applied to recently from many sources to suggest means of reclaiming the tide marshes and inland swamps of the United States, partly for their agricultural value and partly for the increase of healthfulness of the surrounding land. Malaria and similar diseases have contributed greatly to the discomfort of many of the Atlantic coast States, and in many cases areas and industries have been abandoned because of the unhealthfulness of the neighboring marsh lands. These causes have prevented to a large extent the settlement of some of the Southern States, and have caused the abandonment of other lands. (864.)

Mr. Whitney says it is desirable to reclaim the swamps of the Atlantic and Pacific coasts not only for their great agricultural value, but for the welfare of the surrounding country. Certain portions of the city of Washington, for example, have been rendered almost uninhabitable by the conditions prevailing. There should be a levee with gates to let the water out which would shut when the tide comes up, as in the rice lands of the South. This protection, together with the necessary drainage of the soil itself, would reclaim the land, and an appreciation of property aggregating thousands and thousands of dollars would result. It has been estimated that the reclamation of the marsh lands adjacent to Jersey City would cost about \$3,000,000. The plans for this work are under consideration, and the reclamation of large areas has already been undertaken. The disastrous effects of the swamps are keenly felt by summer residents along the coasts of Long Island, New Jersey, Delaware, Maryland, North Carolina, and Virginia. Besides being unpleasant, the mosquitoes carry malaria, and other fatal fevers are prevalent. (881.)

Mr. Whitney says a plan has recently been proposed to the Department of Agriculture for the reclamation of a large area of swamp land in Long Island, in order to treat the swamp for mosquitoes and control the malaria, and it is probable that that plan will be carried out. (881.)

Mr. Whitney predicts that legislation will be necessary in the case of the marsh lands of Marshfield, Mass., and that their reclamation is likely to be a complicated

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matter. It is a matter concerning the State rather than the National Government, unless it should interfere with the channels of the harbor. (882.)

It seems to Mr. Whitney that the drainage of swamps for the purpose of controlling mosquitoes and preventing malaria is work primarily for the individual and secondly for the State, not for the National Government. It is unlike the development of harbor privileges and the improvement of rivers in that it affects to the locality in which it is conducted. (881.)

2. Inland swamps.—Mr. WHITNEY says that many areas of swamp lands and some large areas of cold, wet clays are unproductive or have been abandoned because of a small accumulation of water which needs only to be removed by some artificial means. It is estimated that one-fifth of Michigan is swamp land. During the year 1893, 26,985,000 feet of tile drains were laid in Illinois, mainly in the northern and central parts of the State, where there were 28 or 29 feet of tile laid to each acre cultivated. In Douglas County there were 85 feet and in Livingston County 78 feet to each acre cultivated. As late as 1880 lands could be purchased in the Vermilion Swamp in Livingston County for from \$3 to \$5 per acre; since these lands have been drained they are valued at from \$60 to \$90 per acre for general farm purposes. As a result of the widespread drainage in Illinois and Michigan, the swamp lands have become most productive, the health of the region has been much improved, and the public roads have been kept in much better repair. (880.)

Mr. MILLER says Ohio has very ample drainage laws, executed by township trustees and county commissioners, which have been almost universally availed of in parts of the State requiring drainage. The county incurs a considerable part of the expense in paying the engineers, commissioners, and trustees; the remainder is raised by assessment according to benefits, deferred payments being placed on the tax duplicate as other taxes are. Money is raised at the time by selling bonds, though in many cases the counties are able to pay the expenses outright, and collect on the tax duplicate afterwards. The State Board of Agriculture has from its organization published important papers and lectures on the subject of drainage. Ohio has no very large amount of unreclaimed swamp lands. (608.)

3. Need of drainage in the West.—Mr. WHITNEY testifies that soil investigations in the Salt Lake Valley have shown that it would be possible to reclaim a large tract of salt land west of Salt Lake City, and that perhaps this should be done; but the State is debarred by its constitution from taking any part in internal improvements, as is done in Minnesota and some other of the Central Western States, and by reason of the lack of drainage laws it would be almost impossible for the landowners to drain any considerable part of the area without the written consent of every individual land owner affected. In the attempts that were made it was not found possible to get such consent. (880, 881.)

It seems to Mr. Whitney that drainage legislation is one of the important problems for the Western country, where some remedy must be found for the accumulation of seepage water and alkali from leaky ditches and overirrigation, either through State or national legislation. Land owners should be given recourse for the recovery of damages in civil suits, in case of such injury by seepage. (880.)

G. Forestry.—Mr. WHITNEY says that another important means for the reclamation of poor or abandoned lands is the reforestation and protection of timber from fires and a more rational method of cutting timber. This is one of the important remedies applicable to areas in which there seems at present no other mode of improvement. (878.)

1. Relation of forests to the water supply.—Mr. HAMILTON explains that a forest acts as a reservoir, preventing the water from flowing off; it percolates into the soil and fills the river gradually, continuing the flowing of springs and streams during the entire season. The deforesting of a district takes away its reservoir character, so that the water that falls runs off nearly at once into the streams, resulting in destructive floods, while a slight drought dries the streams up. (363, 364.)

Mr. GREELEY testifies that only a few years ago there were whole counties of pine and hemlock at the headwaters of the Mississippi and its tributaries, under which there were deep mosses from 6 inches to a foot deep. Mr. Greeley has seen snow and ice in this moss in shady places as late as the middle of June. The snow melted slowly, and it took months for the water to ooze through the moss and deep surface loams. Millions did not have to be spent to ward off floods, nor did the streams nearly dry up as they do now. Vast regions which were thus protected have been stripped of the pine and hemlock, and the slashings burned over, until now one hot March day sends a winter's snow rushing into overflowing streams. (944.)

Mr. NAFTZGER says the preservation of the forests on the Pacific slope, and particularly in California, where there is so much irrigation, is of vital importance. The

destruction of the forests destroys the water storage, and also reduces the rainfall, according to very competent engineers. (966.)

2. Purposes and methods of forestry.—Professor FERNOW, director of the New York State College of Forestry, defines forestry as the business and art of producing wood crops and deriving a revenue therefrom. It implies a continuous succession of profitable forest growth from which profit may be continuously derived, just as profit is continuously derived from the use of the soil for food crops. The forester differs from the lumberman chiefly in that he has regard to the future, as well as to the present, and sacrifices some present profit to the future welfare of his forest. On account of the long time which the crop requires to mature, from 50 to 100 years and more, the business is not suitable for the small capitalist. The farmer can profitably practice sylviculture on his wood lot, according to the principles outlined in Farmers' Bulletin No. 67, United States Department of Agriculture, entitled *Forestry for Farmers*. But the farmer's wood lot is not suitable for the production of log timber. It is fit only for growing firewood, posts, and poles of small dimensions. Log timber must be grown on large contiguous areas by large capitalists, who can afford to have their capital tied up for a long time, and are not tempted to cash it as soon as it becomes possible. Forestry affords a safe continuous investment, with sure, though comparatively small, returns. It is peculiarly a business for States and communities to undertake. (1001, 1002.)

Mr. Fernow says that so long as virgin supplies of timber, which have cost nothing to produce, compete in the market, there is little inducement to apply money to the production of wood crops. The time seems to have come, however, when those who now begin to look out for the future may expect to reap their reward. This is especially true of certain kinds of timber supply, such as pulp wood. (1002.)

Mr. Fernow says that the most difficult problem in the management of forests is protection against fire and getting rid of the debris that comes from logging, when the brushwood can not be disposed of. Attempts to utilize the brushwood have not so far succeeded financially. Constant patrol seems to be the only help against fire. All other means seem to be more expensive and less effective. (1004.)

3. Forestry in Germany.—Mr. HAMILTON thinks that some large owners of timber lands select trees to cut so as to keep the growth about even, allowing the rest to grow, and when that matures, cut it all off and reforest. The German method is to take out at first the better portions and allow the rest to grow for 30 or 40 years. The forest is then nearly uniform, and is allowed to grow for another 30 or 40 years, when it is fully matured and the entire section is cut off and reforested. The German foresters plant trees of high value, mostly the conifers, and they also plant trees of inferior quality that will grow up among the cone-bearing trees and prevent the growth of lower limbs upon the latter. After a while the inferior trees are cut out and the others allowed to grow. (365.)

Mr. Hamilton states on the authority of a recent official report that the German Government receives annually about \$95,000,000 from forests, of which about \$55,000,000 is clear profit. There are many districts where no taxes whatever are levied, the forests supplying all the revenues for schools and roads. (364.)

4. Forest lands of New York State.—Mr. FERNOW, director of the New York State College of Forestry, states that the forest commission of New York State was established in 1885 to take charge of the forest reservations in the Adirondacks, amounting at that time to some 800,000 acres. The State now controls about 1,500,000 acres. The commission exercised the power to cut timber by selling stumpage to lumbermen, and the woods continued to be culled of the valuable spruce and pine, just as before. This led to the insertion of a clause in the constitution which forbids the cutting of any trees on the State lands, as well as the building of railroads over them. This clause prevents the application of forestry to the State lands.

For the purposes of a demonstration on a small scale, showing how a forester would manage a forest property, the State College of Forestry was established and put in charge of 30,000 acres of land which the State bought and turned over to Cornell University for the purpose. The university holds the title to the land for 30 years, and is expected to conduct the experiments out of the profits of the forest itself, with the help of a working capital of \$30,000, which the State provided to start with.

The college tract is typical of the Adirondack woods, being chiefly a hard wood forest, from which the white pine and, to a great degree the spruce, have been culled by lumbermen. The policy adopted is to replace the old decrepit natural forest with a new more valuable forest. It is required that this be done with the profits of the harvest of the old crop. A contract has been made under which a railroad has been built into the tract and a market is provided, both for the logs and for the cord wood, which is 3 or 4 times as great in volume as the logs. Since the conifers

are more valuable than the hard wood, the young conifers are saved in the logging, and occasionally seed trees of conifers, as well as of hard woods, are left. It seems best, however, under existing conditions, to supplement the natural supply of young growth by planting. Large nurseries have accordingly been established in which the trees are grown from the seed and transplanted to the woods when 2 or 3 years old. More than 1,000,000 seedlings are now on hand. Planting is necessary only for the conifers. A mixture of hard wood in the forest is desirable, but enough grows without assistance. (1000-1003.)

5. Forestry in Pennsylvania.—Mr. HAMILTON thinks Pennsylvania has the best forestry laws of any State in the Union. Authority has been granted to purchase lands on the headwaters of the Allegheny, Susquehanna, and Delaware rivers for the purpose of protecting the water supply of the cities situated on those rivers. The Forestry Commissioner has authority to purchase lands at tax sales, and the Forestry Commission has authority to condemn lands for forestry purposes. Some lands have been purchased outright. It is hoped that the State will soon have many thousands of acres reforested and preserved from fire. By a proper system of reforesting Pennsylvania can, in 90 years or less, pay a large part of the expenses of government from the income derived from forests, and in the meantime give profitable employment to many citizens in planting and maintaining the forests. (364.)

Mr. Hamilton says that formerly large areas of Pennsylvania hemlock timber were cut simply for the bark, and the trees left to decay or burn on the ground; but in the districts cut in recent years everything has been cleared up, the wood being used for building purposes and for paper. (364.)

6. Forestry legislation advocated.—Mr. GREELEY is deeply impressed with the importance of doing something to preserve the young second growth evergreens, and as much as possible of the evergreen forests of the Northwest. Great parks of these evergreens, particularly at the heads of great rivers and on poor nonagricultural lands, should be preserved. Thousands spent by Congress in this way would save the expenditure of millions for dikes to save the country along the Lower Mississippi. The stripping of the great evergreen forests is producing desert conditions farther east from the mountains every year. Mr. Greeley declares that the greatest thing Congress can do for the nation to-day is to set aside immense parks at the heads of all the great streams to hold the snow. (944.)

Mr. NAPPZGER proposes the transfer of the forest reservations from the Interior to the Agricultural Department, under which he thinks they would be much better patrolled and protected. (966.)

VIII. IRRIGATION.

A. Its extent and importance.—1. **Early history of irrigation in America.**—Mr. MEAD, expert in charge of irrigation investigations for the Department of Agriculture, says irrigation is far from being a recent development in the United States:

"In many parts of the Southwest, notably in northern New Mexico and Arizona, there are well-defined remains of irrigation works which have outlived by many centuries the civilization to which they belonged. Near Las Cruces, N. Mex., is an irrigation ditch which has an unbroken record of over 800 years of service. The Spanish settlers along the Rio Grande were irrigating their gardens 70 years before the settlement of Jamestown. It is true, however, that irrigation by English-speaking people is only about 50 years old. For its beginnings we must go to Utah where the little band of Mormon emigrants were compelled to adopt it to save themselves from starvation. It was 20 years after the beginnings in Utah that irrigation came to be an important factor in the growth and settlement of Colorado and California. It is an interesting fact that the earlier attempts in these two States where irrigation has assumed the greatest importance were made at the same time. The discovery of gold in California created the overland trail and opened the great interior valleys of the arid West to miners and stock raisers. At the stage stations, bordering on streams and in the vicinity of mining camps, men without any knowledge or experience built small, rude ditches and turned water on the thirsty soil. In every instance work was begun without apparent consideration of future necessities, and by men to whom the whole subject was strange and new. It is only by understanding this lack of direction and the haphazard methods which prevailed in the beginnings of our age that we can understand the present situation." (1060.)

Colorado was the first of the arid States to assume public control over the diversion of water from streams. In providing for this control it was necessary to know the capacities of the different ditches in use. Mr. Mead was employed during 2 summer vacations by the State engineer to make official measurements of the capacities of the irrigation ditches of the State having adjudicated rights to water. These were the first of such measurements made. After 2 years of this vacation employment Mr. Mead resigned his professorship in the State Agricultural College to become assistant State engineer, but returned to the college in 1886, when a school of irrigation was created, as professor of irrigation engineering. This was the first professorship of that branch of engineering in the country. (1049.)

2. Necessity of irrigation in the West.—Mr. MEAD says:

"There are few countries in which irrigation is destined to assume greater importance than in the United States. Throughout nearly all that portion of the country west of the one hundredth meridian successful agriculture is not possible without it, while each year sees an increase in its use east of that meridian. Leaving out of consideration Alaska and the recently acquired insular possessions, in some of which irrigation is already an important factor, the area of the United States east of the one hundredth meridian is 1,948,830 square miles. West of that meridian there are 1,443,849 square miles. Taking this meridian as an approximate division of the humid and arid portions of the United States, they stand in a ratio of about 53 to 47. The humid portion is, however, somewhat larger than this. There is a narrow strip of well-watered territory along a part of the Pacific coast, and scattered throughout the arid region there are relatively small areas with a rainfall considerably above that of the surrounding country, and where crops can be grown without irrigation. Making the one hundredth meridian the eastern boundary of the arid region is also purely arbitrary. The decrease in moisture begins 500 miles east of the Rocky Mountains, and gradually but irregularly increases as they are approached. Taking into consideration these minor modifications of the rough division changes the percentage of humid to arid land to a ratio of about 60 to 40.

"Within the limits of the arid region it is not too much to say that irrigation is the basis of civilized life. In many of the arid States the value of the crops grown by irrigation exceeds the output of the mine or the profits of the factory.

"By providing an abundant food supply, moreover, irrigation has made possible the operation of many mines and the development of important industries. Irrigation has also beautified the landscapes of the water areas, lessening the dust and discomfort, and rendered life more healthful and more attractive. The oases of fruit and foliage and the marvelous beauty of the gardens and orchards of southern California have done as much to fill the transcontinental trains from the East with health and pleasure seekers as has the healthful and enjoyable climate of that region. * * * The cities of Phoenix, Reno, Boise, Salt Lake, and Denver are almost as much the creation of irrigation as the farms and orchards which surround them." (1060.)

3. Area irrigated.—Mr. MEAD says that in every State, including even California, the leading irrigated State of the country, the irrigated area is a very small proportion of the total. (1069.)

Mr. WHITNEY says the public lands of the arid States amount to 560,000,000 acres. Only 3,600,000 acres in these States were irrigated in 1899, and according to the estimates of the Geological Survey, only 74,000,000 acres are capable of being irrigated. Many areas have been abandoned after being settled because of the extreme scarcity of water. (862.)

4. The semiarid region.—Mr. MEAD says there is a very large district, embracing the western portion of Texas, Kansas, Nebraska, and the Dakotas, which was first settled in the humid parts, but is settled sufficiently in the western or semiarid parts to render irrigation problems important. This is in some respects among the best parts of the arid region, because the ditches can be built at small cost, the country being well adapted to the distribution of water, and a comparatively small amount is required to supplement the rainfall. Farther west, with only 10 inches of rainfall, more moisture must be supplied by irrigation than where there are 20 inches of rainfall and less evaporation.

Mr. Mead submits the following problems affecting this central region: In the Dakotas it is very expensive to bring water from the Missouri River. In Nebraska there is uncertainty at present regarding the State law; but as the North Platte can not be utilized to any great extent in the West, and the Loupe is a good stream, Nebraska has in these two rivers an opportunity for very large development. In Kansas the question is as to the extent of the underflow, and whether it is practicable to pump it up. In Texas, and also through Arizona and New Mexico, there is a considerable territory irrigable from springs and wells. (1070.)

Mr. WHITNEY, Chief of the Bureau of Soils in the United States Department of Agriculture, says the semiarid region of the country extends generally from the one hundredth meridian to the foot of the Rocky Mountains. It has from 15 to 20 inches of rainfall yearly, but so distributed that only occasionally are the conditions favorable for crops. In favorable seasons the crops are good, but in 3 years out of 5 there are disastrous droughts, and the profits of the 2 successful years are used up. With 20 inches of rainfall, about half the rainfall of the East, provided it is fairly well distributed, good crops can be grown in the semiarid regions, but the uncertainty and unequal distribution of the rainfall has caused the abandonment of many farms. With less than 15 inches of rainfall lands are seldom or never successfully cultivated except in certain areas in Washington and California. Mr. Whitney says the problem of the semiarid regions is perhaps one of the most serious problems in the agriculture of this country. In the far West aridity can be overcome where irrigation is practicable, but so far as known there is no bright future for irrigation in most of the semiarid region. In 1889 there were only 20,000 acres of land under irrigation in Kansas, and only 67,000 acres under irrigation in North and South Dakota, Nebraska, Kansas, and Texas; and the possibilities of getting water are small in comparison with the areas which need to be watered. (861.)

5. Irrigation in the East and South.—Mr. MEAD says that while irrigation will never have the importance in the East that it has in the West, there is every reason to believe that it will be largely employed throughout the humid regions in the growing of

high priced and special products. Work done in Connecticut, Massachusetts, and New Jersey shows that in the growing of small fruits irrigation is exceedingly profitable, and it is already being largely utilized in market gardening. The cranberry growers of Wisconsin and farmers in the sandy pine lands of the Northwest are beginning to irrigate in order to get crops started and a sod established. The tobacco growers of Connecticut use irrigation to some extent in growing fancy varieties. In the South irrigation seems certain to have a very large usefulness. Within 5 years more land has been brought under irrigation in southern Louisiana and southern Texas than in any single State of the arid region during the same period. Irrigation in these States is quite different, from an engineering standpoint, from that of the arid regions, where there is a rapid flow away from the mountains and the water is conducted by gravity. In the South the streams are practically stationary. The canals are simply banked reservoirs; instead of cutting below the surface of the ground two banks are built, sometimes 200 feet apart, and the width of the canal has nothing to do with the cost of construction. The water is then pumped up from the river into the canal and the current is caused by turning water out at different points rather than by the inclination of the land. This method of irrigation is being extended throughout an area about 200 miles long and 50 miles wide.

The first canals were taken out of sluggish streams flowing into the Gulf, but when the value of the rice product became established and land rose in value from \$5 to \$50 and \$100 an acre, it was seen that those streams would not supply the need, and the pumping stations are now being supplemented largely by wells, hundreds of which are going down in Louisiana. A study is being made to determine the source of that water supply; if it is reinforced from the Mississippi, irrigation from wells can be indefinitely extended. (1069.)

Mr. Mead predicts that the South is also likely to develop irrigation in the growing of forage crops, wherever water can be obtained at sufficiently low cost. Alfalfa, for example, which in the middle East freezes out in the winter, will live through the winter and become a perennial in Louisiana. (1070.)

Mr. Mead says the economic and legal phases of irrigation have already ceased to be sectional questions. Where development has gone far enough in the East the same questions arise as in the West. In the South, also, the question has come up as to who has the better right to the water where the supply is not equal to the demand, and some system of priorities will have to be established there. On one of the streams last year so much water was pumped out that the river changed its direction and ran up stream for 50 miles, and salt water came in from the Gulf and rendered useless the pumps farthest downstream. In like manner, if there should be in the East any considerable demand on the streams the right to take water will be called in question. (1070.)

6. Possibilities of irrigation.—Mr. Powers thinks the nation has not begun to wake up to the possibilities lying before the country as the result of irrigation. The development of irrigation, however, will have to wait for transportation and markets. If the Western States can develop a market for fruits or anything which will bear transportation to the East, there will be successful farming on a large scale. Mr. Powers believes that this market will be developed within the next 25 or 30 years. (182.)

Mr. MEAD remarks that probably not more than 10 per cent of all the lands of the arid region can be irrigated, while of the arid lands still remaining public the irrigable portion is certainly not over 5 and probably not over 2 per cent, the easily irrigated lands having passed into private hands. The public lands along many rivers require more water than the streams contain. But a small fraction of the Columbia River can be used, not all of the Colorado can be utilized, and it is doubtful if the Missouri can ever be completely used. (1063, 1066.)

Mr. WHITNEY says that, unfortunately, nearly all of the water in California, Washington, and certain parts of Arizona and New Mexico has already been appropriated and is now used to its fullest extent, except such as may be added by the construction of reservoirs for the storage of waste waters. There are areas in Montana, Idaho, and Wyoming, however, where there is still some available water. It is estimated that about 74,000,000 acres can be irrigated by the construction of reservoirs. The possibilities of irrigated soil are very great for special crops, especially fruit crops and alfalfa, but it no longer pays to irrigate wheat. (878.)

California.—Mr. NAFZGER believes that large portions of the arid lands of California, but never even approximately all of it, can be irrigated by extensive dams and reservoirs. (951.)

B. Water rights.—1. *Necessity for legislation.*—Mr. MEAD emphasizes the necessity of laws for the regulation and control of streams:

"It is just as necessary for the farmer to know who owns the water he uses as it is for him to know that he has title to the land that he cultivates. In the arid region of the United States the character

of titles to water has an especial importance, because of the scarcity of the supply. With very few exceptions, there is more irrigable land along the river than the stream will serve. Hence, whoever controls the stream practically controls the land on which it is used, because he can dictate what land shall be made productive and what lands must remain forever arid and almost worthless." (1061.)

The importance of adequate water laws, Mr. Mead goes on to say, was not at first appreciated. The settlers in Utah had to build and operate ditches to keep from starvation, and it was some years before they began to study water rights. There was no need of legislation, because the people were all practically of one faith, and their religious advisers were also their directors in temporal affairs, including the settlement of quarrels over water, but in recent years litigation has been a conspicuous feature of irrigation development in Utah, and there is great need of a good code of water laws. In California millions of dollars had been invested in canals before the controversy arose over riparian rights. Another reason assigned for the neglect of this legislation is that many of the States interested in irrigation lay partly within the humid region, and the humid portions having been first settled, the importance of irrigation was not realized by the first inhabitants, who framed the earlier laws. Even the irrigators did not for a long time realize the difference between the institutions of arid and humid lands, the prevailing idea in the early settlements being that they were to create communities the counterparts of those they had left in the East, and the early settlers, as a rule, opposed any legislation which would restrict or define their rights or make rivers public property and provide for their systematic disposal, as is done with public land. It was not until the growing scarcity of water began to rob some of the lower ditches that any headway could be made in legislation, but as ditches multiplied it was seen that when the demand for water was greater than the supply, those at the head of the stream could take all the water, "while those lower down, unless protected by law, must see their fields parch and their crops wither whenever the stream ran low." The ditches of the Greeley colony, for instance, were on the lower end of the stream, and they were robbed by ditches built later farther upstream. (1052.)

In many of the States and Territories there is no orderly procedure for the settlement of water rights. Controversies are sure to arise in such cases between the owners of the ditches along the stream, and where the irrigators are lawless the dams and head gates are often torn out. The courts have authority to adjudicate the rights, but the litigation is very costly and never finally settles anything. In a California case, which Mr. Mead regards as typical, "A" brought suit against "B," and was decreed to have the first right to the water of a stream, and "B" was enjoined from interfering with "A's" use. "B" then brought suit against "C" and "C" was enjoined from interfering with "B's" use. "C" thereupon instituted a suit against "A," and the latter, relying upon the fact that there had been two judgments in his favor already, put up a weak defense, and "C" was decreed to have a superior right to "A." Mr. Mead thinks that some orderly tribunal should have been provided at the outset to manage and dispose of the water of the streams as the Government has disposed of the public lands. If that had been done, records of claims and appropriations would have been complete and accurate, and the danger of excessive and speculative appropriations would have been averted. (1053, 1054.)

In recent years litigation over water rights has been a conspicuous and injurious feature of irrigated agriculture. Mr. Mead attributes this to two causes, the first of which is the lack of any plan for the establishment or protection of rights to streams. Farmers will resort to almost any expedient to obtain the water they believe belongs to them. The remedy for this evil is to have water divided under public control. Where this has been done, controversies are far less numerous than in other States. The second reason for controversies has grown out of the mistakes made in the adjudication of water rights. Before the value of water was appreciated titles to its use, in amounts far beyond the possible needs of appropriators or the capacities of the streams or canals, were repeatedly established. When these decrees were rendered, the majority of appropriators believed that rights for irrigation were limited to the lands already irrigated, and that the actual volume stated in the decree was unimportant. Recent decisions, however, have recognized the right of the holders of these decreed appropriations to sell the entire volume granted. Every attempt to do so is contested. Irrigators have in practice built up a system on one theory of water rights, while the courts have rendered a number of decisions based on another theory. If the doctrine laid down in these decisions is carried to its logical conclusion, it will transfer the ownership of a majority of the streams of northern Colorado to a few early appropriators, and compel a large proportion of the users of water to purchase what they have heretofore had for nothing. Irrigation practice in that State, Mr. Mead thinks, is superior to irrigation law. He quotes from a brief of Judge Victor A. Elliott, of Colorado, forcibly stating the evils which have been

created by this situation, and adds that the settlement of the issue is of very great importance to the entire nation. There is need of more general agreement regarding the nature of a water right and more effective means of disposing of streams. (1058-1060.)

Mr. WHITNEY calls attention to the necessity for uniform State laws on the subject of irrigation, and adds that certain phases of the subject will undoubtedly have to be taken up by the National Congress, especially where interstate streams are concerned. (880.)

2. The nature of water rights.—Mr. MEAD says that each State and Territory of the arid regions has some legislation governing the use of water in irrigation. The General Government, in 1866, passed a law recognizing local laws and customs relating to mining and irrigation, and since that time has not interfered with whatever system the States and Territories have seen fit to adopt. The laws of the States and Territories, and the decisions under them, have apparently settled certain issues: (1) The first appropriator from a stream has the first right to its water, and the rights of subsequent appropriators follow in order. (2) All rights must be based on the actual beneficial use of the water.

Concerning the limitations of an appropriation, however, there is wide difference of opinion and of law. In some States and Territories water is regarded as personal property, the owner of which can lend or sell it like any other commodity, the appropriation not being attached to any particular tract of land nor to the ditch through which the water was first diverted. In other States, water rights are attached to the land and the appropriations limited to the necessities of the land. The conflicting views regarding the nature of a water right are largely due to the different methods employed in constructing ditches. Where ditches are small and the same person owns the land and the ditch, the tendency is to favor the union of land and water, but on many streams corporations have built costly works in advance of settlement to supply lands they never expected to own. Under such conditions, the tendency has been in favor of making the owners of the works the appropriators of the stream, and giving them the greatest possible freedom in disposing of the water supply to users.

"Another troublesome problem in many of the Western States has grown out of the conflict between the rights of appropriators of water under State laws and the rights of riparian proprietors, as recognized by State constitutions. In Colorado, Wyoming, Montana, Idaho, Utah, Nevada, and in the Territories of New Mexico and Arizona, riparian rights have been abrogated, but in California, Washington, Oregon, the two Dakotas, and Nebraska the constitution recognizes the common-law doctrine of riparian rights, which requires that streams must flow undiminished in volume. Later on these States have passed laws which permit irrigators to appropriate and divert the entire supply until it is an open question which of these two conflicting policies is to prevail. It will hardly be wise for either the State or General Government to extend any considerable aid, while whatever is done by private enterprise will be attended by so much hazard as to make development comparatively slow and uncertain." (1062, 1063.)

Mr. Mead says many canals and ditches carry volumes of water sufficient to irrigate from 100 to 500 farms. The limitations of the water rights of the canal owner are fixed by law; the owners of farms along such canals purchase from the canal owners the right to the use of water, also called a water right, the limitations of which are fixed by the terms of the contract. The right of the canal owner gives him a continuous flow of the water appropriated with the right to dispose of it to whomsoever he pleases, and with no restrictions as to the means of diversion or place of use. The water-right contract gives the irrigator the right to water only during the irrigation season; not a continuous flow, but one varying with his necessities. These contracts fix the conditions of the traffic in water, the conditions on which the users receive it, and its value. Some of the contracts provide a charge for the right to the water itself, and also a charge for the service rendered in the delivery of the water, while some of them are of a character that contemplates the eventual transfer of the works and the appropriation to the users of the water. (1054.)

Mr. Mead submits specimens of water-right contracts used in some of the Western States. (1071-1074.)

3. Provisions of statute law.—*Colorado.*—Mr. MEAD says that Colorado passed the first law providing a method for establishing water rights. This law gives to each claimant the right to inaugurate in court a procedure under which all claimants to the same water supply can be compelled to come into court and have their relative priorities and amounts adjudicated. It provides that the streams shall be under public control, and the State Water Commissioner shall in times of scarcity divide the water among the holders of adjudicated rights. (1053.)

Kansas.—Mr. MEAD says that in Kansas the statute recognizes the doctrine of riparian rights east of the ninety-seventh meridian, and the doctrine of appropriation west of it. Mr. Mead deems this a sensible arrangement, although it sounds arbitrary. (1053.)

Nebraska.—Mr. MEAD calls attention to the very rapid growth of Nebraska in recent years. Many large canals have been built, and a large amount of land in the western part of the State brought under cultivation. This development he attributes in part to favorable natural conditions, but more to a very excellent law providing for the systematic record of water appropriators' rights and their legal recognition. All this, he adds, has been changed by a recent decision of the supreme court, declaring the common-law doctrine of riparian rights to be the law in that State. If this is the case, every diversion of water is illegal. No one knows what is to be the result. Irrigators and investors in canals are alarmed, and the millers of Nebraska, at a recent meeting, perfected an organization under which they are to institute lawsuits to enforce the decision of the court and close up the irrigating canals that are depleting streams. (1053.)

California.—Mr. NARTZGER testifies that irrigation in California is in the hands of private corporations and individuals, who obtain their right to the water chiefly by appropriation. Under the general riparian law, the individual who finds a water source or a stream, who has lands upon which he can take it for irrigation, appropriates as much as he may think he requires, and if he proceeds to distribute it and use it will hold so much as he uses against adverse claimants. Water developed by artesian wells is sometimes sold to individuals and becomes an easement upon the land. (953.)

Wyoming and Canada.—Mr. MEAD states that in Wyoming the waters of streams are public property and are managed by a special tribunal, from which every intending user of water must secure a permit. Where all the water has been previously appropriated permits are refused. Under this law, which has been in force for 10 years, the rights of over 4,000 appropriators have been established without litigation or controversy. (1054.)

Canada has been dealing with the problem of water rights for several years, under conditions similar to ours, and Mr. Mead deems the result worthy of study. He compares the general principles underlying the Canadian irrigation code with those underlying the irrigation code of Wyoming, which has gone farther than any other of the arid States of this country in the direction of the public control of streams:

CANADA.

- (1) That the water in all streams, lakes, ponds, springs, or other sources is the property of the Crown.
- (2) That this water may be obtained by companies or individuals for certain described uses upon compliance with the provisions of the law.
- (3) That the uses for which water may be so acquired are "domestic," "irrigation," and "other" purposes, domestic purposes being limited to household and sanitary purposes, the watering of stock, and operation of railways and factories by steam, but not the sale or barter of water for such purposes.
- (4) That the company or individual acquiring water for irrigation or other purposes shall be given a clear and indisputable title to such water.
- (5) That holders of water rights shall have the protection and assistance of permanent government officials in the exercise of such rights.
- (6) That disputes or complaints regarding the diversion or use of water shall be referred to and settled by the officials of the government department charged with the administration of the act, and that decisions so given shall be final and without appeal.

WYOMING.

- (1) That water is not subject to private ownership, but is the property of the State.
- (2) That the board of control is the trustee for the administering of a great public trust in the interests of the people of the State.
- (3) That all rights to divert water from the streams must be based on beneficial use, and that the right terminates when the use ceases.
- (4) That the volume diverted shall in all cases be limited to the least amount actually necessary for the accomplishment of the purposes of the diversion.
- (5) That under no circumstances shall the water diverted for irrigation exceed 1 cubic foot per second for each 70 acres of land actually irrigated.
- (6) That the right to the use of the public waters attaches only to the use for which the right was originally obtained.
- (7) That the right of diversion for irrigation attaches to the land reclaimed and none other; that the transfer of the land carries with it the right, and that apart from the land the right can not be transferred.
- (8) That when a ditch waters land not the property of the ditch owner the right attaches to the land on which the water is used and not to the ditch. The owner of the lands irrigated makes the proof of appropriation and the certificate is issued to him. No certificate of appropriation can be issued to a ditch owner for the watering of lands not his own. The ditch owner is a common carrier and is subject to regulation as such.
- (9) That when proper diligence has been exercised in the construction of works and in applying the water to the purpose for which it is diverted the priority is fixed by the date of beginning the survey. When diligence is lacking, the priority dates from the time of use. (1060, 1061.)

4. Interstate complications.—Mr. MEAD refers to conflicts which have arisen between States as to their rights in interstate streams, and illustrates the nature of some of the interstate complications growing out of irrigation by means of a map of the Bear

River, which rises in Utah, flows into Wyoming, crosses back into Utah and again into Wyoming, whence it enters Idaho, and finally returns to the State of its origin. The stream is thus cut into 5 sections. Ditches are taken out of the stream along its entire course, and the people of Wyoming, though complying with all the requirements of the State law, can not enforce the doctrine of priority, because some of the last ditches built have their head gates just over the border in Utah. It is useless to attempt to enforce priorities on the upper section of the stream in Wyoming, even in favor of earlier rights on the lower section in the same State, because if the water were not taken out above it would go into Utah and be taken there. Mr. Mead adds that the same thing is true in the case of Bear Lake. Irrigators on the lower end of the river desired to develop an important storage basin, but were confronted by the fact that all the ditches in Idaho would have the first chance to utilize the water supply.

Mr. Mead goes on to say that if the development of irrigation could have been foreseen these complications could have been avoided by a change of about 10 miles in the boundary line between Wyoming and Utah, and that in a great many cases a very slight change of State boundaries so as to follow divides would have entirely obviated interstate problems which are now unsolved, and must be settled either in the courts or by legislation. (1064, 1067.)

5. Conflicting rights of irrigation and navigation.—Mr. MEAD says the General Government looks after the rights of navigation, and the States after the interests of the irrigators. The relative rights of navigation and irrigation were raised in litigation over the waters of the Rio Grande, and the decision of the United States Supreme Court indicated a strong tendency toward maintaining the interests of navigation. The same questions may arise along the Missouri River and its tributaries. If it should become necessary to close the head gates of the irrigating canals to prevent steamboats from running aground, it would prevent any considerable increase in the acreage now cultivated. Mr. Mead believes, however, that as the tendency of irrigation is to equalize the discharge of streams, reducing the floods and raising the low-water discharge, its extension on the headwaters of the Missouri will be a help instead of an injury to navigation. (1064.)

C. Engineering methods and difficulties.—**1. Irrigation by wells.**—*South Dakota.*—Mr. GREELEY says much of the drier part of South Dakota is underlaid with water, which, when reached by artesian wells, comes to the surface with great force and in enormous quantities. In some sections large open basins have been dammed up and lakes made from great wells. In some instances trees have been planted around the lakes and fish put in and beautiful spots made with surprisingly little cost. The effect of the water is seen, when the hot south wind is blowing, in a flat-iron-shaped piece of green stretching away to the northeast. (933.)

California.—Mr. NAFZGER testifies that there are some quite extensive belts in California, where there are flowing wells of large extent. There is also a vast amount of pumping done where the water will not rise to the surface. Artesian water is seldom salty or strongly impregnated with alkali, though surface waters frequently are. The artesian waters are usually suitable for all crops, as well as for domestic purposes. (953.)

Louisiana and Texas.—Dr. STUBBS says a bed of gravel nearly a hundred feet thick was discovered by the geological survey of Louisiana, in 1898 or 1899, underlying the rice district, and since then from 300 to 500 wells have been bored. The water comes within a few feet of the surface, and the fields are irrigated with small pumps without difficulty. The wells are being bored (January, 1901), at the rate of 10 to 20 a day. Dr. Stubbs says he can give no conception of the wonderful activity being displayed in the rice fields. This same condition runs into Texas as far as Houston. (773.)

2. Storage reservoirs.—Mr. MEAD says a great many torrents carry an immense flow of water at first and then run down to nothing. These streams must be stored in order to utilize their waters, and the problem of storage is complicated, involving, in the Southern streams, the problem of sediment. It is disastrous to build a reservoir in the channel of a river and then have it fill up and necessitate the moving away of the settlers. The Department of Agriculture is studying this question, and has arranged with the Agricultural College of Texas to gather samples from the streams to ascertain the probable result of depositing the mud they carry upon the soil. (1070.)

Mr. Mead says that, with the exception of two or three reservoirs in Colorado, all the reservoirs in the West are private property. So long as there is water running in a river which can be diverted there is no need of reservoirs, consequently they receive little attention until the natural flow has been utilized. On the Poudre River, in Colorado, storage has probably been carried farther than any other place in the whole Rocky Mountain drainage area. The highest water occurs in May, and

from the middle of that month to the middle of June nearly half of the entire year's discharge runs away. The farmers grow crops which require more water in July, August, and September than the stream will supply, and it has thus become necessary to build reservoirs to hold back the surplus flow of the early summer until it is needed. Natural depressions lying outside of the channel of the stream have been utilized for this purpose. The development of this reservoir system has given rise to a very interesting system of exchanges between the canals. (1061.)

Mr. Mead says that where reservoirs are located outside of the channel of the stream there is no question of public policy involved in their construction and operation as private works, but where they are located in the channels of running streams, and especially in the mountains on the headwaters of streams, it is a question whether they should not be built as public works, even if private capital is willing to undertake their construction. The water from reservoirs so located has to be turned into the natural channel of the stream, and if there is no public control of the streams irrigators will not discriminate between the natural flow and the stored supply. If public regulation is attempted perplexing questions are sure to arise; if the reservoirs at the heads of the streams are built and operated as public works and the water used to make more secure the supply of the appropriators of the natural flow, all these troublesome questions will be avoided. (1061, 1062.)

3. *Methods of distributing water.*—Mr. MEAD says that from the eastern base of the Rocky Mountains for nearly 500 miles the country has a slope of from 25 feet to 4 or 5 feet to the mile. Bear River in Utah, for a mile below the head of the Bear River Canal, has a fall of 120 feet, while the canal in that distance has a fall of 4 feet, leaving it 116 feet above the stream, a sufficient elevation to permit of the watering of the plateau, embracing nearly 100,000 acres of land. The Poudre River in Colorado (of which a map is shown) has a fall of 25 feet to the mile, while each canal has a fall of about 2 feet to the mile, a gain of 20 feet or more in elevation for each mile. (1054, 1055.)

Mr. Mead says that where crops are cultivated water is run down furrows, and furrow irrigation is generally employed in the irrigation of orchards. Small grain and hay are usually irrigated by flooding. (1055.)

4. *Loss of water by seepage, etc.*—Mr. MEAD says that throughout the West, except in southern California, irrigation ditches and canals are unlined, the soil being expected to retain the water in the channel; but where canals cross a stratum of coarse gravel or where there are gypsum deposits the losses from percolation are very great. In one case investigation by the Department of Agriculture showed a loss of 75 per cent of the entire water supply of a canal within less than a mile.

Quoting from a report of the irrigation investigations of the Department of Agriculture for 1899, Mr. Mead says the losses in canals from percolation, leakage of flues, evaporation, etc., are an important factor in fixing the duty of water from a river or an extensive canal system. To determine this average duty the volume should be measured at the head gate, and the duty thus determined is lower than that obtained by measurements on the laterals or at the margins of the irrigated fields, the influence of the losses on the main canal being greater than has usually been supposed. A table is submitted showing that on certain canals in Colorado, Utah, Idaho, New Mexico, and Arizona, according to measurements made at the canal head gates, 5.47 acre-feet of water were required on an average to irrigate an acre of land, or more than twice as much as where the water was measured at the place of use, showing that the losses from the canals from seepage and evaporation amounted to more than half the entire supply. This accords with many of the measurements made on irrigating canals in India and in this country. The loss of water by seepage, Mr. Mead goes on to say, is not only a very serious problem to canal owners, but is frequently the cause of grave injury to the farming lands below. The water may run into the river or cause the appearance of springs in ravines which before were dry, or it may reappear in the fields, converting them into marshes and swamps. Not infrequently thousands of acres of land have for a time been rendered valueless from this cause. The saturation of the subsoil and the gradual rise of the water level nearly always attend irrigation.

In Colorado and Wyoming, as a rule, the loss from seepage is not excessive, because the soil is of such a character as to hold water pretty well. All of the rivers that flow out on the plains, however, such as the Arkansas, the Rio Grande, the South Platte, and the North Platte, sink into the sand. The North Platte River was measured 100 miles west of the Wyoming border and found to contain 400 cubic feet per second, while a few miles east of that border it was entirely dry. (1065-1068.)

5. *Alkali.*—Mr. MEAD says that where seepage is not excessive it furnishes an inexpensive method of irrigation, but where it is excessive it may prevent the growth of

crops by the excess of water and also render the soil unproductive through the accumulation of alkali. Water passing from canals through the subsoil dissolves the soluble salts which all Western lands contain, and the subsequent evaporation of the water increases the percentage of alkali. This evil, however, like the excessive moisture, can be remedied by drainage. (1057.)

Mr. WHITNEY says the difficulties in the way of the extension of irrigation are the alkali and the silt in the water. The amount of alkali in the water is a very serious difficulty in the way of irrigation in many localities. In the Pecos Valley the alkali is so great in the lower part of the valley that the water is entirely unfit for irrigation. In the storage reservoir above Carlsbad the evaporation is so great that at the end of a long dry season the water is too salty to be applied safely to the land. Much trouble and loss have been experienced in connection with the storage of alkali water in California. The river water in Utah is very pure, because the rivers are short and rise in the snowclad mountains; but in the Pecos Valley the water travels 200 or 300 miles from the mountains and gathers up salts as it flows. The Pecos is entirely taken up about 6 miles above Carlsbad, but 6 miles below the reservoir it has about the same flow that it has above the reservoir. Frequently in the West the water of a river is entirely used up before it reaches the mouth, going out in seepage and flowing again into the river after it has been applied to the land; and by the time it reaches the mouth of the river it is very salty. (879.)

Mr. Whitney says that when the Morimons first settled in Utah they naturally took up the richest bottom lands along the Jordan River. With the increase of population settlers moved up on the highlands, and the seepage water from the irrigating canals accumulated in the low places and washed down the salts to such an extent that the most fertile lands were rendered entirely unfit for cultivation, being wet and swampy and filled with alkali. The people are therefore abandoning the soils which were once the most productive in the State, and moving up onto the bench land. (862.)

There is an area of about 90,000 acres just west of Salt Lake City, extending over to the Great Salt Lake, that is filled with alkali which is not always apparent on the surface. Frequently the surface looks like a fertile loam, and many attempts have been made to settle the country. Irrigating canals have been constructed, town sites located, and railroads built. With the first application of water good crops have been produced; with the second application, a failure; with the third, the land has become so salty that it is abandoned as desert land. Thousands of dollars have been lost in the effort to build up agriculture in that area. The soil survey of the Department of Agriculture showed that it was perfectly feasible to reclaim these lands by drainage. The expense would be no greater than the drainage of lands in Ohio and Illinois, and the profit that would be realized from the reclamation of the 60,000 acres in that tract would amount to about \$3,000,000 in property values. But there are no drainage laws there as there are in Illinois and other States, and the reclamation is prevented by the unwillingness of people to give the right of way for drainage canals through their premises. (862, 863.)

Mr. Whitney explains that the alkali in soils is derived from the natural weathering and disintegration of the rocks. Generally speaking, it is peculiar to arid regions, though it occurs occasionally in the East. The mineral springs are due to the decomposition of the rocks. In the West the decomposing rocks accumulate in the soil and stay there. No such accumulations occur in the East, because half of the 40 inches of rainfall goes down through the ground and is carried off in the rivers. In the West, on the other hand, only about 5 per cent of the very small rainfall is carried off, and then usually over the surface of the ground. (880.)

Mr. MEAD says the total evaporation from the water surface in the West ranges from 3 to 6 inches a month. Where the waters of a river are heavily charged with alkaline salts this evaporation will so concentrate them as to make them injurious; but there are very few instances of this kind. The only case Mr. Mead knows of is the Pecos River, where he thinks the phenomenon occurred only in one season. In the part of the country where the water is stored the streams carry so little alkali that the accumulation is not great, and, the water being discharged every year, there is no continuous cumulative action; hence Mr. Mead does not consider the problem of alkali one presenting insurmountable obstacles. (1070.)

6. **Prevention of seepage.**—Mr. WHITNEY declares that something will have to be done through either State or national legislation to stop the injury from seepage waters. The farmers situated on the lower levels should have recourse to damages through civil suits, and the canal companies should either be compelled to protect their canals from seepage or pay damages. (862, 863.)

Mr. MEAD says canals can be cemented on earth, as is done in California, only where winter frosts are not severe. Dumping clay into the canal and causing it to be distributed by agitating the water has been tried with good results on some Nebraska

ditches. The waters of Salt River, Arizona, contain a cementing material which in time renders its banks almost watertight, so long as they remain undisturbed. (1056, 1057.)

Mr. WHITNEY says that in California, where the water is more valuable to the companies, it is very common to protect canals from loss by seepage by wooden troughs or pipes, or by cementing the sides and bottoms of the canals and ditches, as is frequently done in sandy areas. In many cases simply the puddling of the canal would be sufficient to prevent seepage. (864.)

Mr. Whitney says that his study of soils, alkali, and seepage waters has convinced him that it will be necessary to use greater care in the application of water, to protect the soil from the injurious effects of overirrigation and the accumulation of seepage water and alkali. He thinks it safe to say that in nearly all irrigated districts twice as much land could be irrigated with the water now used, with actual benefit to the soil, if it were intelligently applied. (880.)

7. **Silt.**—Mr. MEAD testifies that all canals taken out of rivers which carry considerable quantities of mud in high waters have to be cleaned out every year. The deposits of mud can be handled as a rule without any excessive expense, but in streams like the North and South Platte and the Arkansas the sand is quite troublesome; on the lower Rio Grande the mud is an important factor. The red rise in the Rio Grande occurs when there are heavy rains along certain portions of the river where there is a red soil, and enormous volumes of mud are washed down in the river; samples have shown as much as 17 per cent of solid matter. All the ditches have to be closed during the red rise, or they would immediately fill up.

One of the oldest ditches in the United States, if not the oldest, is at Las Cruces, N. Mex. Though it was formerly a channel cut below the surface of the ground, it is now raised 4 or 5 feet above the surface of the ground. As the mud was cleaned out each year it was thrown on the banks, and when the banks became so high as to be troublesome, the mud was allowed to fill up a foot or so in the bottom. In time the ditch was higher than the stream, and the head had to be moved further up stream; it has been moved 3 or 4 miles upstream from the original location. The level of the soil on which the water and mud have been spread has also been raised from a few inches to 2 feet. The Rio Grande at El Paso has filled up its channel until the river itself is higher than some of the streets of either El Paso or Juarez. (1058.)

Mr. WHITNEY says that in Arizona, where the waters are very heavily laden with silt, there is a very distinct type of soil, undoubtedly a sediment left by the irrigation of some prehistoric race. The amount of sediment is so great that it is very difficult to maintain the modern canals, and it is also generally believed that reservoirs will quickly fill up with silt in such districts unless special precautions are taken; how to keep them open is a problem which has not been satisfactorily solved. (879.)

8. **Lowering of water levels.**—Mr. WHITNEY says the level of the Great Salt Lake has fallen 14 feet since 1865, and in a recent soil survey of the area around Ogden, 60,000 acres, or about 10 square miles, were mapped in where the lake had receded. In some places the shore line was established 9 miles beyond its former location. There are annual and periodical fluctuations in the tide of the lake which have never been explained, but the withdrawal of water for irrigation is an important cause of the lowering of the surface. (864.)

D. Economic aspects.—1. **Cost of irrigation.**—Mr. MEAD testifies that the first ditches built are always the cheapest, because they are little ditches leading out from the most favorable bends in the streams, and such ditches cost little more than laterals from main channels. The cost of irrigation from many of the earlier ditches was not to exceed from \$2 to \$5 an acre. When larger ditches had to be built the expense for the main canal and lateral would run from \$5 to \$15 an acre; at present the cost is above that, because large rivers have to be dealt with, requiring costly head gates, and the fall is less than in the first small ditches. On a good many of the canals the estimates for water now range from \$7 to \$20 an acre, and the latter price is in many localities more than can be paid, because there must be added to the cost of the water the cost of the settler's equipment, including his house, tools, and stock, and of putting the land into condition for cultivation. In many places where there is an abundance of land it is not being developed because it would cost as much to develop it as it would to buy an improved farm in the older States in the Mississippi Valley. (1065.)

Mr. WHITNEY testifies that the average cost of placing land under irrigation, as shown by the Eleventh Census, was \$12.12 an acre, and the annual cost thereafter \$1.07 an acre. The cost of opening 74,000,000 acres, therefore, would be \$897,000,000; but as the methods heretofore used have been the simplest possible, the cost per

acre will be much greater in the new areas where the water must be stored and carried long distances. The storage of water under the most favorable conditions in Arizona is estimated to cost \$4.30 an acre-foot, and at least 5 acre-feet of water must be stored for each acre, in order to provide for seasons of low water, making the cost about \$21.50 an acre. This calculation assumes that all the land that could be watered by the average reservoir is to be actually irrigated. If only half or a quarter of that area were taken up, the cost would be twice or four times as great. The value of this land, after being put under water, would be from \$60 to \$100 per acre throughout the arid regions. (878, 879.)

2. Value of irrigated land.—Mr. MEAD says that the value of irrigated land is governed by its proximity to local markets, by the climate, and by the distance and cost of railway transportation to the great markets of the world. In southern California and around Phoenix, Ariz., where citrus fruits and other high-priced products are raised, irrigated lands having no improvements excepting the orchards planted on them, have sold as high as \$1,800 an acre. Water rentals also reach a very high figure; in some instances water rents for \$45 an inch a year, and water rights reach as high as \$1,000 an inch. In the northern part of the arid region there are cheaper water supplies and cheaper lands. (1065.)

Mr. WHITNEY testifies that irrigated lands in Utah are worth from \$60 to \$100 an acre, and set out in good varieties of fruit trees, up to \$1,000 an acre. In southern California lands are worth generally from \$50 to \$100 an acre, but many orchards are worth from \$1,000 to \$2,000 an acre. (878.)

3. Products of irrigated lands.—Mr. MEAD says that the greater part of the arid region will always be largely devoted to the raising of live stock, and to gardens to supply the local markets. The live-stock industry is largely based on the use of public and private lands as a grazing ground. The practice of open ranging during the entire year has given way to the practice of feeding in winter. This has been forced upon the cattlemen by the overstocking of the grazing lands. It is therefore necessary to depend upon the irrigated lands, and the needs of the live-stock business have been one of the great incentives to irrigation, furnishing one of the best markets for crops, especially hay and alfalfa, the two leading general products of the grazing region. Mr. Mead does not think corn can ever become a general crop under irrigation, because the nights in a considerable part of the arid region are too cold for it; though it is grown in restricted areas as a part of the system of rotation. Moreover, alfalfa is a better stock food than corn. Mr. Mead also predicts that there will be no large development of wheat growing in the irrigated regions, unless there shall be a market which can be reached by water, without excessive railroad charges. The great bulk of the wheat grown now is consumed at home, and in many of the arid States not nearly enough is raised to supply the home demand. Montana, Wyoming, and Idaho all import flour and oats. The growth of the home demand for food in the mining States is more rapid than the extension of irrigation. (1065, 1066.)

Mr. POWERS says irrigation on a small scale is now found in the mountainous regions of Montana and Colorado. A ready market for a small amount of produce is found among the mine workers, etc., in those States. The products are sold at a price equal to their price in Minnesota, Kansas, or Nebraska, plus the cost of transporting them to these mining centers, and there is a profit in their cultivation. (182.)

Mr. NAPPZGER testifies that for the growing of citrus fruits irrigation is absolutely indispensable, and that the water is the chief element of cost, the land being of small value without it. (953.)

E. Irrigation by public and by private works.—**1. Governmental irrigation abroad.**—Mr. MEAD shows that irrigation in the United States differs from that of nearly all other irrigated countries. In Italy, France, Egypt, India, and Australia many of the important irrigation works are public works. In the United States every canal in operation and nearly every reservoir used in irrigation has been constructed by private enterprise. Investments of \$200,000,000 or more have been made from private funds to provide water for the lands of the arid West. Colorado, however, has, with State funds, built two or three reservoirs and begun one canal. (1050, 1051.)

2. Results of individual initiative.—Owing to the fact that irrigation works have been left to private enterprise, Mr. Mead says, there has been a delay in the enactment of laws for protecting irrigation investments and securing to the user of water his proper share of the stream on which he lives. Where canals are built with public funds, laws governing the division of streams receive early attention, and the leading consideration in the location of the works is the conservation of the water and its use on the best land. In the United States, on the other hand, public considerations have received but little attention in the location of works, or in the

enactment of laws determining rights to streams. The places where ditches could be built at the least cost were first selected, and where these locations have been utilized larger works have been undertaken. After the natural flow of streams has been absorbed, reservoirs have been constructed to store the flood waters and the waters which would otherwise run to waste. Irrigation has developed most rapidly in States having a favorable climate, like California, or people of exceptional enterprise, like Colorado, or where the proximity of mines has led to a large local demand for farm products; thus, Utah has more cultivated land than Montana, although the area susceptible of irrigation is many times greater in Montana than Utah.

Irrigating canals being private works, the leading consideration has been the cheapness with which they could be built and the profit with which water rights could be disposed of, instead of being the abundance of water supply. Hence there are many streams in the West where the natural flow has been already fully utilized. On hundreds of streams the capacity of the canals and ditches is fully equal to the water supply, and in some cases, as in that of the Arkansas River in Colorado and Kansas, there are more ditches than can be filled, covering more land than the stream can be made to irrigate, so that the people dependent upon them suffer from drouth as severely as those who depend on rain.

As a rule all the land which can be irrigated cheaply is now being irrigated, or is owned by parties who intend to irrigate, and the streams which can be easily diverted will require reservoirs to make a further extension of the cultivated area safe and profitable. Yet there is a great field for future development. The large rivers, like the Missouri, Big Horn, Snake, Rio Grande, Green, and Sacramento, are as yet almost undiminished in flow. The cost of works to utilize them has been too great, and in many cases will, for years to come, be beyond the reach for private enterprise. This is one reason why State or national aid is regarded as a necessity, or at least a wise public policy. (1061.)

3. The argument for public irrigation works.—Mr. MEAD says there will have to be an expenditure of public funds to secure certain developments. He does not believe that it will pay private capital for some time to take water from rivers like the Missouri, because the land would not pay the cost. The value of irrigated lands and of irrigation improvements is measured by the value of lands in the Mississippi Valley, or of lands irrigated by public works. There are projects, however, that would perhaps pay as public works, because in bringing land now entirely worthless into cultivation homes and taxable values are created. This, Mr. Mead says, is the argument for State or national aid. (1067.)

4. Desirability of public reservoirs and artificial lakes.—Mr. MEAD is confident that the subject of reservoirs will soon assume a much greater importance than in the past, because on many streams it is the only means by which the irrigated area can be extended. It can not be too soon determined, therefore, whether they are to be constructed as private or public works. Mr. Mead believes that reservoirs located away from the channels of streams can be safely left to private enterprise, but that those built to supplement the natural flow of streams and to meet the needs of a number of ditches or canals should be public works, either State or National, depending upon whether or not all the water rights continue to be regulated by State laws; in that case the reservoirs should be owned and operated as a part of the State system. Any uncertainty regarding future legislation is likely to interfere with the building of ditches and the reclamation of new lands.

Mr. Mead goes on to say that this subject is of paramount importance in each of the arid States, and that the local conditions being understood by the people who have made the beginning makes it possible for the States to bring to the solution of irrigation problems a higher intelligence and more direct interest than can be secured in any other way; and he attributes their lack of success in the past in part to failure to appreciate the necessity for legislation, and to disagreement regarding the principles which should govern the ownership of water. The States are entirely capable, in Mr. Mead's judgment, of regulating and protecting all interests concerned, but they are not capable, under present conditions, of securing the full utilization of their resources. The building of reservoirs as public works does not appeal to private investors. The public receives benefits from irrigation works which private capital can not share. Such works give a high value to land now worthless, and greatly increase the taxable resources of the States and the productive wealth of the country. Unfortunately, the arid States lack the resources for undertaking the construction of canals and reservoirs. They are sparsely populated, and the heavy expense of maintaining local government has to be paid for by taxes levied on only a small fraction of the land. The public land contributes nothing in taxes, and can not be used as a basis of credit in borrowing money for its improvement. (1062, 1063.)

Mr. GREELEY, secretary of the Board of Regents of education of South Dakota,

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declares that if the Government would use the artesian supplies of water to make great lakes and streams where they are needed, distributing the lakes throughout western Nebraska, southwestern Dakota, and other places where the hot winds pass over the prairies, it would make a lovely, habitable, and healthful region, where now at times there is almost a desert. Many hundreds of thousands of dollars expended in river improvements might well be diverted to this use; one-half the money put into the improvement of the Missouri River would make a great many lakes, stocked with fish and surrounded by trees. There are also other large appropriations which might be diverted to this purpose. (933.)

5. Possibility of conflict with existing rights.—Mr. MEAD says there is considerable discussion in the West about the best means of extending Government aid. Communities have built up their systems under local laws and customs and do not want them interfered with; on the other hand, another element is in favor of a complete national system of laws and administration. (1067.)

Mr. NAPTZEGER, of California, does not think any general plan of irrigation inaugurated by the Government would conflict with existing riparian rights, because the Government's undertakings would probably be reservoirs in undeveloped sections, as most of the streams that could be used by individuals or private corporations are already appropriated. (953.)

6. National aid through modifications of the land laws.—Mr. MEAD says the present land laws were framed for the humid region, and do not meet the requirements of the arid region. He illustrates the benefits which might result from their modification by reference to the so-called Carey act, which gave to each arid-land State the control of 1,000,000 acres of land during its reclamation. This has resulted in Wyoming in the irrigation of about 100,000 acres of land which would never have been reclaimed under the public-land act. In Idaho the projects inaugurated under the Carey act embrace about 400,000 acres. In both States the condition of irrigators is superior to the average result where land is reclaimed under the homestead or desert-land acts. Actual settlement and cultivation of land are required by the act, and no one can acquire more than 160 acres, attached to which is a water right and a share in the canal. Colorado also received 500,000 acres of public land to provide a fund for making public improvements, some of which has been spent on irrigation works, but the greater part of which has been expended in building roads and bridges. Utah was recently given 500,000 acres of land to provide a reservoir fund. (1064.)

Mr. Mead says that a number of bills have been introduced in Congress embodying the idea that the States be given the proceeds of the sales of public lands within their borders as a fund with which to construct public irrigation works. During the year 1900, 14 western States would have realized \$2,107,000 from the net receipts of such lands. These revenues, Mr. Mead says, can be largely increased by collecting rentals or other revenue from the public grazing lands. (1063.)

7. Objections to Government aid.—Mr. MEAD says there has been in the East a feeling that any large development of agricultural lands would interfere with the prosperity of Eastern farmers; and there has been a question as to the constitutionality of irrigation by the General Government. Mr. Mead says, however, that there can be legislation which will very materially promote successful development without any appropriation of money. (1066.)

Mr. BRIGHAM believes that nearly all farmers east of the Mississippi are opposed to the plan of a national appropriation to survey the headwaters of the Missouri and other great Western rivers with a view to impounding their water for irrigation. This survey would be but the opening wedge for a demand that the Government erect dams and reservoirs and invest hundreds of millions. Land capable of irrigation from such reservoirs would be obtained by syndicates and capitalists and the actual farmers would receive little benefit. The time may come when this land will be really needed, but the Government should wait till then before investing any money. (28.)

Mr. JONES, master of the National Grange, also deprecates such Government aid, as unfairly assisting the competitors of the Eastern farmers. He says the Eastern Senators who opposed Government aid to irrigation had the sympathy of farmers' organizations. (38.)

IX. VARIOUS AGRICULTURAL INDUSTRIES.

A. Cereal growing.—1. Wheat.—Mr. NORRIS remarks an inclination in the West and Northwest to get land into producing wheat as fast as possible, because if a person wants to dispose of his land he must have it under cultivation. (328.)

Mr. Norris thinks the production of wheat is continually growing less in the East, so that some increase is necessary in the West to keep up the supply; but in some

years the production has developed more rapidly than the demand, resulting in lower prices. He says wheat can be grown in the Dakotas for 50 cents a bushel at more profit than in the East at 75 cents. (328, 329.)

Mr. BUDGE says the principal industry in North Dakota is grain growing. The Red River Valley is justly proud of being known as the bread basket of the world. The crops seldom fail. Even during occasional years of partial drought the moisture-storing capacity of the soil and the resisting qualities of the acclimated wheat plant are very remarkable. (845.)

Mr. BUDGE says plowing for wheat is done in the fall in North Dakota in order to get the crop in on time. Farmers do not wait for the frost to get out of the ground before seeding. The deeper the frost the better they like it; the moisture supports the crop. The land is ready for seeding without any further preparation. Wheat is cut with a binder, shocked, and thrashed out of the shock as a rule, though a good many farmers have stacks. A good thrashing machine will thrash 2,500 to 3,000 bushels a day. (851.)

Mr. JUMPER, of Aberdeen, S. Dak., knows of several farmers who have tried winter wheat in that section, but it does not come up in the spring. Unless there is a good deal of rain in the fall the ground will freeze out dry on top. (740.)

Mr. WEIDENBURN testifies that there is a good deal of wheat grown in the valley of Virginia and through the Piedmont section and some in southern Virginia. A little is grown in Loudoun and Fairfax counties. Corn is the principal Loudoun County product. Wheat does not pay in that section, though in that portion of Maryland adjacent to the District of Columbia very fine wheat crops are raised, the soil and climate being very much the same as in northern Virginia. In Fairfax County, Va., within a few miles of Georgetown, farmers have raised as much as 35 bushels of wheat to the acre. (625.)

The production of wheat in relation to the demand.—Mr. HANLEY testifies that the 70,000,000 people of the United States consume 400,000,000 bushels of wheat annually, or 5½ bushels per capita. (289.)

Referring to Mr. Atkinson's statement that the productive capacity of this country for wheat is sufficient to meet all demands of the world for the next 50 or 100 years, Mr. POWERS says the amount of wheat that would be produced in this country if the price were kept at a dollar a bushel in Liverpool could hardly be calculated. The amount we are capable of producing is immeasurable. (181.)

Dr. CROWELL says that when Europe has good harvests for a series of years the demand on the American surplus of wheat is very much less than usual, and over-production has made the low-price level more or less permanent. When the leading countries of Europe have a bad harvest there is a shortage and prices go up. America is in the position of a monopolist, because the Argentine and Australian harvests do not come at the same time as ours. (343.)

Mr. HIRCHCOCK testifies that India has not the importance it formerly had as a source of supply for wheat. The general tendency of wheat production in British India has been downward in recent years. (669.)

2. Corn.—Mr. PROM says corn is beginning to be raised in North Dakota; he is confident that before many years it will mature even in Cavalier County, which lies on a plateau, because the seasons are longer than formerly. The breaking up of the territory to the west gives the Red River Valley more heat, yet the hot, burning winds that strike South Dakota do not reach that section. (793.)

Mr. JUMPER says that corn matures nearly every year in South Dakota, but it is smaller than the Iowa corn. Farmers are increasing their acreage every year. (740.)

Mr. GAGE, of Memphis, says a good farmer is always supposed to make corn enough to supply his family and stock. All the little country towns have mills to grind corn. Corn is used a great deal for food. Where the farmers are able to, they buy flour to a great extent and sell their corn; one is about as cheap as the other. (492.)

Mr. HALE testifies that corn can be produced in Georgia at from 20 to 25 cents a bushel. His superintendent produced it one year at 17 cents and a fraction. (397.)

Mr. WILSON estimates the cost of raising corn and putting it in the crib in central and northern Illinois at from \$10 to \$11 an acre, including the interest on the money, land being valued at \$80 or \$90 an acre. The yield per acre in that section is seldom under 40 bushels, and some get 75; the average for Illinois is 26. The cost per bushel is from 20 to 25 cents. The cost of marketing varies with the locality. (251.)

Mr. TURNBULL says that corn is raised in some portions of California, but not generally. (984.)

3. Barley.—Mr. NORRIS says that formerly the price of barley was 70 to 75 cents, and often a dollar or more, but the price was reduced to about 30 or 35 cents. It no longer paid to raise barley in the best barley section of New York, and the people practically stopped raising it. In the town of Sodus, where 25,000 to 40,000 bushels

used to be grown, probably not 1,000 bushels were grown in 1899. There were formerly several very large malt houses in the county, but the trust closed up nearly all of them and began to buy Western barley. Mr. Norris thinks the adulteration of malt by the use of substitutes for barley has been the chief factor in destroying the barley-growing business, however. The importation of barley from Canada has had no perceptible effect upon prices, because of the duty, though the malsters claimed for several years that Canadian barley made a little lighter malt or a little more of it than the American (having a finer shell), in order that they might buy the best American barley at less than the Canadian price. (325.)

Mr. BUDGE says the yield of barley in the river counties of North Dakota ranges from 50 to 70 bushels to the acre. The price runs from 18 to 27 cents, depending on the quality, but averages about 20 to 25 cents for good barley; sometimes it goes to 34 cents. The farmers do not take care of their barley, but let it get bleached, and that reduces the price 2 or 3 cents. With care it would be a profitable crop. (852, 853.)

4. Cereals in California.—Mr. NAFTZGER testifies that the California wheat crop of 1900 was a little over 973,000 tons. The exports of barley from California were 212,000 tons. The production of other cereals is comparatively small. Very little corn is raised. The summer is too dry for corn, though there are limited areas of moist land near enough to the water level to produce it. Oregon and Washington, having a longer rainy season, produce more corn. (950.)

Mr. Naftzger says there is a wet and a dry season in California. The rains usually begin in November, sometimes earlier; but in central and northern California the rain puts the ground in condition for seeding by November, and the sowing of the cereals continues until midwinter. The rains continue at intervals until April, after which very little is expected. The wheat is ready for harvest by the 1st of June. It cures on the stalk, and is harvested from June until September. A good deal of barley is grown, the food for work animals being largely barley and hay. (966.)

5. Yield of cereals per acre.—*In the Northwest.*—Mr. MORAN submits a tabular statement showing the average yield of wheat per acre in Big Stone County, Minn., from 1890 to 1900, inclusive. The average number of bushels to the acre ranged from 24 in 1895 to 6 in 1893 and 1900. The average yield was 10 bushels. Mr. Moran thinks these figures would apply to the adjoining counties also. (707, 708.)

Mr. Moran testifies that the usual yield of from 8 to 12 bushels of wheat in Big Stone County, Minn., is obtained by continual cropping of the same land, without the use of artificial fertilizers or composts. The soil is dark loam, and is considered fertile enough without fertilizing. There is very little difference between the yield per acre during the past decade and the one preceding. On the breaking of the virgin soil in that district the crops are small the first year as compared with the second, and the second year as compared with the third, but beginning with the third crop they are fair. (708.)

Mr. JUMPER states the average yield of wheat per acre in South Dakota during recent years as follows: 1893, 8.5 bushels; 1894, 6.6 bushels; 1895, 12 bushels; 1896, 11.2 bushels; 1897, 8 bushels; 1898, 12.4 bushels; 1899, 10.7 bushels; 1900, 6.9 bushels; average, 9.5 bushels. (732.)

Mr. Jumper says the average yield per acre is reduced by shiftless farmers, who drag or scratch the seed in on the old stubble without plowing it once in 5 or 6 years. The field grows up partly to weeds, and perhaps half of it, and perhaps none, will be harvested. Ten years ago 20 or 30 per cent of the farming in the Dakotas was carried on in this manner, but these farmers have gone, or are farming better year by year. On the other hand, there are a great many farmers in South Dakota that produce 20 bushels an acre almost every year, and some get as much as 25 or 35 bushels. (733.)

Mr. PROM, of North Dakota, says that in 1895 there was a big crop of wheat, but in 1900 a small crop. The intervening years were average years, and the average yield has been 14½ to 15 bushels. (793.)

Mr. BUDGE testifies that the yield of oats per acre in the river counties of North Dakota is about 50 to 90 bushels. Oats are not as hard on the land as wheat. (853.)

In the South.—Mr. POWERS says that in the production of cereals in the South, generally speaking, much smaller crops are raised than in the Northwest. (171.)

Mr. WHITNEY testifies that the normal yield of grain is about one-third as great in the South as in the North, apparently because in the Northern States frosty nights occur at about the time the plant has attained its full growth, favoring the production of grain, as in all plants, when there is danger of destruction, the plant tends to reproduce itself by the formation of seed. In the South, on the other hand, with a higher temperature and greater humidity, there is a persistence of vegetable growth and less chance for the production of grain. (873.)

Mr. Whitney adds, however, that the largest yield of corn on record is from South Carolina, where the vegetative growth was checked by certain methods of cultivation, and the resulting yield was phenomenal. (873.)

Mr. NUNNALLY says about 10 bushels of wheat and 15 bushels of shelled corn are raised to the acre in Georgia. (457.)

6. *Cost of wheat production.*—*Minnesota.*—Mr. MORAN submits the following estimate of the average cost for 11 years of raising an acre of wheat in Bigstone County, Minn.: Plowing stubbles, \$1; dragging, 15 cents; seed, 75 cents; drilling or seeding, 30 cents; cutting or binding, including twine, 75 cents; shocking, 15 cents; stacking, \$1; thrashing, 60 cents; hauling to market, from 3 to 7 miles, 3 cents a bushel; interest on land worth \$20 at 7 per cent, \$1.40; tax, including road tax, 30 cents; total, \$6.40, or including the cost of hauling to market, \$6.70. The average yield per acre for 11 years was 10 bushels, and the average price for No. 1 Northern was 60¢ cents. The usual difference of 2 cents a bushel between No. 1 and No. 2 and between No. 2 and No. 3 makes the average 58½ cents a bushel. (707.)

South Dakota.—Mr. JUMPER submits statistics of the cost per acre of raising and marketing wheat in South Dakota. He explains that the figures given are less than those given by Mr. Moran, because they are based on wheat headed and put in the stack, while Mr. Moran's were based on wheat cut by the binder, then shocked, and stacked and thrashed from the stack, which is possibly \$1.25 an acre more expensive. Moreover, Mr. Jumper does not include interest on the value of property, but commences with the preparation of the ground and ends with the wheat at the elevator, allowing average wages and including 16 cents for taxes, but nothing for wear and tear of machinery. The average cost of production of wheat is stated as follows: 1893, \$3.45 an acre; 1894, \$3.25; 1895, \$3.80; 1896, \$3.90; 1897, \$3.95; 1898, \$4.25; 1899, \$3.90; 1900, \$3.70; average, \$3.77. (732.)

North Dakota.—Mr. BUDGE, of Grand Forks, N. Dak., estimates the cost of raising wheat and putting it on the cars at about \$5 an acre. (849.)

Mr. PROM testifies that it costs about \$5.72 an acre to raise wheat in North Dakota, not including interest on the land. There is a margin of profit. (793.)

7. *Does it pay to raise wheat?*—The question as to whether wheat farming is profitable in western Minnesota at 10 bushels an acre at the average price of the past decade is answered by Mr. MORAN in the negative; "the more wheat we grow, the poorer we get." The settling of the country increases the value of the land, however. (708.)

Mr. Moran testifies that his estimates of cost of production (see IX, A 6 above) represent the lowest price at which the work could be done, and that in comparison with the price of grain they show that grain is raised at a loss, allowing a reasonable remuneration for the farmer's time. With land at \$20 an acre, which is about the average price in his vicinity, and allowing interest at 7 per cent, the witness fails to see how a young man can get a foothold raising wheat. (710.)

Mr. GREELEY, of South Dakota, says the farmers of that section can not make it pay to raise wheat year after year; they lose crops by hail and drought, and if they have no stock, the year's income is gone. Wheat exhausts the soil, and does not pay unless it is brought in incidentally in rotation with stock farming. The attention of the whole Northwest is turning more to stock. This will decrease the wheat production for a time, but Mr. Greeley knows of farmers who are raising more grain than before they put the stock on the farm, because their farms are cleaner and richer. With good stock farms the Northwest will continue to be the "granary of the world." (938.)

Mr. BUDGE, of Grand Forks, N. Dak., says that when a man cultivates his farm rightly it is profitable to raise wheat. The price averages about 60 cents. (849.)

Mr. JUMPER finds the profit per acre from wheat raising in South Dakota, or the difference between the cost of production and the average price of each crop, to have been as follows: 1893, 21 cents; 1894, 49 cents loss; 1895, profit of \$1; 1896, \$2.03; 1897, \$1.97; 1898, \$1.95; 1899, \$1.45; 1900, 30 cents; average, \$1.05.

Mr. Jumper estimates that the average amount of wheat raised in his section on 160 acres would be 1,200 or 1,250 bushels, giving a clear profit of about \$275, after allowing good wages. Mr. Jumper denies that the more wheat a man grows the poorer he gets. He says he can cite many thrifty farmers in Brown County who have added more land to their farms by raising wheat, but they have grown much more wheat than the average. (732, 733.)

Mr. TURNBULL states that it is thought by experts in the business that wheat can not be raised at a profit in California. Many of those that have been largely in the business are quitting it and cutting up their farms for fruit. The largest yields would be about 30 cents or 50 bushels an acre on the Sacramento bottoms. That is an unusual crop. A good average crop for a fair year would be 15 or 16 cents, or 25

to 27 bushels. The trouble is that such a crop can be obtained only about twice in 5 years. The other 3 crops would probably not be one-fourth as great; so the farm would run 3 years at a loss and 2 at a profit. This is because of lack of water. (970, 983-985.)

8. Grain markets.—Mr. WILSON, of Magnolia, Ill., says the grain from that section goes to Chicago for the most part, though grain is shipped to the Gulf to a considerable extent. (252.)

Mr. PRATT, of Aberdeen, S. Dak., says that when he was first in the wheat business the wheat was shipped to commission houses in Milwaukee. Afterwards Chicago was the market for wheat from the South and Southwest, and Minneapolis the market for Dakota. Twenty or 25 years ago a great many country buyers bought up grain and shipped it on their own responsibility to elevator companies, putting up cheap houses along the track. The grain was handled by sample. (726.)

Mr. MORAN, of Graceville, Minn., says he generally sells his grain under the quotations of the Minneapolis market, which are sometimes lower and sometimes a little higher than the Chicago quotations. (713.)

Mr. PRATT, of Aberdeen, S. Dak., says the buyers of wheat in that section ship to Minneapolis principally, and the price is set mainly by Minneapolis people. Even if the Duluth market is better than the Minneapolis market the wheat goes to Minneapolis, but some cars go right on to Duluth. The heads of the Minneapolis firms will order it to Duluth; they can make a deal with the Duluth people at any time. The local buyers on the Great Northern road, however, very seldom ship wheat to Minneapolis, but ship to Duluth. There are no Milwaukee or Chicago buyers in that section. (727, 728.)

Mr. JUMPER, also of Aberdeen, S. Dak., says the wheat from that section is nearly all unloaded and sold at Minneapolis, because the price there is about equal to Chicago prices; a farmer would lose 2 or 3 cents a bushel by shipping to Chicago. Some of the wheat goes direct to Duluth for transshipment by the lakes and export. Mr. Jumper knows of no instances of shipments to New York, because the difference in price between Minneapolis and New York is very much less than the freight. The farmers never ship wheat to Chicago or Milwaukee, because Minneapolis and Duluth are much better markets. The price in Minneapolis is more than the price in Chicago, taking the freight into consideration, because of the local consumption by the mills in Minneapolis. (739, 740.)

Mr. PROM says the shipments of grain from Cavalier County, N. Dak., are very often divided between Minneapolis and Duluth, the freight rate being the same to both points—15½ cents per 100 pounds. At times there is a difference of 2 cents in favor of Duluth, and at other times of the year Minneapolis is higher. The best grades of wheat go to Duluth; the poorer grades generally go to Minneapolis, and are mixed with better grades. (795, 796.)

Mr. PRATT says that it is impossible to ship wheat to Liverpool so as to keep each grade separate, as some schemers have proposed. It is mixed before it starts across the ocean, and the whole cargo shipped in bulk. (727.)

9. The manufacture of flour.—Mr. REDDING testifies that there are some roller mills in northwestern Georgia, the wheat-growing section of the State. They are being established even in middle Georgia. Quite an interest in wheat has been created within a few years, centering largely about Macon. (447.)

Mr. Redding thinks the establishment of local flour mills would doubtless tend to increase the demand for the Georgia wheat crop. There are a great many old-fashioned merchant mills now idle or only grinding corn which could be equipped for grinding wheat. (448.)

Mr. TURNBULL states that all the flour used in California is manufactured there from California wheat, and a large amount is also manufactured for shipment to Asia. This trade is rapidly growing. (983, 985.)

10. Prices of wheat.—*Reasons for low prices.*—Dr. CROWELL attributes the decline in the price of wheat to (1) transportation facilities, and (2) the great increase in production due to the application of agricultural machinery to cheap, rich land. A great decline has occurred since the development of the wheat-growing section of America. Dr. Crowell submits a diagram from the final report of the Royal Commission on Agriculture, showing that from 1849 to 1872 the production of wheat increased 70 per cent and the price increased 30 per cent, while from 1872 to 1894 the production increased 40 per cent and the price decreased 60 per cent. (341, 342.)

Recent price movements.—Mr. COLES, of New Jersey, testifying in June, 1899, stated the price of wheat in New Jersey was about 85 cents. The previous summer it was about 75 cents; the year before that, somewhat higher, and the year before that about 65 or 60 cents. The average price for the years of 1897 to 1899 was higher than for some years previous. He thinks the average wheat crop in his section in

1898 was 18 bushels and in 1897 22 bushels. He does not regard wheat as a paying crop in that section, though it is sometimes necessary to grow it on account of the straw. (127.)

Mr. POWERS says that in Minnesota, the center of the wheat area, the gold value of wheat on the farm, as given by the Agricultural Department for 5 years about the close of the war, averaged about the same as in recent years, or a little less. Wheat at the center of production has remained substantially unchanged in price. (188.)

Mr. HANLEY says that the average price the farmer gets for wheat in the wheat belt is in the neighborhood of 50 cents, although the price quoted is generally about 70 cents. The price of wheat July 1, 1899, was 52 cents at Viborg, S. Dak., about 275 miles from Minneapolis; about 45 cents at a distance of 400 miles, and 60 cents at a distance of 150 miles from Minneapolis, or, on an average, about 55 cents in the wheat belt of the Northwest; while in Minneapolis the price was 69½ cents, in Duluth 72½, in Chicago 73, and in New York 78½. The cost of producing a bushel of wheat being 50 cents, it costs about one-half that cost to carry it to the Atlantic seaboard, including freight charges, storage, insurance, loading and unloading, etc. (280, 287.)

Mr. MORAN testifies that there is usually a difference of 10 cents a bushel between the price of wheat in Graceville, Minn., and the price paid in Minneapolis, and he attributes the difference to freight rates, elevator charges, commissions, etc. (708.)

Mr. Moran submits a statement of the average price of No. 1 Northern wheat at Graceville, Minn., from 1890 to 1900, inclusive, showing a maximum of 84 cents in 1891 and a minimum of 44 cents in 1895, increasing to 72 cents in 1897 and 65 cents in 1900, with a reaction in 1898 and 1899. Mr. Moran says the climate had a good deal to do with the low prices of wheat from 1892 to 1896. The largest crop ever produced in Big Stone County, Minn., was in 1895, the season being very favorable. The year 1900 was extraordinarily dry, and the crop was small in consequence. (707.)

Mr. Moran testifies that he has sold wheat in his young days as high as \$1.37, and might have sold it as high as \$1.50 if he had sold at the right time. The contrast of these figures with 50 and 55 cents shows a vast difference in the opportunity presented to a young man. (710.)

Mr. JUMPER, postmaster at Aberdeen, S. Dak., submits statistics of the average monthly price of wheat at that point from August, 1893, to December, 1900, and the following averages for the crop years and for the first 6 months, August 1 to February 1, when nearly all the crop is sold:

	1893-94.	1894-95.	1895-96.	1896-97.	1897-98.	1898-99.	1899-1900.	1900 (5 months).
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
Crop year	43½	46	42½	55	80½	53	52½	58
First 6 months	43	42	40	53	74	60	51	

Mr. Jumper explains that the price of wheat was about 2 cents higher in North Dakota and about 5 cents higher in Minnesota than the figures he gives for Aberdeen, on account of nearness to Minneapolis and to the Duluth market, which is usually 1 or 2 cents higher than the Minneapolis market. The prices at the different stations are adjusted according to the difference in freight, being lower or higher according as freight is higher or lower. (729-731.)

Mr. PROM says that during the last 6 years the average grade of North Dakota wheat has been No. 2, and the average price for that grade 55 cents. (793.)

11. *Rice.*—*South Carolina and Louisiana.*—Mr. WHITNEY says the rice lands of South Carolina were protected before the war by substantial levees, built through cooperation between individuals and the State. During the war these levees were destroyed, and since then it has been impossible to get labor to work in the canals on account of the unhealthfulness and other conditions, and large areas of this once extremely productive land have been abandoned. The rice lands of southwestern Louisiana, which were semiswamps, have been drained where necessary, and are not subject to overflow as the rice lands of South Carolina are. The Louisiana lands are higher and more healthful than those of South Carolina and are irrigated by pumping or by artesian flow, while the rice lands of South Carolina are flooded by the rivers, without artificial means. (864, 865.)

Dr. STUBBS says the production of rice in Louisiana has increased enormously in recent years, and more rice is now produced in that State than in all the others together. Until 15 years ago the rice fields of Louisiana were practically worthless and were used for cattle and ponies, but they were discovered to be valuable for

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rice and have been redeemed. A good deal of the land belonged to the United States and a great deal to the State, being swamp land. The lands have all been bought, and are now being exchanged at \$30 and \$50 an acre. Rice cultivation in Louisiana is now extremely profitable, particularly in the southwestern part, where improved implements can be used. (773.)

Rice irrigation in Louisiana.—Dr. STUBBS says it has been found necessary for profitable rice culture that the fields should be covered by water. Five or 10 years ago probably one-third of the rice grown in southwestern Louisiana was Providence rice. All the water falling is retained by a substratum of clay and by an embankment around the field. This made possible the production of considerable quantities of Providence rice for 1 or 2 years, but in dry seasons nothing was made, and the Providence rice has been abandoned entirely. Rice is now grown exclusively by flooding, and the immense amount of money spent in constructing canals for flooding the rice fields from the nearest streams has contributed to the abandonment of the Providence process. Dr. Stubbs estimates that at least \$5,000,000 have been spent in that way. There are 300 miles of these large rice canals, some of them 30 miles long, and every tributary farmer draws water. The fields are usually overflowed when the rice is about 6 inches high, unless conditions require flooding to get the seed up. The water is kept on the land until harvest time, when it must be allowed to dry sufficiently to permit the use of binders. The country being very level an 80 or 100 acre field can be inclosed within a levee and improved implements can be used to great advantage, though along the river the binder can not be used to advantage, because levees are required at frequent intervals and the sickle is used there for harvest. The levees are arranged in either case so as to get the water from 4 to 6 inches deep over the rice field.

Dr. Stubbs has heard no complaint of the climate of Louisiana on account of the flooding of the rice fields. The climate is regarded as extremely healthful. At a recent election there were 7,000 voting Northern men there who seemed to be healthy after from 1 to 15 years' residence. The summer is very cool and pleasant, though the land is not more than 10 to 50 feet above the Gulf level. There is rarely a frost, and the climate is delightful. Among the creoles there are as many octogenarians as anywhere else in the world. An abundance of the purest drinking water is obtained from artesian wells. (772, 773.)

Seedtime and harvest.—Dr. STUBBS says rice is planted in Louisiana through April and May, and harvested from the last of July up to about the middle of September. The rice planters have far more leisure than the cane planters. The rice is thrashed whenever one of the traveling thrashers can be obtained. Large rice owners have their own thrashers, and commence thrashing as soon as the rice is cut. (775.)

High-grade rice most profitable.—Dr. STUBBS testifies that, good head rice being worth much more than the lower grades, the rice which gives the largest amount of head rice gives the greatest profit to the farmer. (772.)

Rice mills.—Dr. STUBBS declares there is hardly a village of 500 inhabitants in the rice district without a first-class rice mill. The farmer either sends the rough rice to be milled at his own expense or for toll, or sells it in the rough. The mills are ready either to buy it or to work it up on toll. They convert the rough rice into the various grades, from head rice to broken fragments. (772.)

Revival of the rice industry in the Carolinas.—Mr. MEAD testifies that the success of rice irrigation in Louisiana, after a long period of continual shrinkage in production, has led to an increased interest in rice growing on the Atlantic seaboard, where old canals were going out of operation. The question now is whether the Louisiana method can be adopted there.

Rice cultivation in the Carolinas is largely after the methods prevailing before the war, the crop being cut with a sickle and bound by hand. He says the reason it is so much more successful in Louisiana is because of the application of modern machinery. (See also *Agricultural implements in the South*, I F 3, Stubbs, p. xciv.) The crops there are cut with a self-binder, economies have been in the field of labor, and the methods of applying and distributing the water are patterned after those of the West rather than those of the Carolinas. There is an economy in the distribution of the water, as well as in the harvesting of the crop; thus the industry has been made exceedingly profitable. (1069, 1070.)

B. Cotton.—1. *Production at home and abroad.*—Mr. WEDDERBURN says the United States has practically no competitor in cotton at the present time, but the industry is developing in the Russian steppes, where he fears we shall in time have a great competitor. (632.)

Mr. BARRETT says the amount of cotton produced in the United States in 1898 was 11,200,000 bales. The estimates of the Chinese crop are uncertain. American cot-

ton is gradually driving Chinese out of European markets, and to some extent even out of its domestic market. The fiber of the Chinese cotton is not strong enough to stand spinning machinery. (57, 58.)

2. Methods of cultivation.—Mr. Radding testifies that cotton is hoed in Georgia just as formerly, and costs about as much to produce as it did 40 years ago. The improvements are usually in the selection of seeds and fertilizers and the preparation of the land. The principal item of expense is gathering the crop. (453.)

3. Varieties of cotton.—Dr. Stubbs says the production of sea-island cotton per acre is less than of upland, and there is an increased cost. It is nothing unusual to make a 500-pound bale of upland cotton to the acre; it is something extraordinary if that amount of sea-island cotton is obtained. It is also extremely difficult to maintain the long staple. The planters who get 50 cents a pound for their cotton select their seed with the greatest care, and maintain the selection every year; but where it is grown carelessly, as in southern Georgia, the price is rarely more than 15 to 18 cents a pound; the length deteriorates very rapidly under careless cultivation.

Charleston and Savannah are the markets for sea-island cotton; there is no sale for it in the other Southern cities. In 1899 and 1900 sea-island cotton was shipped from one of the Louisiana experiment stations and the prices obtained were from 17 to 30 cents, while the prices were about 14 to 50 cents for ginned cotton.

Dr. Stubbs adds that the upland cotton is baled in the press at the ginhouse. The sea-island cotton is put in long bags and packed down by tramping until a bag weighs from 300 to 400 pounds.

Dr. Stubbs thinks there is abundant room for spreading the cultivation of sea-island cotton; but sea-island cotton is very objectionable to an upland cotton man, because it is extremely difficult to pick. It grows very tall, and the yield of lint is very rarely more than 20 to 24 per cent. It is difficult to grow it unless the hands are accustomed to it. The long-lint cotton has only 3 lobes, with projecting horns which the picker gets in his hands, and a good picker of upland cotton will be a very slow picker of sea-island cotton. It is also necessary to have a roller gin for long-staple cotton, whereas all short-staple cotton is ginned with the saw gins, which are extremely rapid, while the roller gin is very slow. The saw gin tears the seed off, while the roller gin or knife gin cuts the fiber away from the seed without destroying the fiber at all. To pass from upland cotton to sea-island cotton is almost as great a transformation as going from cotton to cane. The Egyptian cotton is woolly, coarse, rather long staple, and has a creamy tint and a peculiar finish. It is used largely for making ballbrigan underwear, hence the introduction of Egyptian cotton can not be suppressed. The merchants demand it. Six or seven million dollars' worth of the cotton is introduced every year. The manufacturers have tried hard to find a Southern cotton that would take the place of it, but have not succeeded.

The growing of Egyptian cotton, according to Dr. Stubbs, is a question of irrigation. It is grown in a very dry climate and irrigated periodically, and it is impossible to acclimate it in the damp climate of Louisiana and get the same result. The Egyptian cotton was originally the sea-island cotton of our coast, but it has been differentiated by climate until it comes back an entirely different cotton. Any attempt to acclimate it will result in its going back to long-staple cotton. The only part of the United States favorable for the production of Egyptian cotton is the arid section of Texas, and it must be periodically irrigated.

The long-staple cotton is confined exclusively to southern Georgia, including the islands on its coast, South Carolina, and certain parts of Florida. Dr. Stubbs has tried for 8 or 10 years to grow a long-staple cotton somewhat resembling Egyptian cotton at the Louisiana experiment station, and by distributing seed to planters, but it has been a failure. He got 8 or 10 kinds of Egyptian seed, including some of the purest, and an English roller gin like the one used by the experiment station in Egypt. He saw that the cotton was cultivated exactly as it is in Egypt. As a result he has 2 bales of home-grown Egyptian cotton, which have been sent to Boston to see what can be done with it. It ought to compare with the imported Egyptian cotton, but the yield is too small for profit.

Peruvian cotton is a perennial or tree cotton, and does not bloom until the second or third year; it would not survive our winters, and can not be introduced in the South successfully because it will never bear seed. Dr. Stubbs has 2 or 3 stalks of it under glass. (785-787.)

4. Yield per acre.—Mr. NUNNALLY, a cotton planter of Nunnally, Ga., cultivates between 300 and 400 acres and runs 9 plows. In 1899 he made 65 bales, or 1 bale to about 2½ acres; the year before he made a bale to every 2 acres, which is generally his estimate of the crop. If he can get 2 acres to make a bale he considers it very good farming. (453, 454.)

Mr. MANSON, of Saulsbury, Tenn., estimates that the average yield of cotton in his

county is about 1 bale to 4 acres. No fertilizers had been used until 1900, when Mr. Manson expressed the intention of trying the experiment. (506.)

Mr. KYLE, of Mississippi, testifies that in the vicinity of Friar Point, in the Delta, the yield of cotton is rarely less than 1 bale or 500 pounds of lint cotton to the acre. In the hills the yield is less. (464.)

5. *Cost of production.*—Mr. HAMMOND, a cotton planter of South Carolina, states that a careful estimate of the cost of raising cotton in the Pedee region of South Carolina, made in 1848, showed the cost to be 4.7 cents a pound, including interest at 7 per cent on the full value of the capital employed. In 1886 Mr. Hammond collected itemized statements of the cost of cotton production from 12 of the best cotton growers of this region. They range from 6.1 to 15.22 cents, the average being 8.28 cents. The lowest possible cost that Mr. Hammond has been able to figure without any profit whatever, is \$5.88 per hundred. Down to 1895 the East Indian crop declined after the price reached 11½ cents, and the Brazilian and West Indian after the price fell to 14 cents. Only in Russia, on account of the unusual development of agriculture, and in Egypt, because of the peculiar character of the staple, has the production increased since cotton fell below 11 cents. The margin of safe cost in cotton growing is about 9 to 11 cents a pound. The large crops that have been grown at much lower prices have been grown under the artificial stimulation of a ruinous credit system. Other property has been swallowed up to maintain the growing of cotton. The orchards, the gardens, the sheep, the cattle, the horses have been swept away, and Mr. Hammond can count, within a radius of from 3 to 4 miles from his door, 11 houses once inhabited by substantial and prosperous families, which are now empty or occupied by negro tenants, with the land divided into small cotton patches cultivated by negroes on the edge of want. (827, 832, 838.)

Mr. NORFLEET, of Memphis, testifies that the cost of producing cotton has been reduced very materially of late years; the methods of cultivation are better, and the price of labor has fallen very materially since the war. During the high-priced days planters paid from \$1 to \$1.50 a day for labor, and from \$200 to \$250 for mules, and lands were worth \$15 to \$25 an acre, so they made no more money than they do now. (485.)

Mr. Norfleet estimates the cost of raising cotton as follows: Cultivation, \$5 an acre; use of mule, \$25, or \$1.25 an acre; use of gear and plows, 50 cents an acre; corn for mule, \$30 a year, or \$1.50 an acre; fodder or hay, \$1.60; rent of land, \$5 an acre as an average; picking, \$8 a bale, or two-thirds of that amount to the acre; hauling to the gin and handling, 60¢ cents an acre; ginning and tying, about \$2.50 a bale, or two-thirds of that amount to the acre; total, \$22 an acre, for two-thirds of a bale. (489, 490.)

Mr. Norfleet says planters can not raise cotton for 5 cents and prosper. When they have to take low prices for cotton they fail to make any further improvements on their places, and their houses, fences, utensils, etc., run down. (490.)

Mr. MANSON, of Saulsbury, Tenn., testifies that if a man pays \$8 a month for hired help he can not raise cotton for less than 7 cents on land producing about one-third of a bale to the acre. He doubts whether even in the Mississippi bottom cotton can be raised at 5 cents a pound. (507.)

Mr. HILL, a cotton dealer of Memphis, thinks the actual cost of raising cotton near Memphis is about 5 cents, and in the hill country about 6 cents, exclusive of the wear and tear on the farming implements and interest. He says the cost of raising cotton has increased with the increased prices between 1898 and 1900. (503.)

Mr. GODWIN, of Tennessee, estimates that it costs \$5 an acre to cultivate cotton up to the time of picking. The average price of picking in his neighborhood is 50 cents a hundred pounds, or \$8 for 1,600 pounds of seed cotton, which makes a bale of lint cotton and 1,100 pounds of seed. The customary price for ginning, if the planter does not furnish the bagging and ties, is \$2.50 a bale. On the basis of one-third of a bale to the acre this would make the cost of production \$8.50 an acre, or, including the hauling of the cotton, say \$9.50 an acre. Deducting \$2.40 an acre for seed sold would leave \$7.10, or about 4 cents a pound, as the net cost of producing lint cotton. It costs less in the Delta than in the hill country, but it seems to cost more to live and run a plantation there. (477, 478.)

Mr. KYLE, of Mississippi, estimates that the average cost of growing cotton when corn, mules, and farming implements were cheap was \$20 to \$25 a bale, or 4 or 5 cents a pound. He does not believe cotton can now be grown for that price (March, 1900) because mules, horses, plows, and all kinds of hardware are worth more. (466, 467.)

Mr. BALCH confirms Mr. Kyle's testimony to the effect that at 5 cents cotton can not be raised with wage labor. At the price prevailing in March, 1900, it could be, though farm labor had also advanced a little. (496.)

Mr. REDDING, director of the Georgia Agricultural Experiment Station, says it

costs all the way from $3\frac{1}{2}$ to 20 cents to raise cotton; the average cost for the past decade or two has been about the market price. A great many farmers do not make any money at all. (445.)

Mr. PEEK, of Georgia, testifies that when 1 bale of cotton is made to 3 acres it costs about $8\frac{1}{2}$ cents, including the expense of delivering at the station and interest and taxes, but not counting the labor of the farmer's wife and children. When 1 bale is raised to 2 acres the cost is about $7\frac{1}{2}$ cents, and when a bale is raised to the acre it can be made for about $6\frac{1}{2}$ cents. (457, 458.)

Mr. HOLMES testifies that the cost of raising cotton has been determined by the Department of Agriculture to be 5.27 cents a pound, but the price of cotton at the plantation has of late gone below this figure. (160.)

Mr. HANLEY says the average price of cotton in 1898 was 6.22 cents a pound. The Agricultural Department gives the cost of producing a pound of cotton as 6.4 cents. The cost of marketing the crop amounts to about 2 cents a pound. This means a net loss to the Southern planter of more than \$100,000,000 on the crop of 1898. (289.)

Where \$6 a month is paid for labor, Mr. BARRETT says, it costs over 6 cents a pound to raise cotton. There are various other items which the cotton raiser is forced to pay which depress his profits. Thus the cost of bagging and ties, which averages about 85 cents a bale, is an absolute loss. The amount deducted for tare in Liverpool is 30 pounds a bale, although the actual tare is little over 24 pounds a bale. The so-called "country damage" is also deducted in Liverpool, amounting to about \$500,000 for the entire crop. (50.)

Mr. LOVEJOY says that there was profit enough to the farmer when cotton was sold at 8 to 10 cents per pound, but there is little profit when it falls below 7 cents. It can not pay expenses when the price is less than $5\frac{1}{2}$ cents. (75.)

Georgia and Texas.—Mr. BARRETT says that although the soil of Texas is more fertile than that of Georgia, requiring no fertilizer, the cost of labor is fully twice as great in Texas, and the success of the cotton crop is much less certain. Mr. Barrett believes that so far as labor is hired in each State Georgia can raise cotton as cheaply as Texas, but she can not compete with the labor of white owners of land. (57.)

6. Marketing of cotton.—Mr. GRAHAM, of North Carolina, says cotton is nearly always sold to the manufacturer. Mr. Graham's custom is to telephone to the mills for the price. He has made half a cent a pound by the use of the telephone. When cotton is low the price is nearly always higher in North Carolina than in New York. There is frequently a difference of a cent between the Charlotte and the New York prices. The farmer benefits by the presence of local mills. (436.)

Mr. REDDING thinks most of the cotton of Georgia still goes to New York. That which is sold in the local market does not have to be hauled very far; perhaps 5 miles would be the average. (453.)

Mr. KYLE, of Sardis, Miss., says the cotton from that section is now generally sold to exporters, and goes to New Orleans. The planters sell at home to anyone who will buy, and sometimes the mills send a man to the interior towns to buy cotton. Sometimes it is shipped to the cotton factors at Memphis. (473.)

Mr. GODWIN, of Tennessee, testifies that he sends his cotton to cotton factors—that is, commission merchants—in Memphis, who sell it to Eastern spinners and to exporters, charging about $2\frac{1}{2}$ per cent commission. Cotton can be sold by the farmer on the street, but the cotton bought on the street in Memphis is as a rule bought by people who do nothing else; they put the cotton in the warehouse, sample it, and put the samples on some factor's table to sell. If a man sells from the wagon he expects to sell at $\frac{1}{8}$ to $\frac{1}{4}$ less than if he turned it over to the factor and let the factor have time to sell on the market. The factor sells to people who can pay full price. (480.)

Mr. PORTER, a cotton broker, testifies that Memphis is the largest inland cotton market in the world. Cotton is shipped from there by way of New Orleans, Pensacola, Brunswick, Norfolk, Boston, New York, and other ports. (483.)

Compressed and uncompressed cotton.—Mr. Porter says the cotton shipped from Memphis to the East and for export is compressed, but cotton is frequently shipped to South Carolina uncompressed. There are about 25 bales of uncompressed cotton to the car. Compressed cotton will run from 55 to 60 bales to the car. The railroad rate to Lowell is 10 cents a hundred lower on compressed cotton than on uncompressed. It makes no difference in the value of the cotton to the mill whether it is compressed or not, but the South Carolina mills prefer it uncompressed. (482.)

7. The decline in price.—Mr. PEEK, of Georgia, testifies that immediately after the war the price of cotton was high, but that since 1872 it has been falling gradually. After the election of 1892 it jumped to 10 cents; the crop of 1898 sold principally at about 4 cents; Mr. Peek began selling the crop of 1899 at 5 cents, and sold some as high as $6\frac{1}{2}$ and 8 cents. (458.)

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Mr. NORFLEET, a cotton factor and farmer of Memphis, Tenn., testifies that since 1870 cotton has gone from between 16 and 20 cents down to 4 cents. (485.)

• Mr. YOUNG, of South Carolina, says that all his debts were contracted on a basis of cotton at 7 cents a pound, but when he sold his crop the price did not average more than 4½ cents a pound. Consequently he met with a loss, and so did every man who advanced on the cotton crop. With some reactions, cotton has been declining since 1873. It sold in 1871 at 20 cents a pound, and has declined 75 per cent. Mr. Young thinks the average decline in prices has been about 50 per cent. (118.)

Mr. GODWIN, of Tennessee, testifies that his cotton crops of 1897 and 1898 brought about 5½ cents, on an average. The price was higher in 1896, and still higher in 1895, because the crop was smaller. The price of the crop of 1899 opened in the fall at about 6 cents, and gradually increased until on March 22, 1900, it was 9⅞ for middling cotton, or 9¼ or 9½ for good middling. The Delta cotton, having a longer staple and being better for export than the hill cotton, sells for ½ to ¾ of a cent more. (478-480.)

Mr. NORFLEET says that when cotton was sold at 5 and 6 cents a pound, cotton factors carried over unpaid accounts in many instances, though some planters were able to pay. The success of a plantation depends upon the supply of labor and the management. (491.)

8. *Efforts of planters to control prices.*—Mr. HOLMES says that for many years cotton planters have held conventions at irregular times with the express object of limiting the production of cotton and raising its price, but these conventions have never accomplished anything. (159.)

Mr. STEVENS says there has been a very successful effort made in Georgia, in connection with other Southern States, to control the price of cotton, and these efforts, together with the greater demand made by local mills, have given promise of very satisfactory prices. (916.)

9. *The recent advance in price* (see also *Recent Southern prosperity*, I B, p. LXXXIII).—Mr. REDDING says the prices of cotton in 1894 and 1895 were 4½ and 5 cents; in 1897 and 1898, about 5, 5½, or 6 cents. He estimates that the farmers realized on an average about 7 cents for the crop of 1899. Some sold before it got to that point, and some held on until it got to 8 cents. The advance was not of much benefit to the farmers, because they incurred obligations in the spring maturing in October or November. Probably not more than 15 or 20 per cent of them were able to hold the crop. (444.)

Mr. PORTER, a cotton broker of Memphis, testifies that the price of the cotton crop of 1899 started at about 6 cents and ran up to 12½ cents. He attributes the high price of cotton in the spring of 1900 to a short crop. (483, 484.)

Mr. KYLE says that while cotton was so cheap people found a great many new uses for it, as for mixing with silk and flax, and this, together with the shortage of the crop, increased the price. (466.)

Mr. Kyle thinks the cotton crop of 1899 was better in Mississippi than almost anywhere else. The crop was made with less money than before, with the idea that the price would be only 5 cents. All labor was furnished on that assumption, and food was cheap. The result was that when the crop paid from 6½ to 9 cents a pound there was a somewhat prosperous condition. (473.)

Mr. POOLE says that for the last few years the production of cotton has been very profitable, and Alabama farmers have been stimulated to cultivate an increased acreage. (925.)

Mr. GAGE, president of the Memphis Cotton Exchange, testifies that while the farmers in the vicinity of Memphis did not raise as much cotton in 1899 as for the two years previous, the advance in the price enabled them to realize more net income from the crop. There was more money in circulation; people were not asking for as large advances as in former years, and were not asking for advances so early in the season. (491.)

10. *Overproduction.*—Dr. STUBBS says cotton has been depressed for years, until 1899-1900, by overproduction or underconsumption. The enormous crops depreciated its value everywhere and reduced the price on the plantation to 4 cents, a price at which it is utterly impossible under the best system to produce it at a profit without starving the labor to death. Dr. Stubbs predicts that the present high price of cotton will induce overproduction again. (782.)

Mr. STEVENS says there was an overproduction of cotton in Georgia for a few years, about 1897 and 1898, but the increase of cotton mills in that State and in the South generally has made a repetition of that condition almost impossible. There has also been underproduction of grain and general farm supplies; but cereals are more largely planted than formerly, and the acreage under cultivation has increased because of

the diversification of crops. The effect of underproduction has been to increase prices, as farmers, because of the raising of supplies, have been able to control the sale of both their cereals and cotton. The prices of wheat and oats have advanced and the price of cotton has greatly increased. (915.)

Mr. KYLE, of Mississippi, attributes the decline in the price of cotton to two immense crops in successive years, an accumulation of manufactured goods, and the depressed condition of business.

Mr. BARRETT does not believe that overproduction is the cause of the low prices of cotton or of any other agricultural product. There would be a demand, if all people were employed, for an indefinite production. The largest cotton crop ever produced in this country brought the most money. (57, 58.)

Mr. PEEK, of Georgia, attributes the low price of cotton to the lack of money (banks paying no attention to the farmers) and to the cry of overproduction. The advance he attributes to the short crop and to the world's coming to the conclusion that there was no oversupply. (458.)

11. Cylindrical bales.—Mr. BARRETT believes the use of round bales to be more economical for the farmer in the South than the square or American bale. The best round bale is the Lowry, which is packed in the spiral manner. This form of baling saves 45 cents per 100 pounds, in the cheaper cost of the bale itself, and in the fact that no tare is deducted, tare on American bales amounting to from 24 to 30 pounds. The actual cost of packing a 500-pound bale on the Lowry system, including all items, is \$2.40. It is impossible to steal cotton from a Lowry bale or to mix in impurities and increase the weight fraudulently. The charge for the use of all forms of baling machinery, which are covered by patents, is excessive. (50, 51.)

Dr. STUBBS says everyone recognizes the merits of the round bale; it dispenses with a great amount of bagging and ties, it condenses and prevents the increased cost for the press at the shipping point, and has many other advantages. Thus far there has been a royalty of \$1 a bale for using the machine, besides other expenses; but Dr. Stubbs understands that the machines are to be for sale.

Thirty pounds are discounted in every bale of raw cotton, though we are not generally aware of it in this country. As soon as the cotton gets to England 6 per cent is thrown off as tare. The price is telegraphed back from Liverpool and the local merchants rearrange it so as to cover the whole bale. Planters can therefore afford to pay more for the round bales, where they lose only about 2 or 2½ pounds to the bale. There is also a saving in insurance and a saving in compressing. The big roller gin is easy to run and does not require a very large horsepower.

The big bales have to be compressed at 50 cents a bale. The condensed round bales are not inflammable; Dr. Stubbs has seen tests where they have been covered with kerosene oil and set on fire, but only charred. He is told that the fiber is not injured by the pressure. Mr. Atkinson writes him that by the recent introduction of a machine by which the cotton is unrolled from 5 or 6 bales at the same time and fed to the spindles or pickers the round bale has become popular. Before that there was difficulty in unrolling the bale. Formerly the old big bale was simply uncovered, drawn out, and picked, and thrown into the pickers.

There are now half a dozen or more different round bales. An antagonism has developed against them because of the large amount of money invested in public gins and compresses; at every crossroads in the hill country there is a large gin which will probably take the crop of 30 or 40 small farms. The only question at issue between the round bales has been which was the greatest monopoly and would squeeze the planters most.

Dr. Stubbs says the Lowry bale is a spiral bale, not round, like the American bale, and it stretches the fiber. (786, 787.)

Mr. HUTCHINSON, representing the American Cotton Company, testifies that a premium of 45 points is universally allowed in the Memphis market on cotton in round bales, and is guaranteed by the American Cotton Company. This premium is not always maintained at local points where there is a stiff fight to shut out the round bales. Wherever a round-bale press is located it also raises the price of square-bale cotton. The Memphis buyer, in order to get any square-bale cotton at that point, has to telephone his agent raising the limit a quarter or half cent a pound.

Mr. Hutchinson says 50,000 pounds of cotton in round lap bales can be put into a box car and shipped directly to the Eastern mills. It would otherwise require four box cars to carry the same amount of cotton to Memphis, where it would be unloaded, trucked into the compress shed, compressed, and loaded back into the cars, and it would then take two cars to carry it East.

Mr. Hutchinson knows of no objection on the part of foreign spinners to the round bale, and says that he has had applications for these bales from a good many brokers. He says there is no difficulty in sampling. It is not necessary to bore the

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materials in every bale. Southern mills also have the advantage of longer light during the day, and they work longer hours. (52, 53.)

C. Other crops. (See also *The sugar industries*, X, pp. CCLI to CCLXXIII.)—
1. Potatoes.—*Vermont.*—Mr. SPEAR says Vermont is a very good potato State, but there has been so much difficulty with rust, potato bugs, etc., that farmers have largely confined themselves to what they need for their own use, though the western part of the State sends potatoes to market. All kinds of potatoes are produced. Mr. Spear has seen at a fair 170 kinds produced by one man. (408.)

New York.—Mr. NORRIS says there are certain sections of New York that grow as good potatoes and root crops as are grown anywhere, except sugar beets, which can be grown to greater perfection in California. (328.)

New Jersey.—Mr. MAGIS testifies that potatoes can still be raised to advantage in New Jersey. In Union County they are raised largely for the early market. After the New York potatoes are in a condition to ship they can be sold at prices which make it unprofitable for the raisers in that part of New Jersey. (100.)

Mr. COLES, of Salem County, New Jersey, says a great many early potatoes are grown in that section, 12 and 20 acres of a 100-acre farm being devoted to potatoes each year. The early potato crop is subject to competition from the South. (127.)

Mr. Coles says the potatoes are generally planted with a machine in his section. There are no improved plows, but the cultivator and the gang plow are used to some extent. The potatoes are usually plowed out with a potato plow, though diggers are sometimes used. (128.)

Kentucky.—Mr. NALL testifies that about 20 years ago, when he was a young agricultural editor, he heard of a new system of growing potatoes, and when he investigated it found a couple of Germans growing potatoes earlier than any of their neighbors and superior in appearance, though they were a well-known variety. They planted immature seed potatoes, digging up a part of their potatoes, exposing them to the sun, then putting them in a shady place and cutting them up and planting them in midsummer, about the 1st of August. By the time of frost the tubers would be about one-third grown. They would then be taken up and the next spring cut up and planted again. Mr. Nall advanced the theory that when the seed formed the root was ready to decay, and therefore less vigorous than if taken up and planted before the seed formed; and he predicted that this method would revolutionize the industry, and that seed potatoes would be exported from Kentucky, though thousands of barrels of potatoes were then shipped into that section from Western New York and Michigan. He has lived to see this prediction verified. For many years seed potatoes have been shipped to the North, and are never allowed to get more than one-third of their growth. This discovery made Jefferson County a very large potato-growing county, and the seed goes north from there instead of coming South. A great many potatoes are grown near the cities of Kentucky, the second-crop seed being used; but now the potatoes dug in July are held in cold storage until the next year, and then planted, instead of being planted the same year. (807.)

2. Truck farming.—*New Jersey.*—Mr. COLES, of New Jersey, says that while the Salem County farmers have not abandoned the growing of cereal crops, they are growing them less than formerly, and have turned their attention to other things, such as berries, asparagus, tomatoes, and sweet potatoes. Southern competition has hurt truck farming a good deal. The effect of Southern competition on the New Jersey farm is especially severe when the Southern crops are delayed by cool weather, so that the glut in the market occurs at about the same time the New Jersey products are ready for market. (123, 127.)

Maryland.—Mr. AGER testifies that there is a great deal of truck farming in Maryland, near Washington and Baltimore. It was formerly very profitable, especially if the farmer understood how to maintain the fertility of the land and grow the best crops; but now many complain that they can do no more than make ends meet. Some grow winter crops in greenhouses, and that is quite profitable. (106.)

Mr. Ager says that the importation of early vegetables from the South has a tendency to lower prices of Maryland products. There is generally a steady shipment from the South during the season. Early potatoes from Norfolk are mentioned as an example. Mr. Ager says transportation, especially by boat, from lower Virginia is almost as cheap as hauling 10 miles by wagon. The Maryland gardeners do not send vegetables to the North, but the commission men do so to some extent. (110.)

Mr. WHITNEY says that 15 years ago the truck industry was in a very flourishing condition in Maryland, and in certain localities the people were very prosperous; but with the development of transportation facilities and with the opening up of truck areas in South Carolina and Florida, the industry has been given up in certain parts of Maryland. (860.)

South Carolina.—Mr. HAMMOND, a cotton planter of South Carolina, says that while the regular truck gardens on the seacoast are permanent institutions, the raising of such things as watermelons and canteloupes in his section does not seem to have been very successful. In any case it must be done on a large scale, so that shipments can be made in carloads. (834.)

3. Tobacco.—Connecticut Valley.—Mr. STOCKWELL says there is a considerable tobacco industry in Massachusetts, in the Connecticut Valley, and to a limited extent in the Housatonic Valley. The industry has been thriving since 1897; it was formerly much depressed, there being no sales because of fear of tariff changes. (899.)

Mr. HALE thinks that for the average planter of tobacco in the Connecticut Valley tobacco is probably the best money crop. He has been educated to grow it, and that is about all he knows. The most prosperous are those who have tobacco in connection with dairying and market gardening, but most of the farmers grow tobacco as the only staple crop. (393.)

Sumatra tobacco.—Mr. WHITNEY says that as a result of the soil-survey work of the Department of Agriculture, Sumatra tobacco was recently grown in the Connecticut Valley and brought 71 cents a pound, while the ordinary crop is sold for 20 cents a pound. In the soil survey it appeared that conditions were favorable on a certain soil in the Connecticut Valley for the production of this tobacco, though so far as known there is no other part of the country besides Florida where the industry can be pursued. Mr. Whitney is confident that there is a possibility of producing in this country \$6,000,000 worth of tobacco which is now imported annually from Sumatra. (870.)

Mr. Whitney goes on to say that on the light sandy soils of the Connecticut and Housatonic valleys a fine grade of wrapper leaf tobacco is produced, which can not be grown in Pennsylvania or Maryland. The introduction of the Sumatra tobacco in 1865 has affected the tobacco industry of the Connecticut Valley. Its fine texture has been so appreciated that it has been imported in increasing amounts ever since, in spite of the duty of \$1.85 a pound. Manufacturers prefer paying \$2.50 or \$3 a pound for Sumatra tobacco to paying 18 or 20 cents for the Connecticut leaf, although the quality of the Connecticut leaf is preferred by many. It has seemed to Mr. Whitney that the tobacco industry of the Connecticut Valley was threatened. This country takes the best Sumatra, paying \$1 for the tobacco and \$1.85 as duty, and there is more and more a feeling against the use of the domestic leaf.

Realizing this condition, the Department of Agriculture 2 or 3 years ago inquired into the possibility of raising the Sumatra tobacco in this country, so as to obviate the importation of such large amounts from Sumatra. It was decided to try a particular soil in the Connecticut Valley. Sumatra seed was planted under a cheese-cloth shed, so as to protect the plants from the sun and maintain the quiet and humidity of the air. The tobacco was grown and cured by a combination of the methods used in Florida, Sumatra, and Cuba, and was pronounced by experts to be fully equal to the imported Sumatra leaf. It is confidently expected to establish an industry in the Connecticut Valley which will successfully compete with the Sumatra tobacco, which is now imported to the extent of \$6,000,000 a year, besides duties. Some Sumatra leaf is being grown also in Florida, where the climatic conditions during the growing season are not very different from those of Connecticut. (876.)

Mr. Whitney explains that the cheese-cloth covering is not affected by any ordinary storm. The first cost of the shed is between \$200 and \$500 an acre, depending upon the cost of the lumber. In the South near sawmills it costs about \$200 an acre. The cheese cloth costs about \$100 an acre, and must be renewed each year. The shed will last about 5 years. The covering goes entirely over the field, and has the effect of a great greenhouse, greatly reducing and modifying the sunlight and heat and making the air stagnant and moist. The conditions are really tropical. In the Connecticut Valley the plants grew to the roof—9 feet high—though the ordinary height of tobacco plants is about 4 feet. The cheese cloth does not prevent evaporation, but conserves the moisture so that the crop does not suffer from drouth. It is also a protection against frosts. (877.)

Maryland.—Mr. WHITNEY says that before the war tobacco was grown very generally in Maryland, and since the war it has been grown extensively in the southern counties; but with the introduction of white burley tobacco in Ohio and Kentucky, where a large yield is produced at a comparatively low cost, the tobacco industry in Maryland has been largely given up, with disastrous effect upon the farmers of Maryland. (860.)

Virginia.—Mr. WEDDERBURN says that near Petersburg and Dinwiddie, Va., a fair average yield, on a good piece of land well fertilized and cultivated, would be one-fourth or one-fifth of a pound of shipping tobacco to the hill. (823.)

Kentucky.—Mr. NALL, Commissioner of Agriculture of Kentucky, divides the State

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into 5 districts according to the character of the soil, and also separating the mountainous from the agricultural part, which latter comprises 3 divisions. Ninety-five per cent of all the dark export tobacco is grown and handled in division No. 1, constituting the western end of the State. Perhaps two-thirds of the red tobacco for domestic manufacture and the greater part of the "regie" tobacco are grown in division No. 2, lying immediately east of No. 1. The export tobacco is long, heavy tobacco, strong and black, and is usually marketed loose in wagon-load lots, and then rehandled and straightened. At least that going to England is stripped, the stem being taken from the leaf to make it lighter, as it pays a duty of 86 cents a pound when taken from the bonded warehouse in England. In the third division is grown about 90 or 95 per cent of all the white burley tobacco, a variety originating across the river in Ohio, and now cultivated throughout the blue-grass region and used almost exclusively for domestic filler and wrapper, as it will absorb a great deal of licorice, moisture, sugar, and other things which are cheaper than tobacco. The black tobacco is cured by fire; the burley tobacco is cured in barns without fire. Very little of the tobacco grown in Kentucky is used for cigar making, though the cultivation of cigar tobacco has been tried unsuccessfully. (806.)

North Carolina.—Mr. WHITE says that in the Durham district and in certain other parts of North Carolina most of the tobacco crop is produced by small croppers, and the landlord or some one else sells it for them. (420.)

Georgia and Florida.—Mr. HALE testifies that Georgia can grow a fine-flavored tobacco for a filler. Some sections of Florida and Georgia, by using Cuban seed, produce the so-called Havana tobacco, which is not as good as the Cuban, but much better than much that is sold as such. With the Connecticut or Sumatra leaf for a wrapper it makes a very fine cigar. Mr. Hale thinks it probably can not be grown if tobacco is brought from Porto Rico and Cuba free of duty. He says the tobacco farmers are very much stirred up about it. (397.)

Bright tobacco.—Mr. WHITNEY says that many areas, formerly of little value, have been developed by the introduction of the bright-tobacco industry, which is adapted only to soils with certain peculiarities, which happen frequently to be unfavorable for general crops. (876.)

Marketing of tobacco.—Mr. WHITE testifies that the farmers of North Carolina send their tobacco to stores and warehouses and have to take whatever price is offered, except those who can hold it in hogheads and ship it when they please to Richmond or Danville. (419.)

Mr. GRAHAM thinks that the price of tobacco has gone down over 50 per cent in 8 or 10 years, while the crop has decreased. He attributes this to a trust or combination of buyers. (435.)

Foreign tobacco monopolies.—Mr. NALL calls attention to the practice of the Italian, Spanish, and perhaps French Governments in appointing an agent or selling to a syndicate the privilege of supplying all the tobaccos that are obtained from America at a certain price. The growers are absolutely at the mercy of these people as to the prices of the export tobaccos, as there is nobody else to sell it to. It can not be shipped to those countries and put in bonded warehouses and sold to manufacturers. The tobacco interests endeavored to get relief in sales in the open market in those countries through a bill introduced in Congress in 1898 by Hon. J. D. Clardy, of Kentucky; but it passed only the lower House. Legislation along that line might result in benefit to Kentucky, Tennessee, Indiana, southern Illinois, and Missouri, all of which grow the export or regie tobacco largely. (810.)

4. *Flax in North Dakota.*—Mr. BUDGE thinks flax is the most profitable crop that has been raised in North Dakota for years. From 10 to 15 bushels are raised to the acre, worth in the fall of 1900, \$1.45 and \$1.60 at the farm. It is thrashed just as wheat is. (852.)

Flax seed and straw.—Mr. PROM, of Milton, N. Dak., says the flax seed is shipped to Minneapolis. The average price in 1900 was from \$1.40 to \$1.50 a bushel. The production varied from 8 or 9 to 24 bushels, averaging 14 and 16 bushels. It is an excellent crop to raise, and is not thought to be hard on the soil if the land is properly treated, or if the crops are rotated. The flax is grown entirely for seed, and the straw is a by-product. Mr. Prom thinks the price of the straw is \$2 a ton, and the yield probably 2 tons to the acre. (793.)

Mr. Prom says sheet-iron drums are filled with flax straw packed as closely as possible, opened at the bottom, and put on top of a cook stove with the lid removed. This makes a good fire, which heats the room very comfortably and lasts a long time. There is a very disagreeable odor, but it is a great saving for farmers who are distant from timber.

Flax straw is also utilized for feeding stock. (788.)

Flax mill, Fargo.—Mr. PROM says there is now in Fargo a flax mill where the seed is

run through rollers and the wooden part taken out. The fiber is then pressed and shipped East for linen manufacture. The business is said to be very profitable, and it is very profitable to the farmers living near by. (792, 793.)

5. *Tea gardens.*—Mr. SHEPARD, of Pinehurst, S. C., testifies that the first tea plant brought to this country was planted about 100 years ago on the Ashley River, about 15 miles from Charleston. During the fifties, Mr. Junius Smith, of Greenville, S. C., made some experiments which attracted considerable attention, and later the United States Government distributed tea seed through the Patent Office and also imported tea plants from China; but the gardens which were established just before the war were abandoned or neglected. About 20 years ago Mr. John Jackson came to this country from India and started a tea plantation in Georgia, which attracted the attention of Commissioner Le Duc, of the Department of Agriculture, who secured Mr. Jackson's services in the establishment of an experimental tea garden; but Mr. Jackson's health broke down, and for lack of an expert the undertaking was abandoned. About 1890 Mr. Shepard purchased a portion of this same plantation and began his experiments at Pinehurst. He wished to produce enough tea to ascertain the cost of production and test the commercial aspect of the question. He has planted between 50 and 60 acres of tea, and looks forward to a production of from 10,000 to 15,000 pounds annually. He has experimented with all the different kinds of tea seed that he could procure either through the trade or through the Departments of State and Agriculture, and under as many different circumstances as possible. He has succeeded in producing tea at the rate of 400 pounds to the acre, with a yearly increase of from 50 to 75 per cent, and sees no reason why it should not be produced at the rate of 600 or even 800 pounds to the acre. In some of the gardens of India and Ceylon tea is produced at the rate of 800 to 1,000 pounds to the acre. The production is a little over one-half ounce to the bush in Japan, and 1 to 2 ounces in China; one of Mr. Shepard's fields has given him $5\frac{1}{2}$ ounces, so he thinks the outlook is favorable. His green tea has been reported by experts as inferior to nothing brought to this country, and it is not artificially colored; but most people do not like it, just as they do not like the best Japanese and Chinese tea. There is very little tea brought to this country that costs more than 20 cents a pound in Japan, though there is a great deal of tea grown in the Orient that costs from \$5 to \$50 a pound. The teas that approach Mr. Shepard's black teas most nearly bring from 30 to 40 cents in bulk in the New York market, or 75 cents to \$1 at retail. Mr. Shepard feels confident of being able to raise tea at a cost of less than 40 cents, even with only 50 or 60 acres, and very much less with larger acreage. He has never had any trouble in selling it above 40 cents a pound, and never carries any over from season to season. The preparation of the field is very expensive, but it is planted for an indefinite future, and the picking extends over half the year. From April to the middle of October the bushes are picked every 10 days, making 20 pickings. If a month or two of the picking is lost by bad weather or accident, there are still 4 or 5 months of picking.

The tea pickers are colored children, who earn from 20 to 50 cents a day. They are very fond of the work, which is extremely easy, consisting simply in pinching off the leaves and putting them in a Swiss trout basket suspended at the waist. It is very much easier than cotton picking, and they can earn much more wages. Mr. Shepard does not consider it profitable for children of less than 8 or 9 years to go into the tea field. He has a free school on the premises, kept open for 9 months in the year, which all the tea pickers must attend. One of his objects was to establish a new industry in a country where thousands of people lack employment and where it was desirable to supply a healthy and easy occupation during the summer, for children and women particularly.

In February, 1899, the thermometer fell to half a degree below zero at Pinehurst, the greatest cold in South Carolina for 150 years, but the tea plants were hardly injured, with the exception of two gardens in a sheltered position and full of sap, which had to be pruned to the ground.

Mr. Shepard says tea from China, Japan, and the Himalayan provinces of India might be cultivated over a large portion of the Southeastern and Gulf regions; those from tropical and subtropical climates over a smaller portion of the country, as a very small part of the country is free from frosts. The soil best adapted to tea raising is rich, level land, with a light, porous, loamy soil, well drained and capable of irrigation. The tea-producing countries have from 50 to 150 inches of rainfall as against 30 inches in South Carolina during the 6 months of the picking season, and Mr. Shepard proposes to supply the deficit by irrigation. A tea garden ought to come into remunerative bearing in 3 or 4 years. On the recommendation of the Secretary of Agriculture, Congress has appropriated a large amount to be devoted to the prosecution of Mr. Shepard's work. (440-443.)

Consumption of tea.—Mr. Shepard states that the consumption of tea in this coun-

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try is about 80,000,000 or 90,000,000 pounds a year. The average consumption is only about one-third that of Great Britain and the British colonies, where it ranges from 5 to 7 pounds per capita. In Russia the consumption per capita is about the same as in the United States; the other nations of the world consume, comparatively little tea. (443.)

6. **Fruit growing.**—*Massachusetts.*—Mr. Stockwell says apples are raised to a large extent in Massachusetts, and he thinks very profitably. The apples are of good quality, and are shipped largely to foreign markets. The main apple for shipping is the Baldwin; the foreign market demands a red apple. The Baldwin is raised in Canada, and the Canadian apples stand high in the foreign market. The Northern apple keeps better than the Southern.

Peaches are again being raised in Massachusetts. At one time they were generally cultivated, but the lack of certain elements in the soil and insect enemies and other causes led to the abandonment of the industry. (895, 896.)

New York.—Mr. ROGERS, president of the Binghamton Beet Sugar Company, says almost every variety of fruit except the orange and banana can be grown to perfection in New York State; no apples have a better flavor than New York apples. The soil and climate of New York give a larger variety of fruit than is produced anywhere else on the globe. (552.)

Fruit evaporation in New York.—Mr. NORRIS testifies that the business of evaporating fruit is carried on very extensively in Wayne County, N. Y., and the surrounding country. Some farmers sell out their whole crop to be evaporated; some like to get rid of doing the work, and sell their apples out and out, agreeing to deliver them to the evaporator, or to give the buyer the privilege of barreling a portion of the fruit. It is becoming very customary for the buyers to do the packing, and their packing is more uniform. The evaporated fruit takes the place of fresh fruit at hotels, restaurants, etc., and a great many private families use evaporated apples. The fruit is put up in 50-pound pine cases as a rule; some is put up in 25-pound cases, and in 2 and 5 pound paper packages. The fruit is marketed all over the world. Evaporated fruit kept from the air and in cold storage will keep for a long time. Mr. Norris has known it to keep as long as 4 years and be perfectly good. (322.)

North Dakota.—Mr. BUDGE says North Dakota is not adapted to fruit, except small fruits, crab apples, etc. It is too far north for the Baldwin apple, but a hardy apple is being tried. Fruit is hard to take care of because of the cold. When the farmers set out fruit trees they have to shelter them. The cold is a dry cold, and not as severe as in New England, but it comes earlier in the fall and lasts longer. (848.)

Peaches in Maryland.—Mr. WHITNEY says that the introduction of peach culture in western Maryland has created an industry on soils which were formerly of little or no value and which are now worth up to \$1,000 an acre. The conditions have made it possible to produce a late peach of excellent quality which does not come into competition with those from the Eastern Shore and southern Maryland. These soils are of no value for general farm purposes, but are particularly adapted to the production of late peaches. (877.)

West Virginia.—Mr. CLOHAN, of Martinsburg, W. Va., says (June, 1900) that it is not over 5 years since the planting of fruit trees to any extent was begun in that section of the State. Before that there was only one fruit grower in Berkeley County. His sons are now at the head of all fruit industries in that end of the State. The largest fruit plantation in that part of the State is that of the Allegheny Orchard Company, in Hampshire County, which has about 1,000 acres altogether, of which about 600 acres were bearing in 1900. The company raises peaches exclusively.

Georgia.—Mr. HALE, of Fort Valley, Ga., raises peaches and Japanese plums most largely, and also various kinds of melons, etc. He says the Georgia peaches are very much better quality than those grown anywhere else; they are a little drier than those grown in the North, but richer and sweeter. Northern fruit is more juicy than the Southern varieties, but lacks the maturity and richness of the latter. (377.)

Mr. Hale testifies that the original fruit plantations of Georgia were developed by native men, and that one of the largest places is still owned and managed by a native; but there are a number of Northern people in the business there. A large number of people in Ohio have formed stock companies, and go South for a sort of picnic in the winter and again in the harvesting season. (400.)

Mr. REDDING declares that the possibilities of growing fruit in northern Georgia are unlimited. A market is found all over the North and West, from Boston to St. Paul. Very few apples are grown; there is no Georgia apple that will as a rule compete with Northern and Western apples. (448.)

Alabama.—Mr. POOLE says that fruit industries are being encouraged in Alabama. Fruitdale, near Mobile, shipped about 80 carloads of peaches to Chicago in 1900, and

will ship 200 carloads in 1901. All fruits do well in Alabama, particularly peaches. A grape-growing industry is also developing. There are 2 grape-growing towns, Cullman and Claiborne. Cullman is settled by German immigrants; there is not a negro in the county, and it is one of the most prosperous counties in the State. Farm products of every description are raised there. Claiborne is settled by people from the Northwest and by Scandinavians. They grow grapes on about 6,000 acres, and make several different kinds of very fine wine. (926, 927.)

Oranges in Florida.—Mr. WHITNEY says oranges have been grown in Florida for years with great success, and the industry has flourished in the most promising way until a season of frosts and freezes has thrown the industry back for years and ruined a large number of people. (862.)

California.—Mr. NAFTZGER, president and general manager of the Southern California Fruit Exchange, says the fruit-growing industry of California has grown in the past decad. to very large proportions. The fruit business, including the products of vineyards and vegetable farms, has increased during that time about 400 per cent. About 50,000 carloads of fruit, of which about 5,000 carloads were canned fruit, were exported by rail in 1900, besides about 3,500 carloads of vegetables and probably about 7,500 carloads of wines and brandies. The sea shipments of fruits and nuts amount to about 3,000 carloads. (950.)

Mr. Naftzger testifies that the navel orange was first propagated in California in the early seventies, the first trees being imported by the Department of Agriculture and sent to Riverside to be planted. The business began to assume practical importance in 1884 and 1885. There are also other seedless oranges, and seedless lemons are produced in California to a large extent. (948.)

Mr. Naftzger pronounces the Santa Clara Valley probably the best prune section of California. The best raisin district is the upper San Joaquin Valley. The best pear district is on the Sacramento River, between Sacramento and the bay. The best orange and lemon district is in the southern tier of counties. The interior valleys are better districts for citrus fruits than the seacoast, being freer from the scale and other effects of sea moisture. The California fog produces on citrus fruits a scale, a fungus smut which propagates very rapidly; but when the hot summer comes on it almost entirely clears itself. The citrus fruits grown in the interior valleys also keep firm much better than those from the seacoast.

The deciduous fruit is gathered from May to October; first the cherries, then the peaches and apricots, then the plums, pears, and grapes, the peaches continuing through to September. The drying goes on at the same time. The raisins, which are made from a variety of grapes which are also shipped in limited quantities in the green State, are cured in September and October. The citrus fruits are shipped from November to July chiefly, though some oranges are shipped every month. Lemons are shipped continuously, but chiefly from the first of June to the first of November.

Oranges and lemons are grown in the same orchards. Lemons are slightly more sensitive to cold than oranges, and so the aim is to put them on ground that is as nearly as possible immune from frost. It is not customary to grow any other crops on the ground beneath the fruit trees in the orchards. (952.)

The oranges are perfectly ripe when picked, except that at the beginning of the season some are shipped for the holidays before they are quite ripe. Lemons are shipped regardless of color; they are picked when they are of proper size and sweated down in a cool place before shipment. The apricots, pears, prunes, etc., must be picked in a rather immature state for long shipment. (952.)

Mr. Naftzger goes on to explain that the up-to-date California lemon grower sends his picker into the orchards with a ring from time to time to test the size of the lemons. As soon as they attain the proper size they are removed from the trees, and if the market is strong they are shipped very soon; if the market is weak they are held. They are put into a cool, dry place and are carefully handled.

The November and December lemons in about 6 months are very fine, tender, ripe, full of juice, and of the highest grade. The time of picking the lemons makes but little difference in the quantity of acid, unless the weather gets too cold. The best lemons in California are the November and December goods. The ripe lemons from the tree are not desirable. They are never permitted to get yellow on the tree. (959, 960.)

Mr. TURNBULL says that oranges and lemons are probably the most profitable fruits to raise in California at the present time. They are grown as far north as Redding, 250 miles north of San Francisco. Probably about one-fourth of the State is suitable for growing fruits of any kind. The rest is too rough and mountainous. (984.)

Olive groves.—Mr. TURNBULL says that there are many olive groves in California, and that the manufacture of olive oil is quite an extensive business. The California

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oil is reputed to be purer than the foreign article. Mr. Turnbull's belief is that it is not mixed with cotton-seed oil. (987.)

Nuts.—Mr. NAFZGER testifies that about 700 carloads of nuts of about 12 tons each were shipped out of California in 1900. They were chiefly English walnuts, but there were some almonds. The nut industry is growing very rapidly. (951.)

Melons.—Mr. HALE testifies that cantaloupes were never transported long distances until Colorado proved that it could grow a fine melon and ship it to the far East. Georgia followed Colorado's example, and found that it could produce equally good melons and get them two months earlier. This is a new industry much appreciated by the consumers, and likely to grow. (397.)

Mr. Hale says that when the Rocky Ford melons acquired fame in the market, Georgia and Florida melons were labeled "Finest melons, grown from Rocky Ford seed," "Rocky Ford" in large type and "seed" in very small type, giving the impression that they were Rocky Ford melons. Mr. Hale labeled his cantaloupes "Finest Georgia melons," indicating that they came from the grower of Hale's peaches, and sold them in New York for \$4 a crate, while the so-called Rocky Ford melons sold at \$1.50 and \$2. (398.)

Mr. Hale says there is little or no profit in watermelon raising in Georgia; it has been overdone. (387.)

Cost of production and profit in fruit growing.—Mr. HALE, of Georgia, says the cost of production of fruits varies from about \$15 an acre on a large scale to \$25 or \$30 on a small scale. A crate of peaches, including packing, transportation, cartage, and commissions, costs in a Northern market from \$1 to \$1.25 and sells all the way from 50 cents to \$3. On the whole, with proper handling, there is a nice profit. Canned and evaporated fruits can be produced more cheaply in Georgia than anywhere else in America. (397.)

Mr. CLOHAN says that the soil and climate of West Virginia are very favorable to fruit growing, and that those who have gone into it have made more than twice as much money as those engaged in general farming. (596.)

In 1890, according to a statement of the president of the California State board of trade presented by Mr. TURNBULL, dried peaches were sold f. o. b. Red Bluff at 20 cents a pound, and the prices of other fruits were equally high. It was not unusual for orange growers to net \$500 an acre. (988.)

Markets for fruit.—Mr. CLOHAN, of West Virginia, says that the fruit from that section is marketed chiefly in New York, Philadelphia, and other Eastern cities. Occasionally, when there is a failure in the West, it is sent to Chicago and Cleveland. (595.)

Mr. HALE estimates that the consumption of peaches might be doubled by a better and more even distribution. Some markets, such as Philadelphia, Chicago, and New York, are overloaded, while there are towns of 50,000 inhabitants that have not a crate. There is some improvement in distribution, however. (393.)

D. The dairy industry.—1. *Dairying in various localities.*—*Vermont.*—Mr. VAIL says the average Vermont dairyman who makes a business of dairying has from 8 to 10 cows. Some of the larger dairies have about 300 cows. Every dairy farmer in Vermont is also a mixed farmer to a certain extent; the dairy and poultry business have been joined together, and some of the dairymen raise horses and sheep. The tendency from the beginning has been in the direction of great cleanliness and the eradication of anything that would injure milk, both in the pastures and at the barn and house. (413, 414.)

Massachusetts.—Mr. STOCKWELL says the supply of milk for the cities is a large item in the farming life of Massachusetts. This industry is profitable—at least except in those sections which supply the Boston market, where the "milk combine" has caused a great deal of dissatisfaction. The recent "strike" of the Milk Producers' Union was caused by a surplus.

The making of butter in the country towns is also quite profitable; a good article of uniform quality is made and commands prices higher than the market. (895, 896.)

New York.—Mr. POWERS says the dairy industry of the State of New York has been almost ruined by Western competition. The production has increased somewhat, but the profit has vanished. The farmer turns off as much money, but spends more in connection with his farm. Twenty-five years ago the New York dairy farmer bought very little feed; to-day he buys large quantities of shorts and more or less corn from the West. After deducting the cost of these things and of artificial fertilizers, he has a smaller amount left than formerly. (177, 178.)

Mr. FLANDERS, Assistant Commissioner of Agriculture, New York, says that when the State Department of Agriculture was created between 3,000,000 and 4,000,000

40-quart cans were taken into New York City annually over milk routes. In 1900 the amount was between 13,000,000 and 14,000,000 40-quart cans. Formerly it was gathered within a few miles; now it is carried more than 250 miles. Mr. Flanders thinks that these results are due to the securing of purer milk by the enforcement of the State law. (998.)

Mr. NORRIS, master of the New York State Grange, thinks dairying is more costly in New York than in Illinois. Land has not been worth as much an acre in Illinois as in New York, and in certain portions of the West the grasses are as well adapted to dairying as those of the Eastern States, with a few exceptions. There are only a few of the Eastern States in which the grasses are especially adapted to butter and cheese making, and there are portions of the West that excel the East in the manufacture of fine butter. Western dairy products come into sharp competition with the New York product. In certain sections of New York dairying paid better in 1899 than for the previous 10 years, because of the drought and consequent diminished production of milk, which increased the value of the product. (327, 328.)

New Jersey.—Mr. KETCHUM estimates that about half the farmers of Mercer County, N. J., now make a specialty of dairying. Those who live within hauling distance of Trenton market their milk there, and the others ship to Philadelphia. (132, 133.)

Mr. MAGIE, a dairyman of Elizabeth, N. J., says the Ayrshire cattle are very popular in New Jersey; that Jerseys are wanted by those who sell cream; and that Guernseys are a good breed. Full-blooded Jerseys stand the climate of New Jersey well, but it is very hard to get a Jersey herd that will give milk enough to pay. A cow must average 6 or 7 quarts a day the year around in order to pay; an exceptionally good cow will average 10 quarts a day. No beef cattle are raised in the vicinity of Elizabeth, and not one dairyman in a hundred raises enough calves to keep up his own dairy. Sheep are raised in other parts of the State, but not in that vicinity. There are dairymen in the vicinity of Elizabeth who have started with 1 or 2 cows and established a good business. The cattle can be kept on commons about the cities or on farm pastures. But, on the other hand, some men with abundant means who have tried to produce milk for the New York market have abandoned the attempt. The Havemeyer estate had a dairy store in New York City for the sale of gilt-edge milk, but did not realize enough from it to pay the bills, and in 1898 the stock was sold at auction. The price for Jersey milk shipped in ice refrigerator cars and kept on ice was formerly 12 cents a quart, but the price was reduced by competition. (101, 102.)

North Dakota.—Mr. BUDGE says some dairies are now gradually being established in North Dakota, though the winters are so long it is difficult to get enough feed. In the eastern part of the State, where the farmers have been raising wheat, and in the central part, where they are raising flax and mixed crops, they are now raising some cattle. The later immigrants from the older States are raising stock and making butter.

Virginia.—Mr. WEDDERBURN says that from the country between Washington and Leesburg and Manassas thousands of gallons of milk are shipped into Washington every day. There are no creameries; 1 or 2 started in Loudoun County, but he does not think they were successful. He thinks there is an immense future for dairying in that section if the people would come and settle there. Fine dairy land can be obtained almost as cheaply right under the shadow of the Capitol as by going thousands of miles away. (623.)

2. *The marketing of milk.*—Mr. MAGIE, of Elizabeth, N. J., says that the dairy business is carried on at a profit in that section of the State where the dairymen can retail the milk from their own wagons, but that producing milk for New York City in the vicinity of Elizabeth can be done only at a loss, and has been discontinued. The dairymen in the upper parts of the State ship their milk to New York very largely. The farmers in the vicinity of Elizabeth commenced selling milk about 1840. At that time it was shipped to New York. The New Jersey farmers turned from the regular lines of agriculture to dairy farming, because as the means of transportation increased the West could undersell them in grain and other products. The prices of milk are now lower than 12 or 15 years ago, and people demand better milk, put up in better shape. The dairymen now bottle most of their milk. In New Jersey truck farmers are giving up that industry and going into dairying. Towns are growing up, but not as fast as the supply of milk is increasing. Mr. Magie thinks the bottom has been touched in the matter of prices, and that the tendency is now upward. (99, 100.)

Mr. Magie says the dairymen in his vicinity, when they shipped milk to New York, or sold to the shipper, got 2 cents a quart. The retail price in New York is from 5 to 8 cents; 8 cents for bottled milk shipped direct from the farm, 7 cents from the can. The New York middlemen get the benefit of the difference between

the wholesale and retail price. Half a cent a quart or 20 cents a can goes for freight. The middlemen have the milkmen come to Jersey City or to the New York depot where it arrives, load their milk, and deliver it. The peddlers keep their own horses and drivers, and furnish the small retail stores with their milk. In Philadelphia the wholesale man owns the wagons and horses and serves the milk routes. Mr. Magie has heard it said that if an independent milk dealer starts in to get a route in New York, the milk dealers' association puts down prices on that route to drive him out. (100, 102, 103.)

Mr. Magie says the price of milk in Elizabeth is 7 cents a quart delivered. Within a year preceding the date of his testimony (June, 1899) it was 8 cents. Jersey City is largely supplied by dairymen near the city. The milk sold in Newark is shipped in from Morris County to a large extent. The price in Newark is about the same as in Elizabeth. Some milk is sold as low as 4, 5, or 6 cents. (100, 101.)

Mr. KERCHEM testifies that the wholesale price of milk in Trenton, N. J., is 4 cents about 6 months in the year and 3 cents the remaining 6 months. The retail prices are about double the wholesale prices. (132.)

Mr. COLES, of Woodstown, N. J., says the dairymen of his vicinity ship their milk chiefly to the Philadelphia market. Milk is shipped to Philadelphia from a much longer distance than formerly. It is carried 200 miles in refrigerator cars for almost the same price it costs to send it 25 miles. The freight on milk from Salem to Philadelphia is 20 cents for a can of 100 pounds or 40 quarts. Mr. Coles thinks it will be necessary to study cheaper means of producing milk. (123.)

3. Butter making in Vermont.—Mr. VAIL testifies that the dairy industry of Vermont has increased very rapidly during the past 20 or 30 years, and to-day all the improved methods are in use. The dairymen have very largely adopted butter as the leading product and have largely adopted the Jersey cow; there are a good many herds of the thoroughbred.

The old method of separating the cream from the milk was a shallow setting in small pans. This was followed by the large-pan setting in pans 3 feet wide and 10 or 12 feet long, with some system of cooling by cold water. The next development was deep setting in cans; the cream was forced to the top by sudden cooling, giving more complete separation and economy of space. For several years, however, centrifugal separators have been in general use. At first the separating was done at the creameries and the milk returned to the farmer, but that is apparently giving place to a more economical system of separating on the farm and carrying the cream only to the creamery. The skimmed milk is fed to swine and young calves. The separators are used very largely on farms. On the small farm hand power is used; there is also a cheap animal power, with which a sheep or a large dog may be used, that will separate from 300 to 500 pounds of milk in an hour. For larger dairies a horse, bull, or heifer is used. The creameries use steam or water power, or any of the modern engines.

A very small amount of cream is churned fresh, making fresh butter without much flavor; as a rule the cream passes through a process of ripening. The churns used are either a rotary barrel or box or a swing churn without any paddles or floats. The original churn was the up-and-down dash churn, followed by crank churns with various devices of floats and paddles. When the butter is taken out of the churn it is usually washed in clear, cold water until the buttermilk is washed out. There are various kinds of butter workers used to eliminate the surplus water and distribute the salt evenly. The salt heightens the color of the butter a trifle. The artificial coloring of butter is quite general during the winter. The coloring matter is now put up in various forms, mixed with oil that combines readily with butter. Mr. Vail supposes that the basis of the coloring matter is annatto, and understands that it is perfectly harmless in the quantities used when it is properly made, though some of the articles put upon the market have been analyzed and condemned. (411, 412.)

Mr. Vail says the milk should be separated before it becomes cold, and cream is usually carried to the creamery every morning. Sometimes the farmer or his wife or children take it to the creamery, sometimes the farmers along a certain road combine and send a team down, and in some instances creameries have sent out teams to collect the cream. (413.)

Mr. Vail thinks it is probably true that if a man understands butter making he can do better to make up his own butter and put it on the market himself instead of sending his cream to the creamery; but it is easier to carry the cream off and get rid of the labor. (413.)

Mr. Vail says the butter is prepared for the market in several ways. There are family prints, tubs, and firkins. The creameries and dairymen always label the goods with their names. The choice dairies that used to get a dollar for fancy butter

now have difficulty in getting a price much in advance of the general market, because the creameries make so choice an article. (412, 413.)

4. Western butter in the East.—Mr. HAMILTON testifies that Pennsylvania produces about 90,000,000 pounds and consumes about 160,000,000 pounds of butter annually. The Northwest has organized the butter industry better than the East. There are boards of trade, such as the Elgin Board of Trade, which inspect dairy products, and whose stamp gives character to the product; so that in many instances Pennsylvania merchants desiring a steady uniform grade take an Elgin brand. Mr. Hamilton refers to an effort being made (January, 1900) to organize such boards of trade in Pennsylvania, and he thinks that when that is fully inaugurated the merchants will prefer Pennsylvania goods to those that come from other States. (368.)

Mr. AGER says hardly any of the butter the Maryland farmers sell in Washington brings a first-class price; the people send out to Illinois and Iowa and get Elgin creamery butter, whereas if farmers living near the city would make a good article they would command first-class prices. (1157.)

Mr. POWERS says that as soon as the method of shipping in refrigerator cars was developed Western butter was taken to the New York market, and the monopoly of 3 or 4 New York counties and their profit in the butter business vanished. (187.)

Mr. VAIL does not know of any Elgin butter being sold in the State of Vermont, though it has a very high reputation. (415.)

5. Cheese making.—Mr. VAIL testifies that cheese making is quite an industry in some portions of Vermont. One large manufacturer sends all his cheese to one section of Ohio. The local markets of the State take a great deal, and some goes to Canada and is sold as Canadian cheese at a better price than it would bring as American cheese, because the latter has had the reputation of being filled. (414.)

Transportation of milk to cheese factories in Ohio.—Mr. DODGE testifies that in northern Ohio, where milk is the farmers' largest product, contracts are usually let to the lowest bidder to gather up the milk and carry it to the cheese factories. (690, 691.)

E. Other animal industries.—**1. General stock raising.**—*Vermont.*—Mr. SPEAR testifies that Vermont has a good many stock farms, owned by wealthy men for the purpose of developing some line of farm animals. (408.)

New Jersey.—Mr. MAGIE says that in some sections of New Jersey the farmers are producing corn and hay, and raising cattle and sheep for sale, to some extent; a few horses are also being raised. (100.)

Mr. COLES, of Woodstown, N. J., thinks the increased amount of stock kept in his section makes the total value of farm and equipment about equal to what it was during the higher price of land. (126.)

Mr. COLES adds, however, that very few beef cattle have been raised in his section of late. The price for beef cattle on the hoof is from 4 to 4½ cents. Some few hogs and a great many colts are raised in his section. A good average horse is worth from \$60 to \$90. (129.)

North and South Dakota.—Mr. PROM says the more advanced farmers of Cavalier County, N. Dak., are now raising a great deal of stock. The stock they formerly kept for meat was scrub stock and very unprofitable; but now blooded stock is being taken hold of to see if it pays. Shorthorn cattle do quite well. They have to be fed nearly 5 months in the year, but they eat the straw which was formerly burned after thrashing. Each farmer tries to supply himself with horses, but they are not raised for export; a few are imported every year from Minnesota, and Iowa—a profitable business to the horse dealers. Mr. Prom says that wheat raising is easier than stock raising in North Dakota, especially as water is required for stock raising, and the farmers who have no rivers or lakes have to rely on wells, which are inadequate for a large amount of stock. The lack of artesian wells is one of the main reasons why stock is not extensively raised in North Dakota. (792.)

Mr. GREELEY, of South Dakota, says that the farmers of that section have been compelled to turn to stock raising because wheat-growing exhausts the land and the pocketbook, being more subject to climatic changes than stock raising. There is sometimes a little less income from stock raising, but it is constant in spite of dry seasons or hail storms, and the soil improves. (937.)

Mr. Greeley testifies that cattle are increasing faster than sheep in his section of South Dakota. Cattle raising is more profitable than anything else unless it be sheep. (942.)

Kentucky.—Mr. NAIL says Kentucky has always been celebrated for its stock. For many years it has held the record for the fastest horses, the best whisky, and the most tobacco, and once had the largest herds of cattle. In recent years Kentucky has been distanced by the West in cattle raising, but still has some of the finest Shorthorns, Jerseys, Herefords, Polled-Angus, and Holsteins. (807.)

South Carolina.—Mr. YOUNG, of Fairfax, S. C., says that section is not a good

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stock-raising country, and stock is not raised for the market. He raises bacon for his own family, and keeps some cattle, but finds that he can buy meat from the West more cheaply than he can raise it. He says his section is not a good country for pasturage. Formerly hay was bought from the West, but, as a rule, it is now raised at home. Mr. Youmans also says that he can buy Western horses more cheaply than he can raise them, the prices during the years 1897 to 1899 ranging from \$40 to \$50. (120, 121.)

Mississippi.—Mr. KYLE testifies that the cattle industry is looked after a good deal more than formerly in Mississippi, because cattle are bringing good prices. Jerseys were brought in years ago, and the country is well stocked with them. Recently the farmers have got the idea that they want a larger breed for beef cattle, and Durham cattle are being introduced.

Mr. Kyle says the idea seems to prevail among the people that they can make cotton to buy mules more easily than they can raise mules, but he does not think this idea is correct. He estimates that it costs \$20 to \$25 to raise a mule ready for the plow, and the price is from \$50 to \$100 or \$125 for an extra good mule. (473.)

Tennessee.—Mr. MANSON, of Tennessee, is certain that it is more economical to raise mules than to buy them. Cattle and sheep, he says, are also profitable. He estimates that his meat cost him less than 2 cents a pound in 1899. He turned out about 25 hogs when the acorns began to fall, and did not see them from the 1st of October until about the middle of January, 1900, when they were all fat. (506, 507.)

Arkansas.—Mr. BALCH testifies that the larger portion of Arkansas is adapted to the raising of good stock, but the people have not paid much attention to it, except in the northern part of the State. Cotton raising and stock raising do not go very well together. There is an increasing tendency among planters in the southern part of the State to raise mules. Mr. Balch has tried to convince the people that they could raise their mules without any expense by making the mares earn their living at the plow. (497.)

California.—Mr. NAFTZGER testifies that the stock interests of California, including cattle, sheep, and horses, are quite large. The wool product of the year 1900 was estimated at 27,500,000 pounds. (950.)

2. Horse breeding.—Professor DAVENPORT testifies that the whole method of breeding horses has been changed within a few years under the pressure of the Chicago market, principally through the efforts of Mr. Berry, to meet the demand of European and American horse buyers. Men are now systematically breeding the classes of horses that are called for in the market. A few years ago, when the horse market went to pieces, the country was full of unclassed horses. It was thought that trotting blood would be a good thing in horses of all descriptions, but it often resulted in crossness or foolishness. Heavy draft horses can be modified by breeding, probably more than most people realize. Professor Davenport thinks the systematic breeding of horses, cattle, and hogs ought to be encouraged. (270, 271.)

Mr. NALL says an American breed of horses is being established in Kentucky—a saddle horse. Nearly all the States have taken them and now have herds of them. It is a resurrection of the old blue-grass saddle horse that was famous during the forties and fifties, but almost disappeared during the trotting fever. Nearly 4,000 of them are now registered. Mr. Nall describes the characteristics of the American saddle horse at some length. He says these horses have been in demand all over the country since they were exhibited at the World's Fair, and some have been exported. Missouri and Illinois have taken leading parts in the development of this horse.

Good specimens sell for from \$500 to \$3,000, and the best specimens are usually bought and trained by professional trainers, after being shown at the county fairs. A great many young farmers give their colts some preliminary training. Mr. Nall says these horses are excellent for family horses and for pleasure driving.

A few coach stallions have been introduced of late, but more trotting horses are raised. Mr. Nall thinks the Kentucky horses compare favorably with any in the world; he thinks the blue grass and the water and soil tend to the best development of the race horse. There are hundreds of stock farms devoted to the raising of horses, and the industry is more or less carried on on nearly all of the farms through the better part of the country, though Mr. Nall thinks that most of the small farms lose money by it. (807-809.)

3. Sheep husbandry.—*New England.*—Mr. GREELEY testifies that some of the worn-out lands of New England are being successfully stocked with sheep. (942.)

Mr. SPEAR estimates that the sheep industry in Vermont is probably not more than one-fourth as extensive as 40 years ago. During the free-wool period the flocks were largely slaughtered. Since the duty upon wool has been restored there has been something of an increase. The present tariff is fairly satisfactory. Mr. Spear says nearly all the farms in the State are adapted to sheep husbandry better than to any

other industry ever practiced by Vermont farmers, and that if the sheep industry had remained prosperous there would not be so many \$5 an acre farms. Many of these farms were too remote for dairying, and there was no good use to put them to.

Mr. Spear says the breeding of Merinos has been a great industry in Vermont in the past, and is still of some importance. Most of the Merino sheep are marketed in Australia, southern Africa, and Argentina. There has been a very great improvement in the Merino sheep since they were first introduced into Vermont early in the century. A good Merino ram yields 20 to 25 pounds of unwashed wool, and there are records up to 40 pounds. The maximum of those first imported was about 10 to 12 pounds. (410, 411.)

Mr. VAIL confirms the statement that there has been a great decrease in the number of sheep in Vermont, but he thinks that at the present time the sheep industry is feeling encouraged; there are better prices for mutton and wool. (415.)

Mr. STOCKWELL says there is very little sheep husbandry in Massachusetts at present; but he hopes the industry is being revived. The State Board of Agriculture is doing what it can to encourage the return of the sheep. In former days sheep were considered a necessary part of every farmer's outfit. Mr. Stockwell says, however, that he has seen too much of the injury to flocks of sheep by dogs to advocate sheep husbandry very strongly under present conditions. The State pays the farmer for the sheep so destroyed, but when one sheep is destroyed the entire flock is demoralized, and the amount of damage is not known. Mr. Stockwell once went to see a farmer whose sheep had been mutilated by dogs, and had him paid liberally; but going back 6 months later he saw that he had not been half remunerated, because of the number of sheep that had produced no young, and the quality of the young, showing the after effect of the fright. One lamb had nearly the appearance and bark of a dog. The dogs so frequently worried the sheep on that farm that there are no sheep there now. There is no effectual legal barrier against dogs. Sheep husbandry involves wire fences and constant watchfulness. Any suggestion that farmers make with reference to the protection of their sheep from dogs is badly received by dog owners. "The dog in Massachusetts is supreme." (899.)

Ohio.—Mr. MILLER says that there are not as many sheep kept in Ohio as there were a decade or two ago, because of the depressed condition of the industry. The industry is now improving (1900), but there has not been time to increase the flocks to the numbers they contained 10 years ago. The industry was affected by tariff legislation. With present conditions Mr. Miller knows no good reason why Ohio may not have as many sheep as formerly. The matter of making sheep raising an independent industry is affected by the high price of lands, but all farmers can better afford to keep a reasonable number of sheep than not to keep them. (619.)

North and South Dakota.—Mr. GREELEY, of South Dakota, says sheep are raised nowadays for mutton. Very few wool sheep are raised in that part of the country now, but the sheep raisers take what wool they can get. As a rule, the farmers have some of the dark-faced mutton breeds crossed with the average Western sheep, yielding about 7 pounds of coarse wool; finer wools are grown on the ranges. With the right kind of sheep and the right management, it is possible to make a pound of mutton as cheaply as a pound of beef, without considering the wool. Mr. Greeley thinks that with cheap lands, the tariff on wool could be dispensed with and the sheep industry still be profitable, but he would not affirm this for the whole of the country or even the whole of South Dakota. There is not very much protection against dogs in South Dakota, and they have demoralized the flocks to some extent, and in some sections have driven the industry out. The dog laws are changed nearly every 2 years, but they do not work well; it is so complicated and difficult to adjust the claims that the law is almost a dead letter. Mr. Greeley declares the dogs an unmitigated curse. (936.)

Mr. Greeley has for years made a specialty of sheep and poultry, and finds the choring on his farm greatly simplified. There is little hired help required, and no large investment is required at the start; while the income is constant. (937.)

Mr. PROM, of Milton, N. Dak., says the sheep industry is not flourishing now in that section. When wool went down to 5 or 6 cents a pound, it was no longer profitable; but it has been taken up again. The cool climate is very favorable to sheep raising; the wool grows long, and the few men that have sheep receive great profit. (792.)

Mr. BUDGE says sheep do very well in North Dakota, and the sheep industry is improving. About 10 years ago the industry diminished. Wool went down, and the farmers of the eastern part of the State, who had a great many sheep, quit the business, but they are now resuming it, and the industry is profitable.

Effect of the tariff on wool. (See also XIX A, p. CCLXXX.)—Mr. GREELEY says "many of our people believe that it is necessary to have a tariff put on wool before

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sheep will pay, and will come to me and offer \$4, \$5, or \$6 for sheep with a tariff on that they would not pay \$2 for if there were no tariff.' They slaughter the flocks when the tariff is reduced so fast that the market for mutton is ruined; then, when a tariff is put on, they rush back into the business until they overdo it. Thus, indirectly, the tariff has been the cause of harm to the sheep raisers, though a moderate, permanent tariff would help them. During the free-wool period the flocks and the profits of the sheep growers diminished greatly. They could have stood the low price of wool, but when mutton went down, too, and they could sell neither mutton nor wool, they suffered unnecessarily. They are now getting better prices for mutton, on the average. One good result of free wool was that when sheep were sold so cheaply that everybody ate mutton, the public acquired a taste for mutton which it still retains. After the enactment of the Dingley tariff there was a material increase in the flocks and a fair price in both mutton and wool, but at the time of Mr. Greeley's testimony (April, 1901) wool was 5 cents lower than the year before, with no change in the tariff. Mr. Greeley thinks too much dependence was put upon the tariff, that enormous quantities of wool were bought at a higher figure than the situation warranted with the expectation of getting big prices, and that this was being thrown on the market and depressing prices. He adds, however, that the flocks have been increased somewhat, and also that wool is lower all over the world. The amount of wool imported during the year 1899-1900 was a good deal less than formerly.

Mr. Greeley says there is not a sheepman in South Dakota but prefers to have the tariff on wool. Mr. Greeley agrees with the others that the price of wool is better than it would be without the tariff, but he looks for the reaction which has always followed so certainly. He thinks the agitation of the matter does the sheep raisers harm in the long run, the uncertainty hurts the business so. This same reaction, he says, comes to overencouraged mill and factory building. He thinks there will be no material reaction in wool unless the tariff is reduced, but says there is going to be a little reaction from the high prices paid largely by speculators who bought too much. Mr. Greeley predicts that wool will go still lower than at the date of his testimony. He believes, with other wool experts, that it will be more than 20 years before this country will grow the wool it consumes. Mr. Greeley says the uncertainties of the tariff are the greatest drawback, and nearly or quite offset all the advantages of a tariff. (941-943.)

Mr. Greeley testifies that just before the tariff was again put on wool the sheep business in Kansas, southern Nebraska, and Colorado was thoroughly demoralized. (942.)

4. Forage crops.—*Vermont.*—Mr. VAIL says the common pasture grass of Vermont is closely allied with Kentucky blue grass. Of late years it has had to be supplemented with the principal forage crops—clover, corn, oats, and pease. Mr. Vail's impression is that the best dairy work is done among the hills of the State, in the upland meadows. (413.)

Silos in Vermont.—Mr. VAIL testifies that the silo has been very largely adopted by the dairymen of Vermont to preserve the corn crop. The silo is described as a process of canning on a large scale. A large air-tight or nearly air-tight wooden vat is made adjacent to the stable, with a diameter, perhaps, of 16 to 20 feet, and usually 25 or 30 feet high. The corn is brought to the silo and cut in a machine, and the carrier takes it up and deposits it in the silo. The practice advocated by the experiment station is to let the corn mature. For cows it is put into the silo with the ears on, though occasionally a few hundred bushels are thrown aside for the horses, hogs, and poultry. The corn settles down very compactly, pressing the air out; then a few inches of the top decay, making a complete sealing, and the corn will keep any length of time. It turns sour, a portion of the starch changing to vinegar, but the loss is said to be less than in drying. The cows are fed ensilage in connection with hay. The average ration of a Jersey dairy cow is probably half a bushel at a feed; some give much heavier rations. Clover and grain feed are ordinarily used where there is a winter dairy. (414.)

New Jersey.—Mr. COLES, of Salem County, N. J., testifies that the farmers of that section make an effort to raise all the feed required for their dairy cattle, except a certain amount of wheat bran. Some use cotton-seed meal to a small extent, but it has been thought by some that the stock was injured by it. Some ruta-baga turnips and sugar beets are also grown. In the winter, ensilage is used. (131, 132.)

Hay in Virginia.—Mr. WEDDERBURN says that some 12 or 15 years ago the land around Bristow and Nokesville, Va., was valueless; but Northern settlers from Iowa, New York, Ohio, and elsewhere came in and began raising grass, and now, instead of buying hay, they ship hundreds of tons, and the land has increased largely in value. (623.)

Soy bean and clover in Kentucky.—Mr. NALL says the soy bean is not commonly

used as human food, having a ranker taste than most people like; but it is very fine for stock. It is sown after the last plowing of corn. After the plant grows up the hogs are turned in and eat it. It is also cut for hay, and the right variety makes a fine hay for cattle and horses. It is also turned under to enrich the soil, being a great gatherer of nitrogen. It loosens up the soil, and is said to be equal to clover. The red clover has no superior, but it will not grow in Kentucky any more; it is claimed that a little maggot gets into the root and kills it. There is no enemy to the soy bean, however, and it is a rank grower. Some of the varieties grow so rank that they can not be cut or turned under; there is too much of them. (812.)

Hay in Georgia.—Mr. HALE says hay can be produced in Georgia at from \$6 to \$8 a ton, and is worth from \$15 to \$20 in the home market. (397.)

Grasses and sorghum in Louisiana.—Dr. STUBBS says Louisiana is a good grazing country for certain kinds of grasses; "with Bermuda as the foundation for pasture grass it is magnificent." The Northern grasses will grow there in the winter. The Bermuda grasses last from April until November, and from November until April the stock is carried through in the swamps on the grasses not killed by the winter. If they do not prosper they are allowed to graze on the green cane.

Dr. Stubbs says the Bermuda grass will probably carry more cattle to the acre than any other grass in the world. It has stolons running under ground, and will stand biting right into the ground; and for that reason stock raising has been very successfully carried on. There are a great number of bottoms growing various grasses, and the whole State is very well watered by numerous springs. Dr. Stubbs calls it "a little farmers' paradise, almost." Hay is made for home consumption; but very little is sold, because everyone raises his own.

Dr. Stubbs says the *Paspalum dilatatum* is a grass which remains green in Louisiana throughout the season and furnishes grazing even when snow is on the ground. It is being sold in the North as Louisiana grass. (781.)

Dr. Stubbs says the milking cows on Louisiana farms are brought up to the barn and looked after at night; but there is no necessity for this where the cattle are raised in large numbers, as they are in some parts of the State. (782.)

Dr. Stubbs says large quantities of sorghum are raised in Louisiana for stock feeding. The Louisiana sorghum has the faculty of suckering 3 or 4 times a year, so that the 3 or 4 crops a year make a very valuable feed for the mules and stock. (775.)

Alfalfa in California.—Mr. NAFITZGER says alfalfa is grown in some sections of California, particularly for cattle. It will not produce more than 2 or 3 crops a year without irrigation, but with it will produce a crop a month during the season. Well-watered alfalfa will produce 1½ to 2½ tons at one cutting, and can be cut from 7 to 9 times a year. (966.)

F. Diversification and specialization.—1. **The single-crop system of the South.**—Mr. HAMMOND, a South Carolina cotton planter, says that in the old days almost all the agricultural implements were made on the plantation, the work animals were raised there, and almost all supplies were produced there. Now, fertilizers, implements, and work animals are bought, and Western meat, Western hominy, Western meal, and canned vegetables and fruits are supplied by the country stores. Life in the country is more luxurious than it used to be. Things which used to be rare are commonly consumed. But gardens and orchards and such helps are neglected, and the whole attention is given to raising crops for sale. Mr. Hammond regards the change as unfortunate. (820, 821.)

Mr. WEDDERBURN says all the Southern States import wheat and corn. (626.)

For many years, Mr. STEVENS says, the people of Georgia have been "wild and crazy on cotton." They thought everything they needed could be bought more cheaply than they could raise it, but they are just now waking up to the fact that they were mistaken, and for 2 or 3 years they have been raising their own food supplies. At present, Western beef, by its superior quality, holds the field in Georgia, even in the smaller towns, but with proper attention given the matter by the farmers a meat supply sufficient for the needs of the State could be produced. (917, 918.)

Mr. POOLE says that, unfortunately, the farmers of Alabama have grown cotton too exclusively and brought their provisions from the West; but that condition is growing less apparent every year. (925.)

Mr. BALCH has never heard any satisfactory reason for the single-crop system of the South, except that the farmers conceive that with their system of labor it pays better to grow cotton and to buy corn. The large planters rarely try to raise any meat. It is the smaller farmer, as a rule, who raises his meat and bread. Mr. Balch says the men who raise their own grain and meat are the most prosperous. (496.)

Mr. NUNNALLY, of Georgia, declares that cultivation of cotton to the exclusion of grain and live stock is a stupendous error that requires heroic treatment before the mischief can be counteracted. (455.)

2. Diversification of crops recommended.—Dr. WILEY says a single agricultural industry does not stand well alone anywhere in the world; it is necessary to diversify agriculture. (654.)

Mr. BRIGHAM says that the National Grange is endeavoring to educate farmers to diversify their products more largely. The feeding of grain to stock and the improvement of the character of such stock would prove advantageous. It would be possible for this country to produce all the sugar it consumes from beets. The diversification of crops is especially desirable in the South, but the farmers there are difficult to educate up to the need of it. (21, 22.)

Professor BAILEY, of Cornell University, says that while there is often an overproduction in staple articles there is seldom an overproduction in luxuries. The danger of overproduction is one that exists in every business, and in the long run the question will solve itself by the operation of the law of supply and demand. The solution will no doubt come the quicker the freer a crop is from speculation. (1011, 1012.)

Mr. WIETING, Commissioner of Agriculture of New York, thinks that the New York farmer must find his salvation in turning from such staple crops as cereals to those perishable products which do not so well bear transportation—such as fruits, vegetables, and dairy and meat products. The authorities of the State of New York are doing what they can by disseminating among the farmers such instruction as will help them to produce these crops. (994.)

Mr. COLES believes that diversified farming increases the chances of success in New Jersey as well as nearly everywhere else. If the season is unfavorable for one crop another will succeed. (127.)

Mr. HALE testifies that the Georgia Commissioner of Agriculture has for some years been strongly impressing upon the people by his monthly bulletin the desirability of diversification, but it seems to need a practical demonstration. There is, however, a steady improvement in that direction. (394.)

Mr. Hale declares the only hope of agricultural salvation in the South is diversity of agriculture. He does not think there is enough study of market conditions among the agriculturists of the South, especially of the home markets. Georgia buys hay, corn, meat, canned goods, dried fruit, etc., which can be profitably produced at home. Mr. Hale has never known outside hay to be sold below \$16 a ton, and the price of corn is the same as in the high-priced Northeastern markets. Thousands of dollars' worth of dairy products are taken South from the North, which, taking freight into consideration, can be produced as cheaply in the South. Mr. Hale raises natural crab-grass hay which, judging from results, is as good as the timothy and clover hay of the North. Bermuda grass grows in the bottom lands in certain places. Johnson grass, a species of sorghum, will make two or three excellent crops of hay in a year. A gentleman on the Savannah River makes a profit of about \$7,000 annually on 100 acres of Johnson grass, without replanting. It would probably not succeed on very dry land. Hardly enough corn is grown in the South to supply the plantations, though some planters have been raising corn on account of the low price of cotton. Good cultivation would double the crop. Mr. Hale has produced 3,300 bushels of corn on 80 acres, or about 40 bushels to the acre, and sold it at 70 cents a bushel to his neighbors, who were selling 7-cent cotton. (390, 391, 393, 394.)

3. Progress of diversification.—*New England.*—Mr. STOCKWELL, of Massachusetts, says that competition with the West in the grain staples led for a while to loss and hardship, as the West has suffered by the competition of Russia and India, but to-day New England has found other channels of industry more profitable and better adapted to her soil, markets, and people. Fruits are grown in January in greenhouses more profitably than in their season, and the people are supplied with every luxury by New England enterprise. The agriculture of Massachusetts is much diversified by market gardening, truck farming, and the selling of truck direct from producer to consumer in the larger villages and cities. The old lines are followed largely in some parts of the State, however, as in the Berkshire hills, where there is no such market. (895, 905.)

New York.—Mr. NORRIS, ofodus, Wayne County, N. Y., says diversified farming is fast becoming the ruling thing in his section, fruit especially taking the place of other products. Crops such as small fruits, beans, etc., are taking the place of wheat and barley. (327, 328.)

Ohio.—Mr. MILLER says that mixed husbandry is more general than specialized agriculture in Ohio. He thinks it safer for the average man, though the specialist would better go into special lines. (619.)

The Northwest.—Mr. GEORGE says that the farmers of the Northwest, who until recently devoted their farms almost entirely to cereals, are now practicing rotation and diversification, which increase their crops, and are making very favorable progress. (221.)

Mr. HANLEY says it has been found that diversified farming is absolutely necessary in a great part of the Northwest. It is found more profitable to convert a crop into stock, dairy products, etc., than to market it as a crop. (281.)

Mr. MORAN, of Graceville, Minn., testifies that the farmers of his section are compelled to diversify their crops because wheat does not pay, its value apparently having depreciated. The farmers are therefore beginning to seed down with timothy and clover and raise more stock and corn than formerly; contrary to a belief formerly prevailing, a very fair crop of corn can be raised in that part of the country. (708.)

Mr. BUDGE says the farmers of North Dakota are now diversifying to some extent. They are raising some stock, hogs, chickens, and turkeys. Some of them are raising a little flax. There is no market for vegetables, and the rates are so high it is impracticable to ship them away. A little corn is raised for the stock, and a great many of the people have butter to sell. Hay and forage are cheap except in the western part of the State. A few horses are being raised, but not quite enough for the country.

Mr. BUDGE testifies that in the western part of North Dakota considerable attention is given to cattle and sheep. Large ranching is giving way to a greater number of small ranches, and settlers are rapidly getting stock on their own farms. In localities subject to occasional dry seasons flax culture is being successfully started, and several oil mills have been established. The rich sandy soils of the central portion of the State are well adapted to sugar-beet growing, and movements are on foot to establish sugar factories. The introduction of sugar-beet culture has given the farmer another profitable crop, and at the same time supplies in the pulp a good feed for cattle. Two years ago it was thought that corn could not be raised in North Dakota, and so the pork industry has not been started there, but little by little the farmers have planted corn, saved the seed, and replanted, until the better varieties have become acclimated and with proper care are doing very well; so that there is every reason to believe that North Dakota will soon multiply its pork production many times. Thus the diversification of crops and industries, which has been the great need of North Dakota, is rapidly being accomplished. With it will come an improvement in the financial condition of the farmer and the merchant, and the great transportation companies will also profit by it, since it will insure more uniform shipments, not only from year to year, but during the year. One important industry which has just started is the mining of lignite coal. (845.)

Mr. PROM, of Cavalier County, N. Dak., says that county is just in the beginning of diversified farming. The farmers have hitherto been exclusively grain growers, but now are turning to flax, and the more advanced farmers are raising a great deal of stock. (792.)

Mr. JUMER says there has been much tendency toward diversification of crops in South Dakota during the past 10 years. Besides wheat, the farmer raises oats and barley for his own use, and corn to sell. In the southern part of the State the farmers raise a great deal of corn to sell, and have poultry and valuable cattle. (732, 733.)

Georgia.—Mr. STEVENS says the people of Georgia have been trying to raise their home supplies, so that they would not be forced to throw all their cotton on the market at one time. The production of grain has not yet been sufficient to meet the home demand, but this is more nearly possible now than for the last 40 years. Farm products of all kinds meet with ready sale in home markets, with generally remunerative prices. (915, 916.)

Mr. REDDING testifies that the farmers of Georgia generally raise part of their supplies. There has been a great improvement in that respect. There are very few who would not like to raise a large part of their cereals, but many of them make short calculations and do not plant enough. (444.)

In the section of Georgia where Mr. BARRETT lives, near Augusta, the general practice is to raise about 20 acres of cotton to 15 of corn and 5 of other crops. Corn is raised for home use, and is hardly a commercial article. The raising of cotton is not profitable (June, 1899). Horses, mules, cattle, and hogs can be raised cheaper than in the North and West, because there are no long winters; yet the farmers of Georgia do not raise enough mules for their own use. High authorities declare that Georgia is a better State for cattle, milk, and butter than the Northern States. Yet Mr. Barrett believes that the South will never be prosperous on account of the incompetence of negro labor. (56-58.)

Mr. HALE says there is considerable change going on in Georgia from cotton to fruits and vegetables of various kinds, and the more of it the better. This has increased the value of the product from 200 to 1,000 per cent. The profits are all the way from nothing up to 10 times the profit on cotton (the rainfall is a little precarious), but the average is good. These crops require more skilled labor and afford

higher wages. Melons and other fruit give the railroads 15 times as much tonnage to the acre as cotton, and at a higher price per ton. (390.)

Mr. Hale adds that there is an overproduction of cotton, and that there perhaps would have been an overproduction of peaches if it had not been for the freeze. The high prices tempted too many to go into peach raising. In nearly everything else there is an underproduction in the South. (393.)

Alabama.—Mr. POOLE testifies that after the increase in the price of cotton following the war every farmer in Alabama went into raising cotton, thinking it more profitable than other products, and neglected pork and corn; but the decrease in the price of cotton has forced them back to raising more corn, and the State is now raising nearly all it consumes. Mr. Poole says the farmers of Alabama ought to raise all the pork and corn they consume, but they are cotton crazy. The soil is adapted to the cultivation of corn, and Mr. Poole estimates that the yield would average 15 or 20 bushels. In some cases as much as 40 or 50 bushels to the acre are raised in the Black Belt. All crops can be raised in Alabama, and the State Department of Agriculture is encouraging the diversification of agriculture. (920.)

Mr. DILLINGHAM has found by careful questioning of the colored farmers of Lowndes County, Ala., that they are not only planning for plenty of cotton, but also planning to raise food as never before, running in debt as little as possible and learning to save. (166.)

Other Southern States.—Dr. STUBBS says there is now a very prosperous condition of agriculture all through the Southern States. Everywhere there has been a constant tendency toward diversification, the raising of home supplies, increased stock raising, pasturage, and forage crops ever since cotton reached its low mark. The unexpectedly high price of cotton will probably in the end be something of a detriment to this progress, because the people will begin raising it more extensively; but the increased price, together with the home production of other articles, has put the people in excellent condition all through the South. Dr. Stubbs believes it desirable to persuade the farmers not to plant too much cotton, but to maintain diversification, because cotton can not remain at 10 cents; the area to be devoted to it can be increased or decreased to any extent. (785.)

4. Diversification of agriculture difficult in the Southern States.—Mr. BROWN believes that the lack of prosperity in Georgia and other Southern States is largely due to the almost entire confinement of agriculture to raising cotton. The reason for this practice is that cotton is the only crop on which money can be borrowed, and which is certain of a market. Corn, for example, is used only for local consumption, and there is no sale for it immediately after harvest; hence it can not be used to pay notes. In the early days nothing was salable except cotton, and the price was high. Farmers supposed that by increasing their output they would increase their profits. But as means were discovered for producing more cotton at the same cost, the price went down excessively from 20 to 4 cents. Meantime, farmers having gotten into the rut of planting cotton only, found it difficult to start in any other line. Their labor is trained to raising cotton. To start in any other crop requires an investment in advance, and it is impossible to borrow on the prospect of any crop except cotton. Moreover, the country is not specially adapted to raising cereals or food crops or cattle. These articles can not be sold at competition with the West. Nevertheless the witness believes that the only salvation of the Southern farmer is by diversification. He must raise a large variety of articles for his own use instead of buying them. This is much more likely to succeed than speculative farming. The witness has found diversification advantageous on his own lands. (60, 61, 64, 70.)

The witness states further that the reason why the South can not compete with the North and West in raising any particular crop (except cotton) for sale in the market, or in stock raising, is that the soil is after all somewhat inferior, and that the heat of summer dries up the grass and interferes with cattle raising. But a very wide variety of products can be raised, making it possible for the farmer to supply his own needs almost altogether. The rotation of crops, or the alternate use of land for grazing and for crops, is beneficial. The witness deprecates the fact that a good deal of corn is imported into Georgia, believing it to be unnecessary.

At the same time, the diversification of manufacture in the South would be of the greatest advantage. Each locality should manufacture a variety of products, largely supplying its own needs. In this way local markets for agricultural products would be established, and conversely a local market for manufactured products. This change in method would save the profits which are made by middlemen, or at least would prevent them from going out of the State. The Southern States are able to offer great advantages to capitalists, especially for cotton factories, in the way of cheap labor, buildings, etc. The witness knows of no disposition on the part of the people of Georgia to antagonize capital and hamper business by legislation. What-

ever legislation can be devised for encouraging manufacturing should be enacted, but the witness makes no definite suggestion. Some municipalities already exempt factories from taxation. (64, 68, 73.)

Mr. LOVEJOY confirms the testimony of Mr. Brown as to the difficulty of beginning the diversification of crops. The exclusive production of cotton was begun at a time when it was very profitable, and then and now it is the only crop for which there is a certain market and on which money can always be borrowed. Moreover, it can be more satisfactorily raised by negro labor than other crops. It will wait, if necessary, while work on the other crops must be done at the particular time when needed.

Diversification is desirable, but must be begun by degrees. Furthermore, the soil in Georgia is not specially adapted to other crops. It will raise only from 10 to 15 bushels of corn per acre, from 5 to 10 bushels of wheat, and from 1 to 2 tons of hay. (76, 78.)

Mr. HAMMOND, a cotton planter of South Carolina, says that everyone there, from the banker to the most unskilled field hand, is ready to promote the industry of cotton growing. Anybody that starts at cotton planting for the first time will find everything fitted to help him. The case is different if he undertakes the culture of any other crop. He will have to search for instructions and try experiments; and experiments are costly. But diversification is what the region needs; especially stock raising. For this industry the meal and hulls from the cotton-seed oil mills, the heavy crops of ensilage that are made from the Southern varieties of corn, cow peas, Bermuda and Johnson grass offer special facilities. (830.)

Mr. GRAHAM, of Machpelah, N. C., says a great many farmers in that section have bought homes in the last 20 years, and consequently are in debt, and have to raise cotton for the credit. Ten acres of cotton afford more credit than 50 acres of corn. He has seldom known mortgages to be taken on corn crops. Cotton can always be sold, but the selling of wheat or corn will sometimes be doubtful. (436.)

Mr. YOUNG, of South Carolina, says he has raised watermelons, corn, vegetables, and other crops, but after mature consideration as to whether there was any crop he could plant with a certainty of reaping a profit, he decided that the best promise for 1899 would be in cotton, although he had tried it the year before and lost money on it. His section does not produce wheat. An experiment with wheat was made there in the spring of 1899 which was not very satisfactory. It is cheaper to raise cotton than wheat. (117, 118.)

Mr. Youmans adds that some years he can make money on watermelons, but at other times they are a dead loss. South Carolina farmers have tried watermelons, potatoes, and wheat. He knows a man who lost a great deal of money on a vegetable farm, and another who lost thousands on tobacco. Mr. Youmans raises all his home supplies, such as oats, corn, and forage, but as a money crop he thinks cotton is the best available. (119.)

Mr. PEEK, of Georgia, testifies that somebody is always ready to buy cotton at some price, and a market can be found near at hand. (461.)

5. Practicability of diversification in the South.—Mr. MASON, an ex-slave, testifies that he has always been able to make his living independently of cotton. His custom is to put about half his crop in corn. His former master, who rented to him after the war, advised him that bread and meat could be bought cheaper than it could be raised, but after 10 years acknowledged the other plan better. Mr. Mason finds that corn is the strength of the farm; it strengthens the stock, fattens the pigs, and improves the ground. He says, however, that young men should not engage in mixed farming unless they have a knowledge of plants. (500, 501.)

Mr. BARRITT, a large farmer of Georgia, has not been able to make money through a diversification of crops, although he has been able to keep his land from being mortgaged. He has raised truck, horses, cows, and hogs. The watermelon industry in Georgia has been entirely destroyed by the high freight rates to the markets. The nearer to the farm the goods can be sold the better off the farmer is. (49-51.)

6. Dependence of diversification upon local markets.—Dr. CROWELL says the chances for diversity increase with nearness to a city. (334.)

7. The tendency toward specialization.—Mr. GREELEY, of South Dakota, concedes that diversification is an important factor in agriculture, yet he does not see why farming should be an exception to the tendency of business to specialize. He finds that as a rule the farmers who are making a specialty of some line, bringing others in incidentally, studying their own tastes, markets, soils, etc., and growing something to which they are particularly adapted and mastering that line of farming, are getting ahead; that they have more leisure, and that their sons are more apt to go into farming. Specializing eliminates to a great extent the objection so many young men and women have to farming—the confinement and drudgery of it. Mr. Greeley thinks, from what he has seen of the best farmers in Minnesota and the Dakotas, that the

best part of the advanced agriculture is the tendency to specialize, but adds that it is dangerous to advocate that kind of farming too much with the inexperienced. Raising wheat exclusively he does not consider farming. (937.)

Mr. WHITNEY pleads for the cultivation of the particular crop or crops the land is best suited to. He is convinced that the future for the New England States as for the Southern States, is in the direction of specialization. They are peculiarly fitted for certain special industries, and the markets are close at hand. All thought of competing with the general farm crops must be given up, and the farmers must look forward to building up certain industries which the conditions make it possible to develop. In many cases very important industries have already been created in the New England States, notably the tobacco interests of the Connecticut Valley, the truck and greenhouse interests along the sound and around Providence and Boston, and the fruit interests of the lower Connecticut Valley, which have all been exceedingly profitable. (867, 870, 871, 875.)

Mr. Whitney says the truck industry has reclaimed vast areas of land in the Atlantic States. Twenty-five or thirty years ago the sandy soils along the coast were worth about \$1 to \$1.50 an acre. By the growth of vegetables they have increased in value until they sell now from \$50 to \$500 an acre in the natural state. (875.)

Mr. Whitney refers also to the important part which celery has taken in the reclamation of many areas of wet, mucky lands, and to the importance of the fruit industry in the reclamation of abandoned lands.

He particularly emphasizes the importance of vineyards as a means of reclaiming gravelly soils. The most valued soils along the Rhine are frequently so destitute of soil covering that the soil has to be maintained by stonework; yet on these very gravelly soils the finest varieties of grapes have been produced. Fruit trees and grapevines are declared to be a most important means of reclaiming otherwise worthless lands, particularly in stony areas. (877.)

Pineapples in Florida.—Mr. WHITNEY says there is a narrow strip of beach along the coast in southern Florida, extending from Jensen to Palm Beach, that was formerly comparatively worthless, but has been redeemed by the introduction of pineapples and is now worth from \$200 to \$1,000 an acre. Even the wild lands covered with the native jungle sell from \$100 to \$200 an acre when favorably located. Mr. Whitney instances this as a case of the reclamation of waste lands by specialization. The land is fertilized very heavily, the sand being used simply as a medium for the fertilizers. The soil would be of no value for general crops, but there is no other which can compare with it for pineapples. (875, 876.)

Mr. STOCKWELL, of Massachusetts, says the prosperous farmer is the one who has some specialty, some one thing in which he is trying to meet the present demand of the market, though not working on it exclusively. (895.)

8. Cooperative diversification proposed.—Mr. REDDING, director of the Georgia Experiment Station, does not think every farmer ought to grow everything he needs, but thinks diversified farming should be followed in a neighborhood by cooperation among the farmers. One man who has good wheat land should furnish wheat for all his neighbors; another with sugar-cane land should furnish sirup; another with rice land should furnish rice. Rice and wheat require milling, and it is not desirable for a man who wants 50 pounds of rice or 25 bushels of wheat to raise rice or wheat. The market should be arranged for before the crop is grown. (446.)

9. Need of public initiative.—Mr. POWERS says that the farming industry of the Eastern States has been revolutionized by the West, and that Eastern farmers who attempt to compete with the West will be ruined. They must find a new system of crops suited to the changed situation. It is the same, to a great extent, with the farmers of the South. The State ought to take the lead by ascertaining what new agricultural industries should be established. The Nation is not doing what it should in working out for the older sections of the country the methods and crops suited to those sections. (177.)

G. Products and resources of particular regions.—**1. Agricultural products of certain Northern States.**—*Vermont.*—Mr. SPEAR testifies that Vermont produces a surplus of nearly all agricultural products except grain. Wheat, corn, and oats are all brought from the West. Mr. Spear believes it is cheaper to raise corn in Vermont than to bring it from Iowa, and he thinks the farmers are coming to believe that it is better to raise more and buy less. The barley and oat crops have not been profitable. (408.)

North Dakota.—It seems to Mr. BUDGE that the climate of North Dakota is improving. Crops are grown there which could not be grown formerly. He attributes the change to the cultivation of the land. A little corn is now grown there, though it could not be grown when Mr. Budge went to North Dakota. (848.)

Mr. PROM says the chief products of North Dakota are wheat, flax, oats, and barley. (791.)

2. Products and possibilities of the South.—*Virginia.*—Mr. WEDDERBURN, master of the Virginia State Grange, says tobacco is the principal crop raised in the southern part of Virginia, while Loudoun and Fairfax counties send a great deal of milk to Washington and raise wheat and corn. Loudoun County raises some very fine cattle; there is a good deal of diversification. (621.)

West Virginia.—Mr. CLOHAN testifies that wheat and corn are the staple products of West Virginia. On the uplands the apple and peach are the two great fruit crops. Plums, cherries, and pears are also raised, and every fence corner has a cherry tree. (595.)

Kentucky.—Mr. NALL says the agriculture of Kentucky is greatly diversified. The crops include the grains, tobacco, hemp, blue grass, orchard grass, timothy, and, near the cities, potatoes. The southeastern part of the State, constituting districts Nos. 4 and 5 on the map accompanying Mr. Nall's testimony, is a mountainous section where the mineral and timber interests predominate, though there are some cultivated fields. Railroads are being run into this district and the mines and timber interests developed. Mr. Nall estimates that the farm products raised there are not sufficient to feed the people, now that there are so many miners. The money products are mostly logs, lumber, and minerals. Some common cattle are driven from this section and sold in the blue-grass region. Mining interests, principally coal, are considerable in the western part of the State also, and there is some very profitable development in petroleum in the mountainous region and along the Cumberland River. (806, 807.)

North Carolina.—Mr. WHITE testifies that cotton, corn, peanuts, and tobacco are staple crops in North Carolina. The principal crops are cotton and tobacco. In the spring early truck is grown to ship North, especially in the vicinity of Newbern. In the vicinity of Wilmington and the Cape Fear River rice, peanuts, etc., are grown. Some of the finest tobacco in the world is grown in the Lenoir district. (419, 420.)

Mr. White says the turpentine industry of North Carolina is nearly a thing of the past. (432.)

South Carolina.—Mr. HAMMOND, of South Carolina, says that there is a considerable amount of lumbering in the southern part of his State. A tract of lumber is bought very cheaply and the lumber cut off. Usually the turpentine is first taken out from the pine, and the Agricultural Department has shown that the lumber is better after it is taken out than before. The chestnut trees have been killed out by an insect. No care is given to the cultivation of forests in any part of the State. (833, 834.)

Mr. YOUNG testifies that there is considerable manufacturing in the upper part of South Carolina, but very little in the southern part. The depression of agriculture is so great and farm wages so low that the manufacturers can get their laborers much cheaper than they can in the North. (419.)

Georgia.—Mr. REDDING, director of the Georgia agricultural experiment station, enumerates cotton, corn, rice, sugar cane, peanuts, potatoes, and fruits as the principal agricultural products of Georgia. Cotton is the leading product, but near the coast rice is a crop of considerable importance. (443.)

Mr. Redding says Georgia is well adapted to the production of cereals; a large part of the State is well adapted to wheat and corn. Corn is now imported from States farther north, but chiefly for the city trade; as a rule the farmers now make a very good supply when crops are fairly good. They do not as a rule raise their own mules, but get them from Tennessee and Kentucky. (447.)

Mr. Redding says it is a common saying that everything but coffee can be grown in Georgia, and he believes it is true. Sugar cane can be grown successfully, and there is a tea farm started in Georgia. (450.)

Mr. STEVENS testifies that cotton is the principal crop grown in Georgia, and he places the value of this crop at \$54,000,000. Corn comes second, with a value of \$18,000,000. In the year 1900 there was a large peach crop, which put a great deal of money into circulation and employed a great many laborers during the dull season. He puts the value of this crop at \$3,750,000. The sugar-cane industry has made great progress, the manufacture of sirup in south Georgia having doubled in two years. The value of sugar and sirup amounted to nearly \$1,500,000. Mr. Stevens predicts that in the near future a number of sugar refineries will be established in south Georgia, which will give a great impetus to this industry. Tobacco of the best grades has been successfully raised in several sections of the State, but until recently only in a sufficient quantity to meet individual wants. The value of this crop is estimated at only \$27,000. Some of the most scientific farmers have undertaken wheat raising with excellent results, 40, 50 and even 65 bushels to the

acre having been produced. No country has a better supply of native grasses than Georgia, and the production of hay is increasing, as much as four tons of hay to the acre being raised. The main grasses are Bermuda grass, crab grass, and orchard grass, crab grass being the best. The new method of cutting, shocking, and shredding the cornstalk by machinery is very superior to the older method. The peavine makes very nutritious hay, as well as a splendid renewer of exhausted soils, and preserves those that are yet in good condition. Cotton-seed supplies in its meal and hulls rich food for stock, and contains a great deal of nitrogen which is useful in fertilizing the soil. The value of the rice crop is estimated at \$1,200,000, and that of the vegetable and apple crops at \$1,000,000 each. (914, 915, 917.)

Alabama.—Mr. POOLE, of Alabama, says that the Black Belt of Alabama is entirely an agricultural district, devoted to cotton and corn, very few other products being grown. The agriculture of the district is not very progressive, but conditions are improving. One may frequently find a graduate of Yale or Harvard living on his estate and directing, either in person or by a son or an overseer, the cultivation of his plantation. The State department of agriculture is encouraging diversified agriculture, and has distributed a large number of seeds of various kinds. The southeastern part of that State is inhabited by very thrifty small white farmers—the most intelligent farmers in the State—farming generally on the intensive plan and doing their own work. Among the eastern and sandy counties of Alabama the small farmers are generally prosperous and own their land to a very large extent. They have acquired lands since the war more rapidly than the colored men. (919, 921.)

Mr. Poole says Alabama is a wonderfully recuperative country. He has known farmers who have made a complete failure on their plantations, and been sold out by the commission merchant, to borrow \$1,000 and pay it back the first year. Mr. Poole regards Alabama as the most rapidly developing of all the Southern States. It has a healthful climate, plenty of water, and rich soil. If the negro laborers were a little more intelligent, all the improved farm implements could be used. The ignorance of the negroes, who are prejudiced against new ideas, is a great bar to success. (926, 927.)

Mississippi.—Mr. KYLE testifies that, besides cotton, sorghum, sweet potatoes, some sugar cane and Irish potatoes are raised in the hills of Mississippi, and meat is raised more than formerly. (467.)

Mr. Kyle says oats and corn can be raised successfully in Mississippi; the soil is not so well adapted to wheat. (473.)

Arkansas.—Mr. BALCH testifies that the northern half of Arkansas produces a considerable quantity of hay, wheat, oats, and various cereals. The southern half grows only enough corn, wheat, and oats for its own consumption. Sixty bushels of corn to the acre is nothing unusual in the neighborhood of Little Rock. (496.)

Louisiana.—Dr. STUBBS, director of the Louisiana Experiment Station, says Louisiana is unique in its agriculture. The southern part of the State is devoted almost exclusively to sub-tropical crops—oranges, sugar cane, and rice; farther north, cotton, corn, and stock are raised. Dr. Stubbs thinks the lower portion of Louisiana is perhaps more intelligently cultivated, and with more economy in methods, than any other portion of the world. The sugar and rice interests utilize every implement and process or method that can best economize production, and the methods of cultivation have improved vastly within 15 years. Everything that can economize labor is used. (770.)

Dr. WILEY declares that Louisiana is one of the best rice-producing States in the world, and predicts that it will in 50 years be the greatest rice-producing country. Rice is gaining and sugar cane is losing in Louisiana. (649.)

Opportunities in Southern agriculture.—Mr. REDDING, director of the Georgia Experiment Station, says the opportunities in Southern agriculture are considered very good by men who have come from the Northwest, accustomed to labor themselves. In Georgia a man worth \$4,000 or \$5,000 does not work on the farm, but hires somebody else to do it. The men from the Northwest come down to do their own work, and find the conditions very much more favorable than they would have found them 25 years ago. After they adapt themselves to the new conditions they are among the best farmers. Their plowing and hoeing is better, they use better tools, and are good patterns for Southern farmers to follow. Some of the Southern farmers have taken heart and become just as good farmers themselves. There has been considerable improvement in the last 20 years. (450.)

Mr. HALE, a fruit grower of Georgia and Connecticut, declares that the South has wonderful possibilities. He thinks that with intelligent business management there is a better opportunity for the investment of capital in agriculture in the South than elsewhere, on an average, because of the cheap labor and cheap land and the long season. He adds, however, that the white man with a very small capital is seriously

at a disadvantage in Southern agriculture. The number who earn something by working for others is very limited, because they must compete with 50 or 60 cent negro labor, working 12 or 14 hours a day. The Southern poor white has perhaps not as good a chance as the black man. (387, 394, 401.)

Mr. WHITE says North Carolina is rich in resources, and a good business man, white or colored, can accumulate a competence in agriculture. There is splendid farming land on the steepes of the mountains in the western part of the State. (422.)

Fruit.—Mr. HALE says a large section of Georgia and northern Alabama and sections of South Carolina and Tennessee are adapted to fruit growing. Georgia is a wonderful State for grape growing. The grapes drop from the bunch, but are of high quality and rich in sugar; there is a fine opportunity to grow them for wine making. Mr. Hale doubts if Georgia can compete with California in growing prunes, and the European plums grown elsewhere in the United States will not thrive in the South; but Japanese plums are grown with wonderful success, and are preferable to anything that can be produced in California. Because of their tough skins they can be shipped all over the United States, and worms are rarely found in them. Mr. Hale has found Japanese plums with marks of the curculio on the skin, but not a single worm in any of them, though he has looked for them for a number of years. A Cornell University scientist says the skin is so thick and tough and grows so rapidly that it crushes the egg before it is hatched. This plum is not troubled with black knot, and can be grown as cheaply as apples. It can be grown all over the United States, but is particularly suited to the South. Blackberries grow wonderfully in Georgia. Mr. Hale suggests the production of canned fruits and evaporated fruits, declaring that Georgia can make a higher quality of canned fruit than California. (382, 394-396.)

Nurseries.—Another industry suitable for the South, in Mr. Hale's opinion, is the growing of nursery stock, which is expensive to produce in the North on account of the high price of labor. Georgia, he says, can grow as fine a fruit tree in 1 year as the North can produce in 2 years. The Baldwin apple, the Concord grape, and the Bartlett pear will thrive equally well in any part of the country, whether propagated in the North or in the South. Mr. Hale gives an interesting account of the way in which fruit trees adapt themselves to a new climate. A number of nurseries were started in Georgia on a large scale, but could not compete with the North on account of the excessive freight rates, which were apparently made for local business. Georgia nurserymen started in a small way to grow plum stocks, which have always been imported from France, but there was hardly a profit in it until the McKinley tariff act put a duty on the stocks. The duty was taken off by the Wilson bill. (395, 396.)

Nuts.—Mr. HALE says we import many hundreds of thousands of dollars' worth of nuts from European countries. The pecan can be grown to advantage in many sections of Georgia, and is grown to some extent. Mr. Hale has grafted the Japanese chestnut on the American chestnut, and produced nuts as large as horse chestnuts and as sweet as the native American chestnut, for which he was paid 40 cents a pound at wholesale in New York. A train load could be sold at 10 cents a pound or \$5 a bushel. He estimates that about 60 or 75 bushels can be grown to the acre. These nuts have never been troubled by the weevil, as the American chestnuts are. (394.)

3. *The Pacific coast.*—Mr. NAFTZGER says the climatic conditions of the Pacific coast are such that almost everything is produced there except purely tropical products. California produces cereals largely and fruits in great variety. The Pacific coast is not a manufacturing country, but depends rather upon its minerals, its agricultural and horticultural products, and lumbering, manufacturing being retarded by the high freight rates. It is only within the last 3 or 4 years that the exports from California have exceeded the imports, but for the last year or two they have exceeded the imports by nearly 50 per cent. Mr. Naftzger thinks this applies also to Washington and Oregon. (949, 950.)

Mr. TURNBULL states that, though California can hardly yet be classed as a manufacturing State, the list of manufactures is considerable and the value is large. He anticipates a great growth of manufactures to accompany the increasing trade with the Orient. (981.)

Petroleum.—Mr. TURNBULL says that there are now about 200,000 producing oil wells in California, owned by more than 250 companies. Prospecting is going on throughout the State. The value of the oil lands, including the plants, boring outfits, tankage systems, pipe lines, etc., amounts to \$200,000,000. The cost of drilling an oil well to the depth of 1,000 feet, exclusive of the cost of casing, is said to be from \$1,000 to \$3,500 in Los Angeles and in the Kern River district, and to go up as high as \$5,000 and even \$7,500 in other regions. Mr. Turnbull presents a table giving the yield of crude

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petroleum in California by years. One hundred and seventy-five thousand barrels is said to have been produced before 1876, and in that year 12,000 barrels. The yield rose gradually to 385,000 barrels in 1892. From that time the increase has been more rapid. The yield for 1899 is given as nearly 2,700,000 barrels, and that for 1900 is estimated at 4,000,000 barrels.

Some illuminating oil is produced in California, but probably nine-tenths of the petroleum is suitable only for fuel. It is used for that purpose in Mr. Spreckels's great sugar factory, and in the cotton mills at Oakland. The Santa Fe and the Southern Pacific use it in their engines. The Union Iron Works at San Francisco are preparing to use it. Oil at \$1 a barrel is said to be equivalent to coal at \$4.50 a ton. The cost of coal in California is about \$7.50 a ton. (986, 987.)

Commercial advantages of San Francisco.—Mr. TURNBULL declares that San Francisco has the largest and most accessible harbor on the Pacific coast. It lies within 90 miles of the shortest sailing route from the Isthmus to Yokohama, and within 200 miles of the shortest sailing route from the Isthmus to Hongkong and the Philippines. It will, therefore, be a way station for all vessels going between the Isthmian canal and Asiatic ports. The greater part of the overland traffic to the Orient must also be tributary to San Francisco; all except that northern fraction which originates in the latitude of Puget Sound. While there will be large and important cities in Washington and Oregon, San Francisco must occupy a position on the Pacific coast comparable with that of New York on the Atlantic. The equable temperature is a unique economic advantage. (982, 983.)

Cost of living in California.—A statement by the president of the State board of trade of California, presented by Mr. TURNBULL, asserts that the prices of the necessities of life—fruit, vegetables, meat, flour, etc.—are lower in California than in the East. California has a large surplus of all these things, except meat, to ship to the East. The price of wheat is the price in Liverpool, less transportation. The cost of clothing for the laborer is also less than in cold countries, because less protection for the body is required. (988.)

Mr. Turnbull says that the cost of groceries in California now averages about the same as in 1896. Hardware and house-furnishing goods are about 15 per cent higher. Meats are about 10 per cent higher. Drugs and medicines are from 5 to 10 per cent higher. Clothing is about 10 per cent higher. Dry goods are from 5 to 10 per cent higher. Coal is the same as in 1896, but wood for fuel has gone up 15 or 20 per cent. The rents of such houses as are usually occupied by workmen are the same, or from 5 to 10 per cent lower. Newer and better classes of houses are a little higher. (977.)

Wages.—Mr. Turnbull discusses the causes of the high wages in the early days of California, and the causes of the decline. So long as there is untilled land at the disposal of the State, he says, or for sale at a reasonably low price, the wages of hired labor must equal the returns of labor applied to the land. So, too, as long as there were many unclaimed placer mines easily available, the wages of other industries had to be high enough to compete with the advantages found there. Various explanations of the decline of wages have been offered. One is that the land has been withdrawn from the market, or is held at such prices that no greater advantage can be got from the purchase of it than from the purchase of land in older communities. Another suggestion, which presupposes this, is that many would-be settlers of small means have come to California under the impression that cheap lands could still be got, and, finding themselves disappointed, have crowded into the cities to compete for such work as they can do. Another and still more popular theory finds the explanation in the competition of the Chinese and Japanese. This, Mr. Turnbull thinks, has only aggravated and intensified the effect of forces already at work. The primary reason of the low wages of unskilled Chinese laborers is their incompetency, though Mr. Turnbull afterwards admits that their ability to live much more cheaply than American workmen is, perhaps, even a greater factor in the result. But Chinamen learn very readily when they have opportunity, and when they have acquired skill, as for instance, the Chinese cooks do, they command such prices that they can no longer be said to depress wages.

Mr. Turnbull thinks it a mistake to attribute the fall of wages to any single cause. The conditions of the separate classes of workers should be considered separately.

The first class consists of skilled laborers producing goods for a greater market than the State of California. This class consists chiefly of the skilled labor engaged in the production and preparation of fruit and wine. In such industries the excess of wages over wages in competing places can not exceed the difference of natural advantages, diminished by the greater cost of transportation from California. As the natural advantages are more and more appropriated they lose their influence on

wages, and the workers who employ them tend to get only what similar workers get elsewhere.

The second group consists of the industries which produce goods competing in the local market with goods that can be imported from outside the State. The principal advantage here is the cost of transportation. If there is a little gain in ability to gauge the market and a little gain in the ability to use raw material produced within the State, these advantages are offset by the higher rate of interest in California. Such industries do not arise until comparatively late, and as soon as they do arise wages in them will conform closely to Eastern rates.

These industries stand at one end of the scale. At the other end are all those trades which require skilled labor and in which the whole of the work must be done on the spot. It is here that the local advantages are longest maintained. The first report of the California Bureau of Labor Statistics contained a comparison of wages in certain trades between California and New York and Chicago. The report referred to the year 1883-84. The California wages seemed to be higher by an astonishing amount. If the report is carefully examined, however, it is seen, says Mr. Turnbull, that almost all the trades mentioned fall within this third group. They are certain building trades, together with blacksmiths, bakers, shoemakers, cabinetmakers, coopers, printers, tinsmiths, and brass founders. These trades were probably not selected with an intent to deceive. They were naturally chosen because they had arisen early in the community and had attained importance in it. But the selection of them was deceptive, because they are exactly those trades which are not subject to competition by the transportation of their products. Wages in these trades are still higher in California than elsewhere, but there has been a decided fall since the report referred to. This can be explained by the movement of labor toward such trades and the inevitable equalizing of wages. The fact that this class of workmen still maintains an advantage, however, seems to Mr. Turnbull to be an argument against the validity of the first-suggested cause of the fall of wages—the increase of land values.

The fourth group is composed of unskilled laborers. This class gains most in newly settled communities, says Mr. Turnbull, from the cheapness of land, and, on the other hand, is the first to feel the movement toward different conditions.

Mr. Turnbull presents a table taken from the report of the Interstate Commerce Commission for the year ending June 30, 1894, showing the compensation of various classes of railway employees in the United States as a whole, in Group 10 (west of the Rocky Mountains), and in certain Eastern and Central States. A considerable difference in favor of Group 10 is shown. Mr. Turnbull asserts that the highly skilled men have the largest proportional advantage, but he does not undertake to support the assertion by an analysis of the figures. Mr. Turnbull remarks that railroad employees belong to the class of workmen which is able to retain longest the benefit of the economic advantages of a new country; namely, the workers at those employments which require skilled labor and in which the work must be done on the spot. (971.)

Mr. Turnbull sums up his conclusions as follows:

"For the unskilled labor the rate of wages in California already conforms to the rate paid elsewhere: First, because the natural advantages which could be used by such labor are mostly monopolized; second, because a large part of the unskilled labor is peculiarly inefficient. A few lines of skilled labor employed in industries exploiting peculiar natural advantages still earn large wages. Many lines of skilled labor, of such a sort that the work is done on the spot, obtain slightly higher wages than prevail in the East, and will do so as long as the advantages enjoyed by the first class of skilled labor are not all appropriated. The rate of wages enjoyed by skilled labor producing commodities which compete in the California market with commodities manufactured outside are higher by part of the cost of transportation, and this will be the first class of skilled labor to lose the advantage which it enjoys."

Mr. Turnbull submits a table purporting to give both nominal daily wages and average yearly earnings in a considerable number of employments. (969-972, 976.)

Mr. Turnbull adds that from 1894 to 1896 a great part of the workmen of California were without employment. Of those that were employed, such as escaped direct reduction of wages had to work less than full time. When the tide turned the first result was full time and the absorption of the idle labor. Then increase of pay began and grew more frequent, until now demands for more pay and fewer hours of work are heard in all directions, and are granted. (977.)

Savings bank deposits.—Mr. TURNBULL states that in 1892 over \$95,000,000 was deposited in the savings banks of California and over \$83,000,000 withdrawn, leaving a net gain of over \$12,000,000. In 1894 nearly \$97,500,000 was deposited and over \$104,000,000 withdrawn, showing a large diminution of deposits. In 1899 the deposits were \$77,500,000 and the withdrawals less than \$72,000,000. Mr. Turnbull assumes without question that the savings banks "are the workers' depository, and by the rise

and fall of deposits therein the workers' comparative prosperity can be measured as by a barometer." (975, 976.)

Labor organizations.—Mr. TURNBULL states that the hat finishers' union of San Francisco is said to date from 1853, and that there are 6 unions in the city that were formed during the Kearney movement. Most of those before 1880, however, were rather social and political clubs than strictly trade organizations. It was not until the special advantages of the situation of workmen in California began to disappear that the movement made great headway. The greatest increase of trade unions in numbers and strength took place from 1884 to 1890. The results have been permanent, but the increase has not since then been so rapid. In 1888 the Bureau of Labor Statistics estimated that there were about 20,000 members of labor organizations in the State. A conservative estimate now places the membership at from 40,000 to 45,000. There are few important industries, if any, which are not organized, and there are many organizations of the unskilled. Even the Chinese have their unions, called "tongs," though on account of their extreme secrecy no trustworthy information about them can be given.

The initiation fees vary from 50 cents to \$10; the monthly dues from 10 cents to \$5, but mostly less than \$2. A large proportion of the unions pay sick and death benefits. Sick benefit seems to be usually about half the regular union wages. The death benefit provides a decent burial, and in some cases a little more. It varies from \$50 to \$250. Strike pay is generally smaller than sick benefit. A few unions have an out-of-work benefit.

The most of the local unions belong to larger associations of their trades, extending throughout the United States and Canada. The local unions in each important city or county are for the most part united in local federations. These associations vary in form, from that of a loose federation to that of a strong body, to which all important questions are referred. The office of the federation is generally open all the time, and serves as a means of communication between the different unions, and sometimes as an intelligence office to men out of work. The rules of most of the federations do not allow the individual unions to strike without the consent of the council of the federation. A local union that desires to strike has first to convince the other unions, therefore, of the justice of its intention. In most cases it must also submit the matter to the central authority of its national trade union. In many instances the necessity of thus showing the reasons for the strike, together with the conciliatory attitude of the federation officers, has prevented serious trouble.

The local federations have recently united in the Pacific Coast Council of Trades and Labor Assemblies. This association is yet very weak. It is supposed to meet once a year, and to be composed of delegates from all the unions on the coast. But the expense of sending delegates to the meetings of the national trade unions, usually held in the East, is so great that the unions hesitate to incur the additional expense of sending men to this convention also. The aim of the council is to care for those interests of the unions that are peculiar to the whole of the Pacific coast, such as the regulation of the hours of labor by law, and the like. (973, 974.)

Mr. Turnbull says that the establishment of unions has brought the California workmen into touch with the labor movement elsewhere, both by actual affiliation in organization and, even where that does not exist, by the closest affiliation in thought. This adds materially to the forces that tend to break down the economic isolation of the State. Too close an affiliation with Eastern unions is likely to be at the cost of the California union. In those industries in which the Western workmen have an advantage they are likely to be the heaviest contributors to any cause calling for financial support. If the unions are strong enough they may retain some of the peculiar advantages of a new community longer than would otherwise be possible, but in the main they have little power to retard the gradual change of conditions. (974, 975.)

Mr. Turnbull says that labor organizations in California, as elsewhere, have been the favorite field in which the advocates for cures for social and economic evils have worked. The Socialist Labor Party carries on a continual but moderate agitation, and sometimes influences the unions in their policy. From time to time the unions have seemed to indorse one or another social specific. Sometimes a newspaper, run in the interest of some hobby or of some political party, has appeared as the organ of the unions, with or without their direct sanction. Such papers seldom represent the thinking members of the unions. These members are, for the most part, sober-thinking, conservative men, and many of them are property owners. The constitutions of many unions forbid the discussion of political or religious questions at their meetings, and these provisions are understood to be generally enforced. Whatever views the members may hold, the unions, as such, do not often enter politics. The

leaders have sometimes abused their powers and been more arbitrary than any employer, but these tendencies are apparently passing away. (974, 975.)

California State Board of Arbitration.—Mr. TURNBULL says the State Board of Arbitration of California is almost useless, because it can not move until it is called upon by the parties to the dispute, and that rarely happens. (974.)

X.—THE SUGAR INDUSTRIES.

A. Development of the beet-sugar industry.—1. In Europe.—Dr. WILEY, Chief Chemist of the United States Department of Agriculture, testifies that the beet-sugar industry was established as an industrial occupation in Europe by the first Emperor Napoleon. On account of the embargo which England laid on European ports, the colonial sugar was practically excluded from France and the whole Continent of Europe, and to remedy this the Emperor made a grant of money in the form of a subsidy to encourage the establishment of beet factories in the Empire. This was about 1809 and 1810. The fall of the Emperor interrupted the State bounty, but the industry had taken such a hold in France that it continued to grow, and by 1830 France made a very considerable quantity of beet sugar, as measured by the markets of that period. The Germans, who had been the first to discover the merits of the beet as a sugar-producing plant, were not slow to follow the French, and before the end of the sixties German production had overtaken that of France. It is now double that of France. (638.)

Germany.—Dr. WILEY submits a statistical statement showing in a striking manner the progress of the beet-sugar industry in Germany from 1840–41 to 1898–99. The yield of sugar shows an increase from 5.88 per cent to 13.37 per cent, the development of processes for recovering sugar formerly lost in the molasses having contributed considerably to this increased yield. During this period of 60 years the sugar production has increased from 15,659 to 1,793,538 tons of 2,000 pounds, while the importations of sugar have decreased to 1,236 tons. The Empire's export trade in sugar has increased until more than one-half the entire product is sent abroad. "The application of scientific methods in the field and in the factory has greatly assisted in attaining this result, but it has only been possible with the aid of most favorable revenue and tariff laws."

Dr. Wiley testifies that the great production in Germany has been secured by bounties, but they have never been paid to the grower or to the manufacturer unless an exporter. The bounty is paid to the man who exports the sugar. The man who grows the sugar has to pay a heavy tax. The German Government collects more in the tax on its beets than it has ever paid in bounty. The average tax on every ton of beets grown in Germany was until recently nearly \$4. A corresponding tax is now levied on sugar consumed within the Empire. Every factory is run like a distillery; a Government officer stands at the scale and keeps the data of all sugar exported.

"A very high tax on imported sugar has been maintained since 1840, with a differential in favor of the German refiners until 1887. An export bounty, also with a differential in favor of German refiners, has stimulated production for export. From 1841 to 1892 an internal-revenue tax was levied on beets used for sugar production. Since 1889 this has been replaced by a corresponding tax on sugar consumed within the Empire. The export bounty was reduced at the same time the manufacturers were relieved of the tax on their raw material."

"Among the important effects of this system of sugar laws there must be mentioned besides the stimulation of production, the depression of domestic consumption of sugar, and the embarrassment of the refiners of sugar in England and of the raw-sugar producers in colonies of that country. Moreover, the system has yielded the Government a net revenue varying from 0.31 to 1.99 marks per capita per year."

Dr. Wiley submits a tabular statement of Germany's sugar laws, inland and import axes and export bounties on sugar, with the gross and net revenues from these sources, the quantities of sugar exported and imported, and the annual consumption per capita in Germany from 1840 to 1899. (655, 656, 658–661.)

2. In America.—Dr. WILEY testifies that the first attempt to introduce the sugar-beet industry in this country was made in 1835 by an association of agricultural and scientific men of Philadelphia, who employed an agent to visit France. As the result of his report an attempt was made at Northampton a year or two afterwards to grow beets for sugar, and several tons of sugar were made. The first chemist of the Department of Agriculture made analyses of sugar beets as early as 1862, just after his appointment; but the Department's first systematic work toward promoting the industry in this country was accomplished during the Paris Exposition of 1878. Dr. McMurtrie, who was at that time chemist of the Department, was detailed to go to Paris in charge of the exhibit from this country, and was charged with studying the beet-sugar industry with a view to its introduction into the United States. He made

a very elaborate and valuable report, and supplemented it with investigations the next year in this country. As an indirect result of this investigation capital was largely interested in the industry in 1879, 1880, 1881, and 1882, and quite a large sum was invested, especially in the New England States and in Delaware. In Delaware a large factory was built, another was built at Franklin, Mass., and a third in Port land, Me. These factories were all equipped with the most improved machinery then known, and should have been a success in manufacture, but they all resulted in disaster, solely on the agricultural side. (638, 639.)

In 1884, Dr. Wiley was instructed by the Commissioner of Agriculture to study the remnants of the sugar-beet industry in this country, to see if it could be revived. He visited the factories which had been established in the East, and also went to California, which had the only factory which remained in operation from the impetus given in 1878 and 1879. This was a small factory with a capacity of only 80 tons of beets per day at Alvarado, near San Francisco. This was one case where growing had gone ahead of manufacture. Beet growing had proved so profitable that the farmers had overwhelmed the factory with beets, and over 20,000 tons of beets were lying in one pile, almost hiding the factory. (See Bulletin No. 5, Division of Chemistry, pp. 73 et seq.) During the next few years investigations were made on beet sugar, among other subjects, and in 1890 a series of special experiments in the production of high-grade seeds was begun at Schuyler, Nebr. (640, 641.)

Dr. Wiley says that while the best beets would naturally be supplied along the northern borders of this country, because the farther north a crop can be produced in time to harvest and deliver it before the advent of winter the better the chances of success, the Department of Agriculture has exploited every part of the country. Seeds have been sent to experiment stations in every State, with a uniform system of directions for planting and cultivation, and also to farmers (6,000 a year on an average) who would promise to conduct the work according to instructions. Analyses have been made at the experiment stations and also at the laboratories of the Department of Agriculture. This work has been continued more than 10 years. (644.)

Mr. Ssow testifies that the American beet-sugar industry is developing very rapidly, and that the manufacture of beet sugar is becoming a very large industry in the central west. In the 2 years 1897 to 1899 there was an enormous increase in the production of beet sugar. (241.)

Mr. Saylor testifies that 30 beet-sugar factories were in operation in this country in 1899. Of these California had 8 (including the largest in the world, with a capacity of 3,000 tons of beets or 300 tons of sugar daily), Michigan had 9, Nebraska 3, Utah 2 factories and 1 subfactory, New York 2, and Colorado, Minnesota, Illinois, Washington, Oregon, and New Mexico 1 each. Six or more were projected or building early in 1900, including 2 in Colorado and 1 each in New York, Ohio, and Michigan. (585, 586.)

New York.—Mr. Rogers, president of the Binghamton Beet Sugar Company, testifies that the first beet-sugar factory in New York State was built at Rome in 1897. The Binghamton Beet Sugar Company was organized in the spring of 1898, after experiments had shown that beets sufficiently rich in sugar could be grown in New York, and manufactured sugar from about 10,000 tons of beets that year and from about 13,000 tons of beets in 1899. New York has the climate and soil for growing beets, and they can be manufactured there as cheaply as anywhere. The important factors in manufacturing beet sugar, besides the beets themselves, are chiefly coal and limestone, both of which can be obtained near at hand. The success or failure of the beet-sugar industry rests with the farmers, who must have a good deal of education to grow the beets successfully. They require much more thorough cultivation and much more work than the average farmer puts on the average crop. The farmers who take the best care of their crops are making the best success with them.

Sugar beets require soil that is well drained and comparatively free from stone, and deep and thorough cultivation. The Binghamton Beet Sugar Company asks the farmers to sow not less than 14 pounds of seed to the acre, in order that every row may be full. The company employs men and keeps them in the field all summer to give help and instruction to the farmers. The average yield of the crops harvested in 1898 was 6 tons to an acre, and in 1899 8 tons to an acre, although the season was the driest for 20 years. Mr. Rogers does not think a yield of more than 10 or 12 tons to the acre can be counted upon, at least until the farmers are more thoroughly versed in the cultivation of the beets. The cost of preparing the ground, sowing, thinning, cultivation, and harvesting need not exceed \$30 an acre; many farmers have paid as much as \$40 and \$45 an acre for this labor, others less than \$20. The State of New York pays a bounty of 1 cent a pound on all sugar made from beets grown in the State, on condition that the farmer received \$5 a ton for the beets.

The Binghamton Beet Sugar Company has never refused any beets offered by farmers with whom it had a contract, although a few lots of beets gave less than 12 per cent of sugar; it pays a uniform price of \$5 a ton. The average percentage of sugar in 1899 was between 12 and 13. Mr. Rogers says the farmers who have taken care of their crops have, as a rule, made a profit of more than \$10 an acre, and a profit of \$20 an acre is within the range of reasonable expectations. Smith & Rowell, of Syracuse, who have been in the nursery business and understand gardening, grew more than 12 tons an acre, receiving about \$8,000 for 130 acres. In exceptional cases men have grown 25 tons to the acre. Mr. Rogers thinks there is no more profitable crop for the American farmer than the sugar beet, properly cultivated. Where there have been failures they have been due chiefly to the lack of a full stand and to neglect in cultivation. The company advises the farmers to sow in rows 18 inches apart, and then to thin, leaving a beet for every 8 inches in the row. (549-552.)

Mr. Rogers says a soil and climate producing fruit in perfection, like that of New York, is exactly what is wanted for the sugar beet. (552.)

Mr. Rogers thinks land suitable for growing sugar beets in the vicinity of Binghamton would be worth \$100 an acre, and rent for \$10 an acre. (560.)

Michigan.—Professor KEDZIE, of the Michigan Agricultural College and Experiment Station, testifies that in 1881 the legislature of Michigan passed "an act to encourage the manufacture of sugar," exempting the apparatus used from taxation for 5 years and offering a bounty of \$2 for every 100 pounds of sugar. Under this law 10 tons of sugar were made from sorghum and \$404 paid as bounty. It was found that sorghum as grown in Michigan was not profitable for making sugar, because the proportion of glucose was too large. The glucose is very difficult of crystallization and only two-fifths the sweetness of sucrose, and renders an equivalent amount of sucrose uncrystallizable. Attention was then turned to sugar beets. In 1890 the college imported 200 kilograms of each of 4 kinds of sugar-beet seeds from Europe and sent them to farmers in all parts of the Lower Peninsula, with directions for planting, cultivating, and harvesting the beets. Of 400 farmers receiving seed, 228 reported results and sent beets for analysis. These reports came from 39 counties. The average content of sugar in the juice was 14.2 per cent, and the coefficient of purity (the proportion of readily crystallizable cane sugar present in the juice as compared with the total amount of solids there present) was above 80° in 200 of the specimens. The estimated yield of beets per acre was 13 tons. The adaptability of Michigan to produce sugar beets of high quality was thus demonstrated, but capitalists and manufacturers were not ready to enter upon the business. In 1897 general interest was awakened in the subject and legislation was secured to promote the manufacture of beet sugar. The legislature passed an act (introduced in full in the testimony, pp. 541, 542) offering a bounty of 1 cent a pound for all sugar (at least 90 per cent crystallized) manufactured in the State from beets grown in the State, provided at least \$4 per ton of 2,000 pounds were paid for all beets containing 12 per cent of sugar. Aid from the Department of Agriculture in furnishing seeds and transportation by mail greatly assisted the efforts of the college. The seed was sent to many leading farmers who would undertake to raise at least 1 acre of beets, and also to a large number of amateurs. Although the season was only a fair one, the beet crop was quite satisfactory. The specimens of beets received for analysis numbered 493, from 64 counties. The average content of sugar in the juice was 16.08 per cent and the coefficient of purity in most cases was 80° or above, some going as high as 92°. In most of the cases of low purity the beets were grown on mucky soil. (535, 536, 540-542.)

The results of the years 1897 and 1898 were so satisfactory that farmers looked for equally good results in 1899, but the weather was so unfavorable (the most severe drought since 1864 occurring during the growing season) that the crop was very unsatisfactory in many localities; and though other crops had suffered even more severely, the farmers in some of their meetings passed resolutions not to plant sugar beets. (537, 538.)

Professor Kedzie testifies that under the stimulus of the bounty 9 factories have been erected in Michigan, and others are projected. The addition of another cash crop was welcomed by intelligent farmers, and the price of farm lands in the vicinity of the factories increased \$10 an acre. Only 1 factory had received the benefit of the bounty at the date of Mr. Kedzie's testimony (May 1900). The Michigan Sugar Company, of Bay City, received \$28,451 in 1898. The legislature passed a bill in 1899 reducing the bounty to one-half cent a pound and appropriating \$200,000 to pay the bounty. The governor vetoed this bill, leaving the State without funds to pay the bounty, but leaving the bounty law in full force. Claims for bounty amounting to \$300,000 for 1899 were pending at the date of the testimony. (542.)

Mr. SMITH, director of the Michigan Experiment Station, says the experiments made in 1890 and 1891 with sugar-beet seed imported by the experiment station from Germany showed that sugar beets of good quality could be grown in all parts of Michigan south of a line drawn east and west through the southern boundaries of Manistee and Iosco counties. Frequent failures in the wheat, fruit, and clover crops during the next few years created an active demand among the farmers for a new crop. The farmers of Michigan are for the most part native-born Americans, accustomed to the growing of cereals and not to intensive agriculture, but repeated failures of the usual crops made them ready to welcome any new crop that gave promise of adequate financial returns. (563, 567.)

Referring to the diminished yield in 1899, Mr. Smith says: "It was assumed that the almost phenomenal results obtained on a peculiarly favorable soil in a peculiarly favorable season by experienced beet raisers would be duplicated on less favorable soils by inexperienced farmers regardless of the season." The farmers all over the State were aroused from apathy to unbounded confidence in the new industry. (568.)

Mr. Smith adds that notwithstanding the adverse season in 1899 some farmers harvested 18 to 20 tons to the acre and made a fair profit. The profit compared very favorably with that from the wheat crop, which was nearly a total failure. Some farmers abandoned the fields after thinning, but in sandy localities many acres were plowed up without any loss except for the seed, and the fields utilized for other crops. (577, 580.)

The season of 1899 was so unfavorable, and the attitude of the average Michigan farmer toward the sugar factory is such, that the Kalamazoo and Rochester factories found it almost impossible to secure beets in 1900 from the territory that supplied them in 1899. The Kalamazoo company contracted for 5,400 acres, of which 2,200 acres were in Indiana and 1,000 in Ohio. The Wolverine Sugar Company, at Benton Harbor, is in the best fruit-growing section of the State, and also has to compete with large canning and pickling factories at Benton Harbor and St. Joseph. As a result, it secured its acreage for 1900 very largely from Indiana. (572.)

The acreage devoted to the culture of beets in Michigan in 1899 was about 35,000 acres. Mr. Smith thinks more than 37,000 were contracted for by May, 1900; all the factories had a sufficient acreage except those at West Bay City and Detroit. (580.)

North Dakota.—Mr. BRIDGE says sugar beets are raised even in the eastern part of North Dakota, but they are not so productive of sugar as those raised farther west. There is a difference of 4 or 5 per cent in favor of the dry north lands; in the eastern part of the State the beet grows larger, and there is more starch in it. In the western part of the State sugar beets are considered a profitable crop. (853.)

Virginia.—Mr. WEDDERBURN says some sugar beets have been grown near Winchester, Va., and he understands that the analysis of the beets sent to the Department of Agriculture was satisfactory. Mr. Wedderburn himself has raised some nice beets, but he knows of no sugar-beet industry in Virginia at present. He quotes Dr. Wiley as expressing the opinion that, except for the vicinity of Winchester, Virginia is rather out of the sugar-beet line. (625.)

Louisiana.—Dr. STEBBES says sugar beets have been tried everywhere south of the Ohio River, but can not be grown successfully in the South, the sugar content being insufficient. They can not be grown to advantage in Louisiana in the summer time because the heavy rains which make the sugar cane and rice profitable are very destructive to the sugar content of the beets, which weigh from 10 to 13 pounds in October and have less than 2 per cent of sugar. A number of experiments have recently been made with winter sugar beets, 1 year with very great success. They were planted in September and October and harvested in January, and beets were grown containing as high as 18 per cent of sugar, but the next year the frost of 1899 destroyed the crop. (774.)

Canada.—Dr. WILEY says an excellent quality of beet is grown in Canada, but on account of the early winter the time for harvesting is so limited that the industry has not proved so profitable as farther south, where the beets are not quite so good. (645.)

California.—Mr. TURNBULL states that an average crop of beets on good land in California is 12 to 15 tons per acre. Many growers obtain much more. The average cost of raising an acre of beets and delivering them on board cars or at the factory, including the seed and wages for all the work, is \$20 to \$25. Mr. Turnbull presents a table showing the production of beet sugar in the State from 1888 to 1899 in tons of 2,000 pounds. The crop in 1888 was 1,910 tons. It rose gradually to 35,280 tons in 1897. The production of 1898 is given as 18,086 tons and that of 1899 as 32,445. A note explains that the output for 1899 would have exceeded that of any previous

year if it had not been cut down by the drought where there was no irrigation, and that the yield hereafter will show a marked increase. (979.)

Mr. Turnbull states that the sugar beets grown in California run from 12 to 14 per cent sugar. There are now 8 plants in the State, representing an investment of over \$10,000,000. Ten years ago there were 2 factories. The machinery is partly imported and partly made in the United States. Mr. Turnbull does not know of any combination between the factories. (980, 981.)

Mr. Turnbull summarizes the advantages of California for beet raising as follows: Earlier maturity of the beet; earlier opening of the campaign; long season for harvesting; long run of the factory; greater yield per acre; greater per cent of saccharine; immunity from frost, and immunity from rain at critical periods. (979.)

Mr. NAFTZGER enumerates the following beet-sugar factories in California: The Chino and Oxnard establishments, both owned by the Oxnard Company; the Alamos, owned by Senator W. A. Clark; the Watsonville, Spreckels, Alvarado, and perhaps the Crockett are, he thinks, all owned by Mr. Spreckels. Mr. Naftzger is inclined to think that there is a sugar combination in California. The product of refined beet sugar in 1899 was 42,000 pounds; in 1900, 30,000 pounds; the crop was nearly a failure that year in southern California, where there are 2 large factories, because of drought. Mr. Naftzger thinks that the farmers engaged in beet raising have had uniformly profitable results except in that dry season. (950, 951.)

3. Ownership of factories.—Mr. SAYLOR testified in May, 1900, that the American Beet Sugar Company had 2 factories in California, at Chino and Oxnard, and 2 in Nebraska, at Grand Island and Norfolk, and was building a fifth. The remaining factories were entirely separate and independent. (590.)

Mr. SMITH has not heard of any beet-sugar trust. The Michigan factories work entirely independently and no organic combinations have been proposed. (582.)

4. Bounties.—*New York.*—Mr. ROGERS testifies that the New York bounty is 1 cent a pound on sugar from beets grown in the State that polarize 90 per cent or above. All the sugar made in his factory comes above the standard. The State appoints a weighman to weigh sugar and select samples to send to the State Chemist for analysis; his salary of \$5 a day is paid by the factory. (558.)

Mr. ROGERS goes on to say that the New York sugar-bounty act provided that the bounty should be paid for at least 5 years. The first year the appropriation was \$25,000; in 1900 it was \$50,000, and there was \$30,000 in the fund. The intention of the bounty was to aid the farmers. Factories would not pay \$5 a ton for all beets if they did not receive a bounty. Of the bounty fund \$7,500 is appropriated to pay 5 men, selected by civil-service examination, to go among the farmers and instruct them in the raising of beets. They visit each farmer who grows sugar beets 2 or 3 times during the season. It is an incentive to the farmer to take good care of his crop if he knows that some one is coming to look at it and compare it with those of his neighbors. It is not sufficient to publish pamphlets; the average farmer neither reads all that is published for him, nor follows all he reads; it needs someone to go into the field and show the farmers how to plant and cultivate the crop. (560, 561.)

Michigan.—Mr. SMITH testifies that the Michigan sugar bounty is 1 cent a pound for all sugar grown from beets grown in the State, for which the factory pays \$4 a ton for beets containing 12 per cent of sugar, with an addition for each additional per cent of sugar. (569.)

Bounties criticised.—Mr. SAYLOR says the bounties are never carried out; the contracts implied in the laws are annulled as soon as the factories are started and the money begins to be drawn from the treasury. In Michigan 8 or 9 factories have brought suit for their bounty. Nebraska has had the same experience; after two factories were started the next legislature refused to make the appropriation for the bounty, and the matter went into the courts.

Mr. Saylor also criticises State bounties as producing inequality among the States, and as unnecessary. He approves the offering of a small bounty for 2 or 3 years (since it takes a factory a year or two to adjust itself to conditions), but says any bounty offered ought to be national. (589, 590.)

Permanent bounties unnecessary.—Mr. ROGERS thinks the bounty has been necessary to encourage the beet-sugar industry in New York. The 500-ton plant at Lyons would not have been built except for the bounty, and he does not think his own factory would have been. He does not think the industry should be fostered continuously, however. (560.)

Professor KENZIE does not think a permanent bounty necessary. He thinks that a bounty of from one-fourth to one-half a cent a pound for 2 to 4 years would be sufficient to establish the factories, and that from that time on they would be self-sustaining. (543.)

Exemption from taxation in Iowa.—Mr. SAYLOR says the State of Iowa refuses to give

a bounty, but exempts all beet-sugar investments from taxation for a series of years. Mr. Saylor approves this as a practical means of encouraging the industry. (590.)

B. Methods of sugar-beet culture.—1. **Improvement of the beet by artificial selection.**—Dr. WILEY says all the varieties of beets now used for sugar production have been developed by selection and cultivation from the *Beta vulgaris*, the original beet growing wild along the European shores of the Mediterranean. The beet in its wild state is an annual plant, producing seeds the first year, but when carried to the north of Europe it became a biennial plant, the seasons not being long enough to produce seed. That is the keynote of its success as a sugar-producing plant, because as soon as it begins to produce seed stems the store of sugar begins to be consumed, and the beet becomes pithy and woody and loses its sweetness very rapidly. The tendency to reversion is still very marked in the south of Europe; in France Dr. Wiley has seen as much as 5 per cent of the beets in a field producing seed, but this is not enough to very greatly interfere with the sugar content. In Germany probably one plant in 200 will produce a seed stem, but will not mature it. The general principle, true both in Europe and in this country, is that the farther north the beet can be brought to its first stage of maturity—that is, the stage at which it is ready to produce seed—the richer it will be in sugar, because (1) the cooler summers repress the tendency to seed production, and (2) there are longer periods of sunlight during the growing season. The finest beets grown in Europe are produced in Russia, and the farther north in Russia the beets will mature the higher the percentage of sugar. The sections having the longest days in the growing season are best adapted to produce beets. (639.)

Dr. Wiley says the development of the beet in sugar content has been accomplished by selection from beets grown in the usual way from ordinary seeds such as are planted for producing beets for the factory. Perfect beets are selected and carefully preserved in silos to protect them from frost. In the early spring the silos are opened and each beet subjected to a chemical analysis by boring diagonally through it, thus getting an average representation of that beet. If it contains less than 15 per cent of sugar, it is thrown away or used for cattle food. If it contains 18 per cent, it is very high grade. If it shows 17 or 16 per cent, it goes into other grades. The beets are then set back in the ground by grades. The boring does not destroy their vitality. There is still enough plant food to produce seed. These seeds are harvested and planted the next spring, and the second year there is another crop of beets with a general tendency to a high average grade, though some may be very inferior. By continuing this process from year to year a type of seed has been secured which will grow a commercial beet with an average of 15 per cent of sugar. The seeds could not be produced commercially from analyzed beets, as they would be worth \$5 a pound; but one mother will produce the second year a hundred beets, which, if planted, will produce seed enough to produce a whole field full. By this plan the sugar content of the beet has been increased from 5 per cent to an average of 15 per cent within the last hundred years, and the beets are still improving, but the limit has been practically reached. It is doubtful if richer beets can be produced unless a better grade can be obtained, as in northern Russia. The great effort is to hold the beet up to its high grade. The moment it is neglected it begins to degenerate. It tends to go back to the type of its ancestors, just as human beings do if opportunities for culture are taken away from them. All the high-grade seeds have been produced from analyzed beets in the fourth generation only, after the growth of 2 crops. The beet seeds sold by European seed growers are grown from the mothers produced 4 years ago and analyzed. (641, 642.)

Mr. SMITH says the beet seed is a thoroughbred, and represents generations of careful selection. The normal content of sugar in beets is perhaps 5 or 6 per cent, and yet beets are produced testing 18 and 20. Poor beets are thrown out, and only those kept for setting out the next year which test above the standard, say 16 per cent. That process is repeated 5 times at least before seed is put on the market, so strong is the tendency to revert to the normal content of sugar. (579, 580.)

2. **Seed farms.** (See also *Sugar-beet seed station*, —, p. —).—Dr. WILEY says there is no beet-seed farm anywhere in this country, though there are places in California where seed is grown in a haphazard way without analysis. If that is continued the content of sugar will run down, and the people who use the seeds can not compete with those who use high-grade seeds. The production of beet seeds requires the highest degree of skill and labor and the greatest amount of patience of any agricultural profession. The beet growers of Europe do not grow their own seeds, not having the necessary experience and ability, but buy their seeds of great farms devoted exclusively to seed production, such as that of Strandes, at Zehringen, where about 1,000 acres are devoted to the production of seed alone, and the still larger

Kleinwanzlebener farms. Practically all the beet seeds planted in this country are imported from Europe. The growing of high-grade seeds for commercial purposes would require a large investment, and it would be 4 years before it would yield any return. (642, 644.)

Mr. SMITH testified in May, 1900, that American seed had not yet been used on a commercial scale in Michigan, but that some of the imported seed was very unsatisfactory in 1899, and that a systematic effort would be made in 1900 to begin the growing of seed near the Alma factory. This industry would employ a great many men and demand the highest talent. (573, 579.)

Mr. Smith is convinced by the Nebraska experiments that American-grown seed acclimated to our conditions produce better results than foreign seed. The installation of a plant to grow beet seed is so very expensive and the returns so long deferred that people hesitate to go into it until the beet industry is firmly established; but Americans will be obliged to raise their own seed, for restrictions will undoubtedly be put upon the export of seed from Germany as soon as the industry is sufficiently developed in this country to be a menace to the sales of German sugar. (580.)

3. Preparation of soil and use of fertilizers.—Mr. SMITH says that to avoid leaving the soil bare during the winter, and to prevent consequent leaching, the farmers are urged to subsoil early in the fall, plow the ground, and sow some crop, such as rye or oats; this crop is inverted in the spring, replotting, and the ground put in perfect condition. This makes the expense of plowing and harrowing large, but the success of the crop depends largely upon the condition of the ground when the beet seed is sown. (576.)

Mr. ROGERS says the Binghamton Beet Sugar Company has provided the farmers with seeds and fertilizers, which they have paid for with the crop in the fall. A special high-grade phosphate fertilizer has been prepared for the purpose, carrying about 4 per cent of nitrogen, 8 per cent of phosphoric acid, and 10 per cent of potash, all available, and costing \$31. Most of the farmers have used about 400 pounds to the acre; where no manure was applied they used 800 pounds to the acre. (556.)

4. Planting and thinning.—Dr. WILEY says at least 20 pounds of seed should be planted to the acre, and more where there are bad conditions at the time of planting, because it is highly essential that the beets should be thick in the row to prevent overgrowth and inferior quality. There should be a beet every 6 or 8 or 9 inches in the row, and to do this a great many more seeds must be planted. Four or five seeds are wrapped up together, but on account of their highly artificial character they have a low vitality and a great many produce no sprouts. (643.)

Mr. ROGERS says in his vicinity beets are sown during May, and in about 10 days or 2 weeks after they are sown, when they are 3 or 4 inches high, they are cut out with a hoe and then thinned by hand.

Mr. Rogers has found it more profitable to cut out the beets with a hoe than with a cultivator, as it requires very careful work. Little clumps of beets are left 6 or 7 inches apart, the roots of which are wound around each other; someone has to put his thumb and finger on the beet to be retained, and pull up the rest with the other hand. The most successful beet raisers are foreigners who are not afraid to work; Americans do not like to go down on their knees. (555.)

Professor KEDZIE, of Michigan, explains that sugar beets are planted with drills, using not less than 20 pounds of seed to the acre. Part of the plants are removed by cross cultivation and careful thinning, leaving only a single beet once in 8 inches. The use of too little seed results in blank spaces, causing the overgrowth of the surrounding plants and a smaller percentage of sugar. (547.)

Professor Kedzie is of the opinion that American implements for cultivating sugar beets are better than those imported from Germany, excelling in lightness, finish, and efficiency; they have less draft and require less manual exertion. (547.)

Mr. SMITH says the foreign cultivators and seeders have been entirely discarded. The American implements, both within and without the factory, are superior to the German. With the Moline seeders and cultivators 4 rows are sown at a time and cultivated at a time, but that cultivator has been discarded in Michigan for one cultivating only 2 rows. (582.)

Mr. Smith says that to thin an acre of beets planted in rows 18 inches apart requires the work of an active boy or woman fully 6 days. It involves creeping on the knees $5\frac{1}{2}$ miles; taking two rows at a time does not lessen the time materially. It seems hardly possible to Mr. Smith that any machine can be invented to take the place of the human hand in thinning. (574.)

Mr. Smith considers the thinning of the beets absolutely unavoidable. The fruit which is sown contains from 1 to 4 seeds, and often produces 4 plants. The Michigan Experiment Station has experimented to find some way to avoid thinning, but without success; the fruit was carefully broken up into separate seeds, but the seeds do

not seem to develop well except in the fruit. Mr. Smith advises the farmers to use the hoe for cutting out the beets, instead of depending upon the cultivator. (575.)

5. Harvesting.—Mr. ROGERS says the beets are loosened with a lifter made for that purpose or dug with a subsoil plow or ditch plow, or plowed out with an ordinary reversible plow. The tops have to be cut off by hand. It is important to cut off the crown at the base of the lowest leaf, as the crown contains a large percentage of salt, which retards crystallization. By returning the crowns and leaves to the soil more than half the fertility taken out by the beet is returned. They also make an excellent food for cattle. (557.)

6. Necessity of intensive culture.—Mr. SMITH says the growing of sugar beets demands far more careful methods of husbandry than those to which American farmers have been accustomed. It requires better cultivation and fertilization and the expenditure of more money per acre. It thus broadens the minds and the methods of the farmers. (578.)

Mr. SAYLOR mentions, as the first difficulty which every new sugar factory has to meet, the conservatism of those who undertake to apply in growing sugar beets the experience gained in growing other entirely different crops. Growing sugar beets, he says, is intensive farming or gardening, the very highest type of field culture. (585.)

Dr. WILEY says growing sugar beets is horticulture rather than agriculture, and ordinary agricultural rules will not apply. The chief misfortune of beet culture in this country has been lack of knowledge on the part of the grower and sometimes lack of willingness to bend his back and crook his knees. It is hard even for an intelligent man, if he has never seen beets grown, to prepare the soil and cultivate the beets properly. (644, 665.)

7. Rotation.—Professor KEDZIE says:

"The sugar beet is an exhausting crop when the whole crop is permanently removed from the land, because it takes off a large amount of potash and phosphoric acid and much organic nitrogen; but none of these materials are removed in the commercial product—sugar—which contains only carbon, oxygen, and hydrogen, a pure carbohydrate, the carbon coming from the carbonic acid of the air and the oxygen and hydrogen from the rain. The sugar is essentially condensed or organized wind, water, and sunshine. No amount of sugar removed from the soil can reduce its crop-producing quality."

He adds that the fertilizing substances are found entirely in the leaves, crown, pulp, and molasses. If these are all returned to the soil, directly or indirectly, there is absolutely no reduction of the productive power of the soil, but an increase of fertility year by year. This is probably the reason why France has increased its wheat acreage from 17 to 28 bushels since the introduction of the sugar-beet industry. In Germany the farmers are not allowed to remove the leaves and crowns of the beet from the field. In both countries the sugar beet is considered the best possible crop to precede a crop of wheat.

Sugar beets make an excellent preparatory crop, because of the thorough and clean tillage required, which subdues the soil and keeps out the weeds. The leaves and crown of the beets should never leave the farm; the pulp should be converted into beef or milk by feeding to stock; even the residual molasses should be fed to stock. (539.)

Professor Kedzie says that any crop grown in continuous succession is exhausting to the soil. Sugar beets in successive crops are more injurious to the land than wheat, which is a surface feeder, because they have a wider range for feeding and exhaust the soil to a greater depth. It has been found in France and Germany that thorough rotation of crops is essential for the raising of beets. They should be grown only once in 4 years. Professor Kedzie recommends clover for securing a supply of atmospheric nitrogen, and barley or some other grain crop to precede the beets. (539, 540.)

Dr. WILEY says beets can not be grown on the same land more than once in 4 years; hence to supply a factory requires four times as much land as is necessary to supply it for any one year. A factory of 500 tons daily capacity will require 12,000 acres of land. (646, 652.)

Mr. ROGERS testifies that he planted 40 acres of sugar beets in 1899, on 20 acres of which beets had been grown the preceding year. The yield per acre in 1898 was 14 tons, and in 1899 between 10 and 11 tons; but he attributes the decrease to the extreme dry weather. (556, 557.)

Mr. TURNBULL states that it is found advisable in the growing of sugar beets to practice a rotation of crops, planting one-fourth or one-third of the land in beets every year. It is the common experience that other crops give larger yields when they are alternated with beets. They get the benefit of the deep plowing and thorough cultivation which the beets require. (979.)

C. Conditions and results of beet culture in America.—1. **Climate and soils suitable for beet culture.**—Mr. SAYLOR, in charge of beet-sugar investigations for the United States Department of Agriculture, says the beet-sugar industry in the United States is governed by conditions of climate, soil, and moisture. (1) A temperature of about 70° during the growing months is the best climatic condition, and sugar beets want about 100 days of good growing weather. (2) Beets are successful on two kinds of soil—those found in the Mississippi Valley, New York, and Michigan, where the fertility is due largely to their alluvial nature, and that found in the Rocky Mountain region and Pacific coast, which is rich in mineral matter. (3) In the Rocky Mountain region sugar beets are grown by rainfall and by irrigation; the plant is started by rainfall, but its further growth must be promoted by irrigation. In the coast country of California, where sugar beets are grown most extensively, they seem to depend upon receiving a supply of moisture by seepage from the rainfall of the winter; and a drought in the winter produces a shortage of the crop. In New Mexico beets are grown entirely by irrigation. (583.)

Mr. Saylor declares the idea that sugar beets need a light, sandy soil to be an error, due to the fact that the industry started in Nebraska, where the soil around Grand Island and Norfolk is really too sandy. The soil must be penetrable and fertile. The taproot goes down from 8 to 12 inches for its moisture, and soil underlaid with hardpan or tending to become compact, like hard clay or muck, is not suitable. The sugar beet, after it has four leaves, is a very hardy plant. After it has attained its growth the one thing needed is sunshine, the entire product of sugar coming from the atmosphere and being produced by the sunlight. (584.)

Dr. WILEY says a soil containing the ordinary elements of plant food is satisfactory for beets. The physical condition of the soil must be considered in beet growth, more than the chemical composition. The beet must have room to go down at least 16 or 18 inches in the soil, or it will be stunted and ruined; so the soil must be pervious. A stiff clay is not good for beets unless very heavily limed to flocculate it, so as to make it pervious and easily penetrable. Stiff clay soils are better for cereals that feed near the surface than for beets; but Dr. Wiley has seen very fine beets in Europe growing on heavy clay soils liberally limed. The soil of Michigan is very well suited to beet culture on account of its sand. It is a sandy loam that does not bake. The soil of southern California is mostly deposit soil which does not bake, but remains pervious. (649.)

Dr. Wiley submits a provisional map of the United States, showing the southern limit of probable profitable sugar-beet culture, following the isothermal line of 71 degrees for June, July, and August. The map was constructed on theoretical principles more than 10 years ago, but the lines would be practically the same if it had been made in 1900. (644-646.)

Dr. Wiley says California and Michigan are now taking the lead in the growth of sugar beets. In California where the coast winds keep the temperature down in the summer fine beets can be grown wherever water can be obtained. Michigan is peculiarly well suited for beet growth, as are also northern Indiana, Iowa, Wisconsin, and northern Ohio. All of central New York and portions of New England where the land is rich enough and level enough also grow beets. Fine beets are grown on the mountains all through North and South Carolina, but the contour of the land is such that an area of level land sufficient to supply a factory can not be obtained. Dr. Wiley has found one place in Maryland and West Virginia where enough land could be obtained and where a factory would prove very profitable. (646.)

New England.—Mr. ROGERS says the soil of the Connecticut River Valley, and of the White River Valley, when free from stones, is as well adapted to sugar beets as that of New York; but there are not enough acres of suitable soil to the square mile. (559, 560.)

Michigan.—Professor KEDZIE, of the Michigan Agricultural College and Experiment Station, testifies that by reason of soil, climate, peninsular position, and the intelligence and energy of the people, Michigan is well adapted to the production of sugar beets. The lands adjacent to the Great Lakes and the southern half of the peninsula are adapted to the raising of all crops and fruits suited to the climate, and the intermingling of many kinds of soil and the porous character of the deposit fit the soil especially for tuberous crops. The Michigan soils are rich in the ash materials required by sugar beets, and they are remarkably rich in potash, which is in special demand for this crop. The water capacity of 28 samples of soil from counties fairly representing the sugar-beet districts averaged 47.4 per cent, showing the ability of the soil to withstand drought. In passing over the Great Lakes the winds receive a moistening touch, and the average rainfall in central Michigan is 32 inches; along the shores of the Great Lakes it is a little more. The average rainfall is abundant in May, June, and July, when the sugar beet requires plenty of moisture, and there

is abundant sunshine in August, September, and October, the critical ripening months. (538-540.)

Mr. SMITH, director of the Michigan Experiment Station, says the broad alluvial Saginaw Valley is undoubtedly the most promising section of Michigan from the standpoint of the sugar-beet grower. The water table is within a few feet of the surface. The soil has an abundance of constituents, and is friable and easily penetrated by the growing roots, resembling somewhat the valley of the Platte in Nebraska. Much of the land lately given over to sugar beets was formerly devoted to truck farming and gardening, which fitted both the farmers and the farms for the economical production of beets. Other sections of the State, also, are well adapted to the industry, though near each factory there are many farms too sandy and light for beet production in dry years without a system of culture to maintain a surface-soil mulch, and too many of these farms were selected for beets in the dry season of 1899. There is within reach of each factory an abundance of soil well adapted to beets, and not all the desirable locations for factories are yet occupied. (567.)

Semiarid region.—Dr. WILEY characterizes the region lying between the humid and the arid regions as very treacherous. The conditions in Dakota and Nebraska are favorable to beet growth on the average, but almost the most pronounced variation of meteorological conditions in the world prevails there. Hot winds from the west wither vegetation, and in October there is sharp weather with snow. These rapid changes are unfavorable to beet growth, and although two of the oldest factories in the country are in Nebraska, if the operators were locating factories now they would put them somewhere else; though now and then they get an excellent crop. The conditions in Michigan and northern Ohio and New York are uniformly more favorable than in Nebraska. In these localities the best results are found. The contour of the land is suitable to beet culture, and the soil is reasonably fertile. Samples averaging 15 per cent sugar of reasonable purity for a whole season have repeatedly been received from these regions. (647.)

Beet growing by irrigation.—Dr. WILEY says an arid region where water can be obtained is the ideal place for beet culture, other things being equal, because of the sunny days and the absolute control of the water conditions. In the humid regions there is nearly always a September rain, followed by warm weather, and a second growth will take place, greatly to the detriment of the sugar, and the roads will become muddy and interfere with the harvest. Dr. Wiley predicts that the sugar beet will be the most profitable crop that can be grown on irrigated lands; it will pay fixed charges on land worth \$300 an acre, about what irrigated lands cost, whereas wheat or Indian corn would not pay the interest on the investment. (646, 647.)

2. Cost of production and yield per acre.—Mr. SAYLOR says it costs about \$30 an acre in almost any region to produce an acre of beets. The expense is mostly for labor. (584.)

Mr. SMITH, with the cooperation of a large number of Michigan beet growers, has calculated the average cost per acre of growing beets, exclusive of fertilizers and rent of land, as follows: Plowing (usually subsoiling), \$2.50; harrowing, several times, \$1; seed, \$2.50; sowing, 50 cents; cultivating, 6 times, \$2.40; thinning and weeding and hoeing, \$8; pulling and piling, \$6; topping, \$6; drawing (average 2.5 miles), \$6; freight (17 tons, at 20 cents), \$3.40; unloading, \$1.13; total, \$35.43. (575, 577.)

Mr. Smith estimates that the yield of sugar beets in Michigan was about 10½ to 11 tons to the acre in 1898, and 6½ to 7 tons to the harvested acre in 1899. A large acreage sown in the latter year was not harvested. The season of 1898 was very favorable, and the industry was confined to areas specially well adapted to the growing of sugar beets. The diminished yield is attributed to the unfavorable weather conditions and to the use of land ill adapted to the purpose. (565.)

Professor KEDZIE testifies that the average crop of sugar beets produced on the Michigan Agricultural College farm was 14 or 15 tons to the acre, with a sugar content of 15 per cent. The rate paid being \$4 for 12 per cent beets and an increase of 50 cents for every additional per cent, these beets would be worth \$5.50 a ton. The cost of raising them was about \$30 an acre, leaving a very nice margin. Professor Kedzie instances a farmer who raised 20 tons to the acre, and got \$90 an acre for his crop. (542, 547.)

Mr. ROGERS testifies that it would pay to grow even an acre or two of sugar beets. (562.)

Dr. WILEY says the average yield of beets to the acre is about 13 tons in Germany, a little over 11 tons in France, about 10½ tons in Austria, and a less amount in Russia. He estimates that the average yield in this country since the industry started would fall below 5 tons to the acre. He saw thousands of acres in California in 1899 that would not yield a ton to the acre; now and then a field will yield 20 tons. He would

consider it fortunate for American farmers if they can begin at 10 tons for an average. He thinks we shall do as well as Germany in time, but not for many years. Dr. WILEY attributes the lower yield in this country partly to drought and partly to carelessness in culture. (664, 665.)

3. Sugar content of beets.—Mr. SAYLOR says a growth of 2 or 2½ pounds is what a factory desires in a beet; if it exceeds that weight it is coarse in texture and inferior in purity. Hence the factory, in contracting with the farmer, always stipulates that the beets shall not exceed a certain weight, and shall have a specific sugar content and purity. (584.)

Mr. SMITH submits tables showing in detail the results of the analysis of sugar beets grown in the various counties of Michigan in 1897, 1898, and 1899. Where proper seed was sown on suitable soil in 1897 the average percentage of sugar was 16.4, far exceeding that of the best districts of France and Germany, and the average coefficient of purity 84. The results for 1897 were based on selected specimens, while those for 1898 and 1899 were based upon average specimens, making an apparent decline in the percentage of sugar. (563-566.)

Dr. WILEY says it costs no more to raise beets containing 18 per cent of sugar than those having only 16 per cent, except that a little more fertilizer may have to be used. It pays the farmer and certainly pays the manufacturer to try to get the largest percentage in the beets, because every additional per cent of sugar means a clear yield of 20 pounds more sugar to the ton, the amount of waste in manufacture being even less with a higher percentage of sugar. (664.)

4. Success of foreigners and Americans compared.—Mr. SMITH says the Michigan Sugar Company, the first company to build a factory in Michigan, was fortunate in having as patrons an agricultural community composed largely of Germans and Hollanders, many of whom were accustomed to raising beets in their native homes, and were therefore intelligent in their methods, besides working on a soil adapted to the beets. The season of 1898 was favorable in most respects, and the harvest was abundant and the financial returns exceedingly satisfactory. Mr. Smith submits as examples of intelligent management and good soils in a favorable season the results obtained by 10 farmers in that vicinity, showing profits ranging from \$18.85 to \$57.08 an acre. The more intelligent the application of fertilizers and the cultivation of a good soil, he says, the greater the yield. (568.)

Mr. Smith says most of the sugar-beet growers about Holland, Mich., are Hollanders who have had previous experience in raising either beets or similar crops; most of them raised beets in Holland. They have large and thrifty families, and are not afraid to get down on their knees and work. (578, 579.)

Professor DAVENPORT testifies that the production of beet sugar has been very carefully studied in Europe and well worked out by scientists, so that the most skillful sugar-beet growers the world has known are from Germany, but when they come into competition with Americans the American is able to beat them. In Illinois, in 1898, the best men in several different localities formed a temporary company, and employed an expert from Germany to tell them how to grow beets. The next year one of the largest sugar-beet factories was built at Peoria, and the farmers in the neighborhood grew better beets than this company could grow with supposedly expert beet tillers from Nebraska and Germany. (263, 264.)

D. Advantages of sugar-beet culture.—1. **Maintenance of fertility.**—Professor KEDZIE quotes Sir Humphrey Davy as stating that the continuous production and exportation of grain leads inevitably to the destruction of fertility, but says that nothing of this kind takes place in the production of sugar, because the sugar contains no elements of fertility. (540.)

2. **Influence upon agricultural methods.**—Dr. WILEY says the establishment of the sugar-beet industry in any locality is a blessing to all forms of agriculture practiced there, because it demands a scientific and just system of culture. Sugar beets can not be grown without fertilization; the crop demands the most careful nutrition in the soil. If any crop will teach the American farmer to increase the fertility of the soil, the sugar beet is that crop, and there is no farmer in the world who needs that lesson as the American farmer does. The introduction of the beet will bring about the feeding of the soil in this country more than anything else possibly could. (647, 648.)

Mr. SMITH predicts that the industry will ultimately be a success, and a benefit to the farmer. When the farmers realize that their harvest depends upon intelligent fertilization and management of the soil, when they have sufficient confidence in the industry to put the necessary fertilizers and work on the crop, and when they realize that the yield is not to be phenomenal, they will, on the average, have successful crops. The crop will pay well and be a great benefit to the State, and the by-products will increase the amount of live stock kept. (580.)

Mr. ROGERS believes the beet-sugar industry will do more than anything else toward lifting up agriculture, but the farmer must have encouragement, and must be educated in the production of the crop. (561.)

3. Benefit to the dairy industry.—Dr. WILEY says in the sugar-beet industry a vast dairy industry is built up around the factory; the pulps and other refuse fed to cattle make fine butter and milk; but cattle can not live in the Tropics, and dairies can not be established there with the refuse of sugar cane. (564.)

4. Effect on the labor market.—Mr. SMITH testifies that the establishment of sugar factories in Michigan exerted a marked influence on the labor market. Employment was given to men, women, and children who would otherwise have been idle, and the congestion of labor in the cities was less conspicuous than in former years. No serious disturbance of the labor market resulted; there have been times in all of the factories when labor was scarce, and exceptionally high prices have been paid, but on the whole there has been a fair supply to meet the demand.

During June and July and again in October the sugar factories give rise to an active demand for persons able to do light work, hoeing, thinning, and harvesting the beets. The supply of such labor has been insufficient near most of the factories. The thinning and hoeing comes for the most part after the close of the schools, and the topping is finished soon after the beginning of schools in the fall. The period of thinning and hoeing lasts about 40 days, beginning early in June. The lifting and topping occur in September and October, and the hauling to the factory continues into January. The plan of furnishing employment in the fields during the summer months to the men employed in the factory in the late fall and winter was projected by one factory for the season of 1900. At Alma in 1899 men were brought from Detroit to aid in thinning the beets. (574.)

Mr. Smith adds that the thinning must be done at just about the right time, or it is more expensive than it should be; and there is therefore an active demand for boys and women at that particular season and again at the season of harvesting. The Polish women about Bay City, adopting the American custom, when they saw the supply was limited, formed a combination and raised the wages. (575.)

Dr. WILEY says the beet factory employs all kinds of labor, from the commonest to the most skilled. He is not an advocate of the employment of women and children in the culture of the beet, as is done in Europe. He believes that it will be possible to do with machinery practically all that women and children do in Europe, and at less expense. The thinning of the beets must be done by an intelligent hand, but it is perhaps the only operation in the agriculture of the beet which machinery can not attend to. The cultivation, harvesting, and even topping of the beets (cutting off the leaves and upper part which contains the largest part of injurious salts) he believes can be accomplished by machinery, though handwork is almost universal in Europe. The expensive part of beet culture, however, will be the thinning. There must be skilled laborers in the factory. In Europe the field hand usually becomes the skilled factory hand during the manufacturing season. In this way the industry gives employment practically the year round; during the only months when there are probably no agricultural operations going on, the factories are in operation, either working up the crop or elaborating the molasses. This gives stability to labor and avoids the migratory condition which so often attaches to agricultural operations, as in grain harvests. It gives an individual interest to the labor on the farm and in the factory, and thus establishes a better morale among the laborers; a more efficient corps of laborers is secured, and the industry tends to advance socially and economically.

A factory of 500 tons capacity will require a corps of about 120 efficient laboring men the year round, on the farm and in the factory, not including those who make the machinery and build the factories and repair them. As the average family consists of 3 or 4 persons, the beet-sugar factory supports a laboring population approximately equal to the number of tons of its daily capacity, and it would require 400 or 500 factories of 500 tons each to supply our present needs. The labor required is the very best and the business is educating. In Europe other manufacturers want to get men who have worked in the beet factories. (652, 653.)

5. Certainty of a market.—Mr. ROGERS declares there is no other crop open to the farmer from which he can be assure of realizing the pay for his labor and use of land as from sugar beets, because his crop is contracted for before he plants it, and he knows exactly what he is going to get. The hardest thing with the average farmer is to dispose of his crop after he has grown it. (557.)

6. Effect on the price of land.—Dr. WILEY says that wherever the beet-sugar industry has been established in this country the value of farm lands has rapidly increased, because the beet is a more profitable crop than those previously grown. He is sorry to say that the fertility of the land has not increased in like proportion. (648.)

Mr. SMITH says the establishment of the Michigan sugar factories has appreciably

increased the selling price of farms in their immediate vicinity and near all railroad stations within 40 miles of each factory except that at Rochester. At Bay City there was at the date of his testimony (May, 1900) a greater activity in real estate transfers than for many years before, and the net advance in real estate values could not be less than 15 per cent, while one very large farm had sold for the purpose of growing beets at an advance of 50 per cent, and another at an advance of 25 per cent. Land rented for beet growing for from \$5 to \$8 an acre. (573.)

E. Relations of sugar factories to beet growers.—1. Prices paid for beets.—Mr. SMITH says the price paid the farmer for beets depends upon the percentage of sugar in the beet, which in Michigan is determined by an analysis made at the factory by men appointed by the State. (581.)

Dr. WILEY says it is usual throughout this country to base the contract upon 12 per cent of sugar, with so much increase for each additional per cent; thus the farmer has a direct interest in growing beets with a high percentage of sugar. The high percentage is secured largely by using high-grade seeds and planting very thickly, so as to prevent the beets from exceeding a pound in weight. This same custom is practiced in most parts of Europe also, but in France beets are bought at a flat price. Wherever that has been practiced the tendency has always been to have a low grade of beets. The higher results have been secured only where the beets are paid for by the quantity of sugar they contain. (604.)

Mr. SMITH says one result of the adverse season of 1899 was a pressure upon the factories for a higher price for beets and for other concessions. The factories yielded to this pressure and raised the price for 1900 to \$4.50 a ton for 12 per cent beets, with an addition of 33½ cents for each additional per cent of sugar. (577.)

2. **Tare and marc.**—Professor KEDZIE says the most successful of the Michigan factories has been that of the Michigan Sugar Company at Essexville, near Bay City, which was first in the field and has been very wisely managed. There has been less friction with the farmers there than anywhere else. The manager gave directions that when questions arose the farmers were to be given the benefit of the doubt. There are two points in the relations of farms to factories where friction may arise: (1) tare, or reduction from gross weight as allowance for adhering dirt and insufficient removal of the crown of the beet; this is left much in the hands of weighmen, but is open to the direct inspection of the farmers, and some of the factories have offered to let the farmers elect their own weighmen; (2) marc, or deduction from the amount of sugar found in the beet juice for nonsaccharine solids, in order to determine the actual amount of sugar. The marc adopted by the chemical division of the Department of Agriculture, and generally agreed to by chemists, is 5 per cent, but a factory may select an arbitrary marc or use the unreliable alcohol method in estimating it. Professor Kedzie is informed that one factory has adopted a deduction of 16 per cent for marc. (544-546.)

Professor Kedzie says the question of cooperation of the farmers with the factories by agreeing to furnish beets and receive such a proportion of the product has been discussed. He thinks that if this could be carried out it would prevent strife. He thinks this system of cooperation has been tried very thoroughly in Germany. (546.)

Dr. WILEY says the beet is 95 per cent liquid (including solids in solution) and only 5 per cent insoluble solids. The insoluble matter (fiber or pith) is called marc, a French word which came into use with the French method of analysis. Polarization determines the amount of sugar in the juice, and if the juice represents 95 per cent of the weight of the beet, the proportion of sugar in the beet is ninety-five one-hundredths of the percentage in the juice. As beets are sold by the percentage of sugar they contain, it is important that a fair method of computing marc be agreed upon. The usual custom in this country has been to use the factor 0.95, assuming 5 per cent of insoluble matter. Dr. Wiley thinks this a fair rule, but there are variations in the marc. If the beet is grown at an exceptionally dry time, if it is exceptionally ripe, or if it contains a second growth, the tendency is to increase the percentage of marc. If the beet produces seed, almost everything left is insoluble. To establish a factor so abnormal as 0.88 and apply it to a normal beet, however, is unscientific and unjust. The advocates of a higher marc than 5 per cent state that in extracting sugar in alcohol (the uniform custom in this country) the marc is sometimes 8, 10, or 12 per cent; but alcohol dissolves sugar with great difficulty, and when the extraction is continued only the ordinary length of time a considerable percentage of the sugar is not extracted. There is another method of determining the percentage of sugar in the pulp without expressing the juice—by aqueous diffusion. By using a peculiar form of rasp an impalpable pulp is obtained, in which the cells have been ruptured. When this pulp is mixed with water the sugar content passes into solution and is polarized. This method has come into general commercial

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use in France in the past decade, and gives the correct percentage of sugar in every case. This method has been used in the laboratory of the Department of Agriculture. Dr. Wiley strongly advises its introduction for commercial purposes, especially under abnormal conditions, if the friction continues between the factories and the farmers. There were abnormal conditions in Michigan in 1899, and in many cases the marc may have amounted to 8 per cent, though that is hardly likely unless there was a second growth. In some instances factories may have had a just ground for increasing the marc, but it would be very unfair to apply the increase another year when the beets are normal. The actual percentage of marc for the normal beet is a little less than 5 per cent, so that in taking 5 per cent some concession is made to the manufacturer, and the farmer is in favor of letting it go at that. In Michigan, where the manufacturers were contending for 7 per cent and Dr. Kedzie and others for 5 per cent, Dr. Wiley finally said he would be willing to compromise at 6 per cent, but he considers this a little too high. To make the marc 14 per cent he characterizes as robbery, because such a condition would never occur in any field of beets. (662, 663.)

Dr. Wiley says the wise manufacturer will concede to the farmer a little more than may be just in order to help establish the industry properly; without successful agriculture nothing is possible. (664.)

Mr. SMITH says the Michigan Sugar Company and most of the Michigan factories accept 5 per cent as the normal marc, but the Alma and Bay City companies calculate it at 8 per cent, and in the western part of the State some of the factories have used as high as 10 or 12 per cent marc in dealing with individual farmers. This has caused a great dissatisfaction among farmers about Holland and Benton Harbor, and some have absolutely refused to raise beets. (571, 572.)

Mr. Smith says that in some of the factories the growers will nominate the tare men, and possibly have some voice in the selection of the weighman and beet tester, thus removing all grounds of suspicion except in the matter of marc. (578.)

Mr. TURNBELL states that each load or car of beets delivered to the American Beet Sugar Company at Oxnard, Cal., is tested for the percentage of sugar, and the farmers are allowed to employ a check chemist to verify the tests. (579.)

3. Beet growers' associations.—Mr. SMITH testifies that the beet growers about Bay City have organized an association for mutual instruction in the art of beet growing and for the purpose of securing better prices. The association was formed in the late summer of 1899, and held frequent meetings during the winter and spring. It was this organization which secured the increase in the price of beets. Similar organizations are formed for the western part of the State. (577, 578.)

4. Assistance to farmers.—Mr. ROGERS testifies that the Binghamton Beet Sugar Company the first year employed 4 men in the field all summer to instruct the farmers and get a complete history of every man's crop. This made it possible to tell the kind of soil and cultivation best adapted to sugar beets. (561.)

Mr. TURNBELL testifies that the American Beet Sugar Company, of Oxnard, Cal., furnishes the seed at cost, 12 cents a pound, deducting the amount from the first delivery of beets. The company also employs a number of agricultural experts, and advertises to give the growers the benefit of their knowledge as to the proper handling of the land, planting, thinning, harvesting, etc. (579.)

5. Transportation, storage, and pitting.—*New York.*—Mr. ROGERS says beets are hauled to Binghamton from distances of 75 to 100 miles. The season for running beet-sugar factories is about 100 to 120 days, beginning in New York the 1st of October. The Binghamton Beet Sugar Company provides storage sheds for the beets, all of which are received by the 1st of December. The factory has a capacity of 250 tons per day of 24 hours. It handled 13,000 tons in 1899, and contracted for about 20,000 tons for 1900. (553.)

Michigan.—Mr. SMITH says over 50 per cent of the beets are hauled to the factories on cars from stations up to 40 miles from the factory. Some factories pay the freight on the beets, and in some cases they are unloaded free of cost; in other cases the beets are received at any time, and the farmers not forced to pit them. (577, 578.)

Mr. Smith emphasizes the difficulty of the storage problem. Most farmers prefer to hold the beets and deliver them after the harvest. During the harvest they have large gangs of men, and they want to devote all their energies to getting the beets pulled up and pitted, hauling them to the factory at their leisure during the winter. It seems inevitable that the farmer must deliver his products in installments as called for by the factories, because of the bulkiness of the crop and the limited capacity of the beet sheds which a factory can construct. To keep the beets from thawing after freezing they must be buried, and the cost of pitting them and afterwards removing them from the pit with pick and shovel has deterred many farmers from beet growing. To obviate this difficulty the Benton Harbor factory undertook in 1900 to

receive beets as fast as farmers could deliver them or to pay the expense of pitting. (576-578.)

6. Cooperation and collective ownership.—Dr. WILEY declares that the interests of the manufacturer and farmer are identical. If a manufacturer wishes to get the advantage of the farmer, he is cutting his own throat, and the farmer who wants to get the best of the manufacturer is defeating his own interests. Success is a benefit to both. These things have adjusted themselves in Germany largely through cooperation. About one-half of the beets grown in Germany belong to farmers who have shares in the factories. In the year 1894-95 the area under cultivation was 1,090,801 acres, or 441,441 hectares. The yield of beets was 32.9 tons per hectare, or 13.3 tons per acre. Of this crop 41.64 per cent was grown by the factories and 58.36 per cent was bought by the factories. These percentages vary slightly from year to year, but represent very closely the relative magnitude of the cooperative beet growth as compared with the total magnitude of the industry in Germany. Dr. Wiley says it is evident that if such a system of cooperation could be established in this country it would be very much more satisfactory both to the farmers and to the factories, inasmuch as the former would be factory owners. He believes that in the course of time the cooperative factory will be a very large element in the industry in this country, and that it is the best solution of the difficulty, though it is a little hard on outside farmers, because the cooperative factories pay a very low price for beets. In Germany all the cooperative factories pay less for beets than the noncooperative factories. (663, 664.)

Mr. SMITH says a large share of the stock of the Holland Sugar Company is owned by farmers in the vicinity of Holland. (572.)

F. Manufacture of beet sugar.—**1. Number and capacity of factories.**—Dr. WILEY submits a list of the 30 beet-sugar factories in operation in 1899, showing a total capacity of 19,100 tons daily, of 6 factories building in May, 1900, and of 5 other companies organized and having factories projected either for 1900 or 1901. The factory at Crockett, Cal., refines the Hawaiian sugar in addition to its local business. Most of the factories have a capacity of about 500 tons. Dr. Wiley explains that the capacities given are maximum capacities, which are rarely reached, because with the complicated machinery there is seldom 24 hours of uninterrupted work. The real working capacity may be estimated at about two-thirds of the maximum capacity, or between 12,000 and 15,000 tons daily. The probable yield in 1899 was about 65,000 or 70,000 tons. Dr. Wiley estimates the production for 1900 with a favorable crop at nearly 100,000 tons. (650-652.)

Dr. Wiley says the average size of our factories is larger than in Europe. The largest factory in the world is at Salinas, Cal., with a capacity of 3,000 tons of beets daily. The factories are operated only from 60 to 120 days a year. (640.)

Mr. ROGERS thinks that sugar can be made at a minimum cost in a factory with a capacity of 500 tons a day. The cost of a 500-ton plant is about \$500,000. (558, 559.)

2. Location of factories.—Mr. SMITH says that in selecting sites for beet-sugar factories it was necessary to consider not only the attitude of the farmers and the quality of the soil, but an abundant and pure water supply and transportation facilities, upon which depends the cheapness of coal and limestone. (567.)

Mr. SAYLOR says that on the Pacific coast the beets are planted in some places in February. Some of the factories are so fortunately located with reference to the variance in the time of harvesting in the surrounding valleys that they have a long time for the manufacturing campaign, beginning as early as August. In the Mississippi Valley, Michigan, and New York the harvesting begins about the middle of October and is done all at once. (583.)

Mr. WHITNEY says two sugar factories have been closed within the last 2 or 3 years, because located on lands containing alkali. (869.)

3. Employment of experts.—According to Mr. SAYLOR, business men know nothing about the process of making sugar, and very little about the markets for sugar. They must depend upon an expert in manufacturing until experience has given them the necessary information. (586.)

Mr. SMITH says that while it was necessary at the outset to employ experts from abroad, Americans are rapidly learning the business, and the American factories will soon be manned throughout by Americans. The employment of foreigners as laborers and as superintendents has not been entirely satisfactory. The West Bay City factory imported a large number of Bohemians and Austrians in 1899, but they were shipped back to Europe at the close of the campaign. Several of the Michigan factories were planning to employ American labor almost exclusively in 1900. (570, 571, 573.)

Mr. SAYLOR says there are two factories in California where foreigners accustomed

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to the labor are employed, but the rest of the work is done largely by Chinese and Japanese. (590.)

4. American and imported machinery.—Mr. ROGERS testifies that the machinery used by the Binghamton Beet Sugar Company is partly French and partly American. There is a duty of 45 per cent on the imported machinery. Some manufacturers in this country have been making as good machinery as can be made in France, but some German concerns make as good machinery as is made in this country. (558, 559.)

Mr. Rogers testifies that the sugar factory at Rome has ceased operations, the proprietors having bought a plant in Canada; but a company was organized at Lyons, Wayne County, in the spring of 1900, which took the contracts that formerly had gone to Rome. The foreign machinery used in the Rome factory was very unsatisfactory. It took 105 days to work up 9,000 tons of beets. (558.)

Professor KEDZIE says the machinery for the manufacture of beet sugar made in the United States is unquestionably better than the German machinery. The factories at Essexville, near Bay City, at Rochester, and at Alma are equipped with American machinery, and have turned out sugar of most excellent quality. (543, 544.)

One manufacturer, however, used German machinery and employed a German chemist, producing some very miserable sugar, which injured the general confidence in the Michigan product.

Mr. SMITH, director of the Michigan Experiment Station, testifies that the sugar made in the 9 Michigan factories in 1899 was generally a prime article, but at the date of his testimony (May, 1900) there was a lawsuit pending between one of the companies and the builders of its factory, who had put in German machinery adapted to the manufacture of sugar for refining purposes and not for the market. The president of the company had succeeded in selling the sugar to refining companies and elsewhere to very good advantage, so that the financial loss was not very great, but unfortunately much sugar was sent to Chicago which was off color, and the people who had formerly bought the product of the Michigan companies without question at once became suspicious, and would buy no sugar from Michigan without examination. The reputation of all the Michigan factories suffered from the output of this one factory. (569.)

Mr. Smith says the West Bay City Sugar Company has suffered great financial loss because the German machinery in its factory was not capable of extracting the proper amount of sugar. The beets yielded only 124 pounds of sugar to the ton of beets for which the factory paid an average of \$4.33½ a ton. (570.)

Dr. WILEY says the United States is still far behind in the culture of the beet, though we have the best beet-sugar factories in the world and experts are coming from all over Europe to study them. Our constructors are quicker to adapt themselves to exigencies than the European machinists, and have made better machines, a great many of which are now being used in Europe, especially the centrifugals, or drying machines, which are recognized everywhere as the best in the world. The first American factories imported every piece of machinery they contained, but some of the best factories in this country to-day have no imported machinery; though some forms of machinery, such as the slicers, are still imported to some extent. The boilers, centrifugals, evaporating pans, vacuum pans, and driers are all of domestic manufacture. Dr. Wiley is informed that one of the factories equipped almost entirely with imported machinery for the crop of 1899 and 1900 replaced it with American machinery for the crop of 1900 and 1901. (640.)

5. Extraction of juice.—Dr. WILEY says that in making the analysis to determine the amount of sugar in the beet only a portion of the juice is extracted, but the juice which remains has practically the same composition. No machine will express all the juice; an ordinary press will not take out more than 50 or 60 per cent. That is the reason the press can not be used in commercial operations, as in the case of sugar cane. A good strong sugar mill properly adjusted will take out from 80 to 82 per cent of the juice which the cane contains, but no press will extract that much juice from the beet. (602.)

Mr. SMITH submits a table showing for each of the 9 beet-sugar factories in Michigan the quantity of beets sliced and the amount of dry granulated sugar produced in 1899. The product varied from 124 to 182.1 pounds of sugar to the ton of beets.

Mr. Smith says the construction companies claim that their factories ought to extract 10 per cent of sugar, or 200 pounds to the ton, but Mr. Smith has never been in any factory east of California that claimed to get as much as that, and the Michigan factories come very far short of it. The Michigan Sugar Company, in order to get 182 pounds, had to modify the temperature in the diffusion batteries in a way the German operators knew nothing about. (569, 570.)

Mr. Smith explains that the amount of sugar reported refers to the amount of crystallized A No. 1 granulated sugar. There is also some second and third run sugar which reduces the loss somewhat. Mr. Rogers says the second and third run is not obtained in most of the Michigan factories. Mr. Smith thinks the percentage of sugar recovered will increase. (581.)

6. By-products.—Pulp.—Mr. SAYLOR says there is no feed known equal to beet pulp for dairy cows and for fattening steers, or for sheep, lambs, mares, and hogs; but few farmers appreciate its value and few of the factories are able to realize much from it. In California whole dairy districts, running train loads of milk into San Francisco, have been established solely because of ability to secure this pulp at a price of \$1 a ton. (587.)

Mr. ROGERS says that the Binghamton Beet Sugar Company at first gave the pulp to the farmers, but after about a month charged 25 cents a ton, and only a small part of the product was taken. In 1899 the company charged 50 cents a ton and could have sold three times the amount produced. Mr. Rogers has found 60 teams in line waiting to be loaded, and many of them would wait all day. The company now gives beet growers special accommodations for getting pulp. Mr. Rogers says the pulp is one of the best milk-producing foods he knows of, and is worth more than \$1 a ton to any farmer who has dairy cows to feed. Some farmers have paid that much freight on it. (554.)

Professor KEDZIE says that in Michigan the pulp was at first given away to the farmers, and the factories even ran it out on cars so as to dump it into the farmers' wagons. At Bay City they are trying to form a company for drying the pulp so that it can be carried to a distance and sold as cattle food. Professor Kedzie thinks the farmers of Michigan have been sufficiently awakened to the value of this pulp in connection with other food for fattening stock. In Nebraska it has been used very largely for feeding stock, and the most delicious and juicy beef has been made out of pulp and prairie hay. The pulp also increases the flow of milk. It can be siloed and will keep better than common corn ensilage. (548.)

Mr. SMITH says the supply of by-products at Bay City is so large that only a small percentage is utilized for feeding live stock and for fertilizers, but he has found a growing feeling among the farmers in that vicinity in favor of feeding the pulp to cattle, and many teams were engaged up to late in the spring of 1900 in hauling it away. Farmers were preparing to make ensilage of it, and relied upon it largely as succulent feed for dairy cows and pigs. The molasses, rich as it is in potash, is never wasted in Michigan. The slaked lime is being used as fertilizer on lands needing it near all the factories. (573.)

Mr. Smith, testifying in May, 1900, said the Bay City Company was installing a plant for drying the pulp and mixing it with molasses to make feed for cattle. The bulk of the product was already sold for export at a nominal advance over the cost of production. It contained 16.9 per cent of protein and a high percentage of carbohydrates. (571.)

Mr. SAYLOR says that in Germany the pulp is dried and prepared for the market as flax-seed meal and other products are in this country, and sells in the feed stores for about 60 per cent of what these products bring. (586.)

Mr. TURNBULL, of California, states that both the beet tops and the pulp are valuable food for sheep and cattle. A yield of 15 tons of beets to the acre leaves 6 or 8 tons of green tops on the field, and the company gives the grower half the weight of his beets, $7\frac{1}{2}$ tons, in pulp, at 10 cents a ton, on cars at the factory or on wagons at the factory loading chute. Mr. Turnbull presents a table giving the value per ton and the value per acre of beet pulp, beet tops, alfalfa hay, barley, barley hay, and barley straw. The value per acre of the beet pulp and tops together is given as about \$25, while the value per acre of a crop of barley hay is given as \$18, of a crop of barley, grain and straw together, \$27.75, and of alfalfa hay \$48. The beet tops are best utilized by bringing cattle or sheep upon the fields as soon as the beets have been carted away. The droppings remaining on the land contain nearly all the mineral plant food of the tops. (979, 980.)

Molasses.—Mr. SAYLOR says that in Europe alcohol, vinegar, and shoe blacking are manufactured from the molasses, but in America thus far it is a loss. One of the problems to be worked out is that of extracting the actual sugar from the molasses, giving it a greater value than it has as a by-product. (587.)

Dr. WILEY submits a statistical table showing Germany's production, importation, utilization, and exportation of molasses since 1871, and a statement explaining the various processes employed. (657.)

Mr. ROGERS says that in 1899 he began distributing molasses to the best farmers, and it was fed to cattle and horses with excellent results, by pouring it on the hay or grain. The molasses is about 50 per cent sugar and 5 per cent potash, and is very

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fattening. In Germany much of the molasses is made into alcohol, but less than formerly because it is used as a food product. The Binghamton company can not afford to make it into alcohol and pay a tax of \$2.10 upon it. It is rated as grain alcohol; if it could be put in as wood alcohol, on which there is no tax, the company could afford to make it. (554.)

7. Branch factories.—Mr. SAYLOR says the factory at Lehi, Utah, has established a substation known as a rasping station, where the juice is extracted from the beets and pumped to the central factory through a pipe line 30 miles long. A second substation nearly as far away was being established in the spring of 1900, and several pipe lines were contemplated in case these should prove successful. Mr. Saylor says the success of these experiments would tend to revolutionize the sugar industry, making it possible to locate a factory at some point favorable on account of its facilities for fuel, shipping, water, etc., and subfactories at other points, thus bringing them into close relations with the farmers. (585, 586.)

G. Sugar cane.—**1. Production.**—*Louisiana.*—Dr. WILEY says we use in this country 2,000,000 tons of sugar yearly, and produce about 300,000 tons of all kinds. The Louisiana production fluctuates greatly, averaging probably 200,000 tons. In the winter of 1898-99 the temperature fell to 13 degrees, practically killing all the cane in the State. Louisiana is not far enough south for cane sugar, and is entirely too far south for beet sugar. Texas has produced cane sugar, but its production is unimportant. Florida is hardly to be considered as a cane-sugar country, at least until the swamp lands are drained. Dr. Wiley thinks the production of cane sugar in the United States is more likely to decrease than to increase. Cane is now planted in Louisiana practically every 2 years; in Cuba it is planted once in 15 years, and fields are frequently harvested for 50 years. (649.)

Dr. STUBBS estimates the sugar-cane production of Louisiana for 1901 at 300,000 tons, though he says it should have been 400,000 tons. The crop of 1897, the largest ever made, was over 340,000 tons; but the crop of 1898 was damaged by a very wet fall and that of 1899 by a very destructive frost. (772.)

Mr. SAYLOR testifies that the cost of producing sugar in Louisiana is considerably higher than in the tropical islands, Cuba, Hawaii, and Porto Rico being more natural cane producers, and wages being higher in Louisiana. (589.)

Cuba.—Dr. WILEY declares that Cuba is the natural sugar-producing country of the world; that no other country can compare with it. He prophesies that if Cuba is prosperous and has a suitable government it will in 50 years produce 3,000,000 tons of sugar a year, but first immense forests must be subjugated, railroads built, and marshes drained. As Cuban sugar comes in German sugar will stay out. The maximum production of Cuba in the past has rarely exceeded 1,000,000 tons. In 50 years the United States will eat at least 6,000,000 tons of sugar yearly, so that there will be the same necessity for domestic production that exists to-day, even allowing for the most favorable development in the tropical regions. (653.)

Hawaii.—Dr. WILEY says Hawaii also is a garden of cane, but nature has prevented any great expansion, and practically all the land in the Hawaiian Islands capable of growing sugar is under cultivation. In the yield per acre Hawaii exceeds Cuba; an almost incredible yield of 14 tons of sugar to an acre of land has been obtained. (654.)

SAYLOR testifies that the leading plantation of the Hawaiian Islands produces 10.1 tons of sugar to the acre, a larger average than some States make from beets, but for all the islands the average is about 5 tons to the acre. (589.)

British possessions.—Dr. WILEY says that though the British are better farmers than the Spanish they have never been able to compete in their West Indian possessions with Cuba in producing cane sugar, and to-day the sugar industry in the British West Indies is bankrupt. The West Indian Commission thoroughly investigated the question, with the result that the home government gave several hundred thousand pounds to keep the industry from becoming exterminated. If necessary, science with the sugar beet can destroy the natural sugar plant of the Tropics. (654.)

Dr. Wiley says that, with all the agricultural skill of the British and their fertile lands in the Barbadoes and British Guiana, their sugar industry has gone to the wall in competition with the beets of Europe. Dr. Wiley suggests that at some future time Hawaii and other cane-producing countries may also feel the effect of this competition. (654.)

2. Methods of cultivation.—Dr. WILEY says sugar cane is not susceptible of scientific improvement, as the beet is, though it can be improved a little by selection. Cane is produced to a limited extent from seed, but the joints of cane so produced are planted just as the old cane is, and the possibilities of improvement in that manner are limited. (653, 654.)

Dr. STUBBS says triennial rotation is usually adopted in Louisiana. The land is first planted in corn and laid by in cowpeas. The cornstalks are cut, and the peas are plowed under with large 6 or 8 horse plows and the land immediately put in cane, which is planted in September, and from that time until March. The stubbles are allowed to bear another year. At the end of the second year the land is plowed and put back in peas, which give a nitrogenous crop of 120 to 125 pounds to the acre, thus supplying the fertility of the soil. Some planters, particularly in the extreme southern part of the State, employ a quadrennial rotation, leaving the fields in stubbles 2 years. A few great sugarhouses make "succession cane" (that is, they plow up the cane and plant again at once); but only when they require all the cane their lands will produce. This practice is extremely wearing to the soil, because the cane is a great nitrogenous crop. (774.)

3. Sugarhouses.—Dr. STUBBS testifies that the sugarhouses of Louisiana represent an investment of \$100,000,000. They are up to date in every respect, and fully equal to any in the world, not excepting those of Hawaii. Dr. Stubbs believes that the full equivalent of the profits made in the sugar industry in Louisiana since the war has gone into the reconstruction of these sugarhouses, in order to increase their capacity and diminish the expense. Sixteen years ago a sugarhouse with a capacity of 200 tons of cane a day was considered a marvel; now several take from 1,500 to 2,000 tons a day. It formerly required 40 or 50 hands to put the cane on the carrier in a mill of 200 tons capacity, but now the whole wagonload of cane is lifted by machinery into cars that are run alongside the carrier. Thus 2 or 3 men will feed the carrier with 1,500 or 2,000 tons a day.

The sugar interests of Louisiana have been economized by increasing the capacity of the sugarhouses. A sugarhouse with a capacity of 1,500 tons of cane daily can produce sugar much more cheaply than one of 200 tons capacity, because the same amount of intelligent expert labor is required in either case. The vacuum pan, discharging 300,000 pounds of sugar daily, can be operated by one man just as easily as the one at the experiment station, where only 2,500 pounds are produced. Improved machinery has saved the sugar industry. (771.)

4. Molasses from cane sugar.—Dr. STUBBS says that until a few years ago the molasses from the sugarhouses which exhaust the sugar had no sale, and was thrown into the streams. The introduction of tank cars has made it possible to realize a profit from the molasses. The tank cars are brought up to the sugarhouses and the molasses pumped into them and shipped to Chicago, Toledo, Buffalo, and elsewhere, to be mixed with glucose and sold as molasses. One barrel of Louisiana molasses and 3 barrels of glucose make 4 barrels of nice Louisiana sirup, and Louisiana imports almost 3 times as much glucose as is sold of the finished Louisiana molasses.

A great deal of the molasses is fed to stock. It is worth more as feed than the commercial price of 3 to 5 cents per gallon, but the planters make from 3 to 5 times as much as the stock can consume.

In the open-kettle sugarhouses, where probably one-fifth of the product of the State is still made, after evaporation in an open vessel, the sugar is clarified very thoroughly and put into hogsheads and drained, the drainings constituting open-kettle molasses, worth from 30 to 50 cents a gallon unadulterated, or \$1 a gallon when mixed with white glucose. The great demand for this molasses keeps alive the open-kettle sugarhouses.

The molasses, after being mixed with glucose, sells throughout the country as Louisiana sirup, and goes into retail consumption for eating. Upon analysis it is easily detected, because glucose is a right-polarizing sirup, and mixed molasses frequently polarizes 104 to 105, whereas the maximum for pure sugar is only 100, showing that it contains corn sirup, which consists of glucose, maltose, and dextrin, all 3 of which polarize heavily to the right, making the polarization of the mixture to the right larger than that of sugar. (774, 775.)

5. Louisiana sugar planters.—Dr. STUBBS says the sugar planters of Louisiana are perhaps the most intelligent body, as a rule, in the world. They are wealthy, thoroughly educated men—a cosmopolitan people who came to Louisiana and invested their capital in sugar plantations. While they were educated in many lines, they were not all well advanced in sugar methods, and early felt the necessity of information of that kind. (781.) (See also *Sugar experiment station*, E, p. cxxvii.)

Dr. Stubbs says the profitableness of the sugar crop depends largely upon the man managing it. There is more in the man than in the land. The economical and intelligent administration of a good sugar estate frequently brings profits where other estates fail. (773.)

H. The maple-sugar industry in Vermont.—Mr. SPEAR, manager of the Vermont Maple Sugar Association, testifies that out of 50,000,000 pounds of maple

sugar produced in the United States, the census credits Vermont with 15,000,000 pounds. New York produces the next largest amount, and Ohio produces about 6,000,000 pounds. Some 22 or 25 States produce more or less maple sugar. The industry means to the Vermont farmers an income of from \$1,000,000 to \$1,500,000 a year, and is as important to them as any line of industry they are engaged in, except dairying. The income from sugar is practically so much added revenue. The sugar season of about 3 to 6 weeks comes at a time when there is not very much else to be done. The sugar-making season is a time of considerable social interest. Nearly every sugar camp has its sugar parties of young and old. The maple groves are used for pasturage to a considerable extent; the growth of maple trees does not prevent the production of considerable feed for stock. New orchards have been planted in a few sections, and this ought to be done more. They mature sufficiently to be utilized in 35 to 40 years. A great many trees have been planted by the roadside, serving for shade as well as for sugar. The average product of a maple tree varies from 1 to 5 or 6 pounds; 3 pounds is a fair average. It is not advisable to have more than 30 or 40 trees to the acre. When they are 50 years old the product should be about 100 pounds of sugar to the acre. The price varies from 5 to 15 cents a pound.

Mr. Spear says the maple-sugar industry has undergone great changes in the past 40 or 50 years. The sap used to be boiled out of doors in a caldron kettle, where charcoal and leaves could get in. Maple sap is almost as susceptible of contamination as milk, and the best operators now handle it with as much care. If it is exposed to the air it loses its delicate flavor and its light color. It is evaporated in sugarhouses immediately after being drawn from the trees. It takes about 10 or 15 minutes for the sap to flow from one end of the evaporator to the other, and it should be boiled rapidly enough to be drawn as sirup when it reaches the farther end. A large amount of sugar, however, is still made carelessly and exposed to bad atmospheric conditions. (405-407.)

1. Commercial aspects of the sugar question.—1. World's production of sugar.—Dr. WILEY testifies that the world's production of sugar is probably 7,000,000 tons, of which more than 4,000,000 tons are produced from beets, practically all on the continent of Europe. (638, 639.)

2. Consumption in the United States.—Mr. SNOW testifies that the annual consumption of sugar in the United States is about 4,000,000,000 pounds, or 2,000,000 tons, of which nearly 1,700,000 tons are imported. (241.)

Dr. STRUBBS says rice and sugar can not be overproduced for years to come. The sugar crop is only one-seventh of the country's consumption. Our present consumption of sugar is a little over 2,000,000 tons, of which only about 300,000 tons are produced in Louisiana. (773, 782.)

Mr. ROGERS says the consumption of sugar in this country is about 80 pounds per capita, and is increasing every year. Three-fifths of all the sugar we are now consuming (May, 1900) is beet sugar. (562.)

Dr. WILEY says the consumption of sugar per capita in this country is between 62 and 65 pounds. In England it is between 72 and 75 pounds. The consumption is greatest in England, a great deal being used for preserving jams, marmalades, etc., largely for exporting. The consumption on the table is greater per capita in this country than in England. (650.)

Dr. Wiley says the United States is now consuming 2,000,000 tons of sugar, and predicts that in 10 years the consumption will be 3,000,000 tons. If the sugar from our 2 tropical possessions were brought in free there would still be a shortage in the supply, and it would take years to reestablish the industry in Cuba and the Philippines to anything like its former extent. It will be necessary to continue the importation of beet sugar from Europe or to extend our own industry. Dr. Wiley believes that for 50 years we shall need from 500,000 to 1,500,000 tons of beet sugar annually. (649.)

Mr. SAYLOR says the demand for sugar increases at a very rapid rate. He thinks the annual increase for the last 30 years, according to statistics compiled by Dr. Wiley, has been 12 per cent. We can consume all the sugar we can produce and all we are likely to import from our island possessions for a long time. (589.)

Mr. ROGERS testifies that Binghamton, a town of from 45,000 to 50,000 inhabitants, expends \$500,000 a year for sugar. The Binghamton Beet Sugar Company has made something over \$100,000 worth a year; 3 such factories would not be able to supply Binghamton alone. (555.)

3. Imports.—Dr. WILEY says the imports of foreign beet sugar for the year 1898 amounted to 800,000 tons, while the production in the United States was about 50,000 or 60,000 tons. The import duty amounts to about 1.8 cents a pound. The imports of sugar from Cuba were formerly 1,000,000 tons; after the rebellion broke out, up to the time of the Spanish war, they fell to less than 200,000 tons. (653.)

Mr. SAYLOR says the Hawaiian Islands have been sending to this country about 250,000 tons of sugar annually, of which about 50,000 tons have been going around the Horn to the Eastern coast, the rest being absorbed by the Pacific coast and Missouri Valley trade; in 1899 the shipment was 282,000 tons. He estimates the maximum production of the Hawaiian Islands at about 450,000 tons annually; but this increase will involve a much higher cost, due to the necessity of growing sugar on higher lands, requiring a greater elevation of water for irrigation, and to increased wages. Porto Rico has been producing about 60,000 tons (and is probably capable of doubling that amount) and sending us about 5 per cent of our present consumption. Cuba is capable of a large output. (587, 588.)

Professor KEDZIE testifies that the supply of sugar from the West Indies and from the Philippines was cut off during the war, and that nearly all produced in the Sandwich Islands is used up on the Pacific coast, while that produced in Louisiana is no more than sufficient to supply that and the surrounding States. The great bulk of sugar consumed in this country of late has therefore come from Europe, and is produced from the sugar beet. (544.)

A director of the Michigan Sugar Company told Mr. Kedzie that his factory would produce 6,000,000 pounds a year, and that 7,500,000 pounds were required for the needs of the counties of Bay and Saginaw. The use of sugar, Professor Kedzie says, is constantly increasing. (543.)

Mr. SNOW testifies that before the reciprocity treaty of 1876 Hawaii produced about 20,000,000 to 30,000,000 pounds of sugar a year, and it was insisted that she had reached the limit of her production, but from that time on the sugar production of Hawaii increased by leaps and bounds, until the United States alone has imported 500,000,000 pounds in a year. Mr. Snow thinks this has undoubtedly been a detriment to the sugar industry of the United States. If the American sugar growers had been given the full benefit of tariff discrimination, they would have rapidly grown to a point where they could furnish a much larger proportion of the sugar. (241.)

The Philippine Islands export nearly 600,000,000 pounds of sugar in some years, of which the United States has never taken a very large share. If the duty were suddenly taken off, Mr. Snow deems it reasonable to suppose that practically all the sugar grown in the Philippines would come to the United States, and the production would be stimulated as it was in Hawaii. If this sugar were admitted duty free to the United States, the greatest sugar market in the world, the amount grown under the present shiftless methods would be sufficient to supply all the people living west of the Missouri River. If the production of the Philippines increased only 10 times, as that of Hawaii increased 24 or 25 times after the limit was supposed to have been reached, the Philippines could send us enough sugar to supply our whole demand. (241, 242.)

4. Tariff on sugar.—Dr. STUBBS says there has been a tariff on sugar ever since the introduction of cane into Louisiana in 1794, before Louisiana was admitted to the Union. During the Monroe Administration, 1812–1815, the duty was 5 cents a pound, and the only time sugar has been on the free list was during the bounty period. During the first year of the war the tariff was lowered to one-half a cent, the lowest it has ever been. (773, 774.)

Dr. WILEY says we have a countervailing duty on beet sugar; that is, the duty is increased on imports from countries giving an export bounty (e. g., Germany) by the amount of the bounty. (653.)

Professor KEDZIE, of the Michigan Agricultural College, thinks the sugar tariff should be continued. If it were removed, while Europe still offers export bounties, we should have cheap sugar, but no large production of sugar. It would be disastrous to cut the price of sugar down below the cost of production here. Ultimately, however, with the industry thoroughly established and with harmonious action between the farmers and factories, we should be entirely independent of the tariff. (543.)

Mr. SAYLOR predicts that the sugar industry will develop very rapidly in this country if free sugar is not admitted from our tropical islands until it has had a proper chance to get started. Mr. Saylor favors the tariff, if constitutional, because the cost of production is such that the islands can pay a fair tariff and still afford to make sugar. Moreover, the American Sugar Refining Company and the combinations which control the sale of sugar have contracts with the planters of Hawaii to refine their sugar and put it on the market, sharing in the profits at a stipulated rate. Mr. Saylor understands that the same thing is true with reference to Porto Rico; hence the only interests benefited by free sugar would be the producer and the company mentioned, and the planter in Porto Rico is, as a rule, a foreigner to both Porto Rico and the United States. (589.)

Dr. WILEY has never had any fear that the American sugar industry would be

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ruined by free sugar as a result of the Spanish war. He declares that the admission free of duty of every pound of sugar made in Porto Rico, Cuba, and the Philippines would not affect the progress of the sugar-beet industry in this country. There would still be a deficit to be supplied. We should still have to import sugar, and the duties on sugar imported from other places would probably remain the same as now and would tend to fix the price. It is not an unmixed evil to have a low price on an agricultural crop, because (1) it increases consumption, which tends to restore prices, and (2) it teaches economy in manufacture. If Louisiana people had been told a few years ago that they would have to sell their sugar at 2½ cents they would have held up their hands in horror, but they are doing it and making money. They had to change their agriculture and manufacture, and it has been to their benefit; they are in a better position than when they got twice the price for their product. (654.)

5. *Cost of producing sugar at home and abroad.*—Dr. WILEY estimates that sugar can be manufactured in Germany for 2½ to 2¾ cents a pound, exclusive of the tax, and in this country, under the best possible conditions, for perhaps 3 cents a pound. The actual cost in this country has probably been greater than that, because many unfavorable conditions have obtained, the business being new. (655.)

Dr. Wiley believes, however, that American machinery is so much more efficient than European, and fuel is so much cheaper and more economically used in this country, that we can make beet sugar almost, if not quite, as cheaply as it is made in Europe to-day, although we pay far more for beets and for labor. (640.)

Mr. SAYLOR says capitalists hesitate about investments until they know what policy is to obtain with reference to our new possessions, where it is understood that sugar can be produced very cheaply. Porto Rico can produce raw sugar and send it to this country for about 2 cents a pound; the tariff is \$1.68 per hundredweight. The cost of refining is about 65 per cent on the west coast and 55 on the Atlantic, making the cost of raising sugar in Porto Rico and placing it on the market here, refined, something over 2½ cents. In Cuba the cost is probably very nearly the same. In Hawaii there are factories that can produce sugar much more cheaply, but the cost of production and transportation to this country averages about \$40 a ton. In this country the cost of beet sugar ranges from 3 to perhaps 3½ cents a pound. Very little is known about what it can be produced for when the farm laborers and factory experts are all thoroughly trained. (587.)

Mr. Saylor says the only thing that gives Porto Rico, Cuba, the Hawaiian Islands, and the Philippines their great advantage in the production of sugar is the low cost of labor. In Porto Rico unskilled labor is 30 cents a day, without board, and skilled laborers, such as brick masons, carpenters, etc., get 60 cents a day. In Hawaii sugar has been manufactured largely by contract laborers, chiefly Japanese, at \$12.50 to \$15 a month, without board, the employer furnishing living quarters, medical attendance, etc. Similar wages were paid the Japanese and Chinese in California 20 or 25 years ago, but under the operation of Chinese exclusion and other influences they now receive about \$30 a month. There is now, however, a very noticeable tendency toward increased wages in Hawaii, and one of the great problems is where to get labor; Chinese immigration has been stopped. Probably wages will increase to about what is paid on the Pacific Coast, in which case it will cost as much to produce sugar in Hawaii and place it on our markets as it now does to produce beet sugar in this country. (585.)

Mr. Saylor adds that the tendency toward increasing wages applies also to Porto Rico and Cuba, where strikes for the 8-hour day and stipulated wages have been stimulated by emissaries of organized labor from the United States. (588.)

Mr. Saylor thinks that the cost of production will be reduced every year in the United States, while it will be increasing in Hawaii, Porto Rico, and Cuba. He considers the sugar industry a perfectly safe business to engage in. (588.)

6. *Price of sugar.*—Mr. WEDDERBURN understands that the sugar combination is all in the hands of one party, and that prices are raised and lowered at will. A few years ago sugar retailed at 5 cents, then went up to 6 and 6½, and in June, 1900, was selling for 5½ and 6 cents, according to the quantity purchased. (624, 625.)

Dr. STUBBS testifies that the price of sugar ("off whites" and "yellow clarified") has fallen in 16 years from 10 cents to 4 and 4½ cents a pound. (771.)

7. *Raw and refined sugar.*—Dr. WILEY says all the beet-sugar factories in this country, with one or two exceptions, make refined sugar and are totally independent of the sugar trust. There are one or two factories controlled by Mr. Spreckels that make raw sugar and send it to his refinery in San Francisco. (655.)

Professor KÄPPEL testifies that the Michigan factories produce sugar ready for the table, hence it does not have to pass through the hands of the sugar trust. He considers deliverance from that monopoly one of the best things to be secured from the enterprise. (543, 544.)

Mr. ROGERS testifies that the Binghamton Beet Sugar Company made granulated sugar the first year, but in 1899, owing to the sugar war, the difference between the price of yellow sugar and granulated sugar was less than one-half a cent, and the entire product of the factory was sold to the American Sugar Refining Company. If the difference were over half a cent, it would pay the factory to do the refining. (553.)

Mr. Rogers adds that the difference in cost between the granulated sugar and raw sugar is very slight, and it pays to equip a sugar factory for refining. The Binghamton Beet Sugar Company is not in the hands of any trust, because it is equipped to refine its own sugar. (559.)

Dr. STUBBS says the Louisiana sugarhouses have been forced to refine sugar because of the lack of competition in the markets. The American Sugar Refinery is the only buyer; hence few sugarhouses are unprepared to refine sugar when the prices for unrefined sugar are unsatisfactory. Dr. Stubbs thinks it is probably not best for the sugarhouses to refine sugar ordinarily, but says it is decidedly more profitable to refine it than to take whatever they can get from one purchaser. Whenever the trust will pay a fair price for 96 centrifugals, it is easier and more profitable for the sugarhouses to sell them, but whenever the price falls below such a point as will leave a profit they refine the sugar and put the refined sugar on the market. The so-called trust has no contract for the sale of the output of Louisiana, as is the case in the Hawaiian Islands, where several planters contract to make 96 centrifugals at a given price during the season. (771, 772.)

Dr. Stubbs explains that the process of granulating sugar consists simply in running the "off whites" through a revolving drum, where it is steam dried, preventing the cohering of the particles, or caking. A dozen or more sugarhouses in Louisiana granulate the sugar, but, as the Louisiana crop is consumed in a few months, it is not found profitable to granulate, because the "off-white" sugar will sell readily and will keep a few months without getting lumpy. Yellow clarified sugar is a refined sugar, very similar to "coffee A." It has a light-golden tint, which is given it artificially in the sugarhouse, and it meets all the requirements of ordinary family consumption. (771.)

8. Sugar from different sources compared.—*Cane and beet sugar.*—Dr. WILEY says beet sugar is not so well adapted to preserving as cane sugar. He predicts that the great use for cane sugar in the future will be for preserving, while beet sugar will be largely employed for ordinary table use. Beet sugar must be absolutely pure before it can be used, while cane sugar, to Dr. Wiley's taste, is a good deal better in its raw state; he knows of no sugar so good as the old-fashioned yellow Louisiana sugar, while unrefined beet sugar is so bitter it could not be eaten. There is no chemical difference between cane and beet sugar, but beet sugar, after being put away in a bottle for a week, gives an unpleasant odor, while cane sugar has a delightful aromatic odor. A beet-sugar factory smells like a soap factory, because the sugar contains a large amount of potash and some fat; while a cane-sugar factory has an aroma like a garden of roses. It is impossible to distinguish between the two kinds of sugar, however, in sweetened coffee and cake. (650.)

Professor KEDZIE attributes to the sugar trust the suspicion that beet sugar is not good for preserving, which he considers groundless. (544.)

Sorghum.—Dr. STUBBS says sugar is never made from Louisiana sorghum. It has been attempted, but found impossible. (775.)

9. Future of sugar production in America.—Dr. WILEY says the United States has a marvelous climate, with great possibilities of development, and, from an industrial point of view, the development of the sugar industry is worthy of consideration. (654.)

Mr. SNOW says we have every facility for sugar production in this country, but if the industry is not favored its development will be very slow. We have been 200 years in building up the iron industry. With anything like the same fostering care the sugar industry could be built up in a much shorter time. Eventually the United States will make its own sugar, and the sooner this comes about the better for all concerned. In the end, beet sugar will more than hold its own against cane sugar. In European countries, where the beet-sugar industry has been built up by the fostering care of government, beet sugar has entirely crowded out cane sugar. Mr. Snow objects to the admission of foreign sugar duty free. (241, 242.)

Mr. BRIGHAM, Assistant Secretary of Agriculture, says that it would be possible for this country to supply all the sugar it needs by means of beets. The pulp left after the sugar has been made can be profitably fed to cattle and the sugar would be largely pure profit. Nevertheless, if sugar can be raised in our new possessions for 2 or 2½ cents per pound, it might not be profitable to grow beets for sugar. (22.)

Mr. SAYLOR says we are only on the threshold of the introduction of this industry,

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and mentions the possibility that we may some time be able to export sugar. (586.)

Mr. ROGERS has estimated that it would take over a million acres to produce the sugar consumed in the United States. Devoting this area to sugar beets would take it out of competition with other products, leave at home the money now spent abroad for sugar, and give employment to the unemployed. (561.)

XI. THE NATURAL ENEMIES OF AGRICULTURE.

A. Insect pests.—1. **The multiplication of injurious insects.**—Dr. HOWARD, Chief Entomologist of the United States Department of Agriculture, says that injurious insects were noticed as soon as man began to grow crops. The prophet Joel, whom Dr. Howard characterizes as an agricultural pessimist, mentioned several insects, including the grasshopper and the palmer worm. As agriculture has become more extensive, insects have found conditions more favorable for rapid multiplication. The cultivation of crops in enormous fields is particularly favorable to the increase of insects. In Europe, where the holdings are smaller and culture more intensive, less trouble is experienced than in this country. In the older agriculture of the South the caterpillar and bollworm were extremely injurious in cotton fields of from 500 to 1,000 acres, and the planters could not spray with ease. Now, with much smaller fields and more diversified agriculture, the conditions for the multiplication of insects are not nearly so good.

Dr. Howard says there is a certain balance in nature which has always been preserved, and in the state of nature each species seems to take care of itself pretty well; but man, by his extensive cropping, has disturbed the balance of nature, and the enormous multiplication of injurious insects seems to be an effort of nature to restore the original balance. (759.)

Professor BAILEY, of Cornell University, says that the insects and diseases which the farmer has to fight are more numerous and more serious than formerly, because of the introduction of new pests through commerce, and because of the greater variety of crops, the greater extent of crops of one kind, and the fact that the natural breeding places in the woods and fields are being eliminated. On the other hand, the farmer has more resources for the conflict than he had a generation ago. Much of the work of the experiment stations has been directed toward overcoming natural difficulties. In most cases the farmer has a recourse for the destruction of pests. Indeed, Mr. Bailey asserts, in another connection, that diseases and insects are under better control than they were 100 years ago. (1006, 1013.)

2. **Economic importance of insect pests.**—Dr. HOWARD estimates the annual loss to crops from the ravages of insects at about \$300,000,000, and says that live stock also suffers severely from insects. The farming class does not lose the amount stated, because of the enhanced price of the remainder of the crop when there is a widespread insect pest, but that increase in price means an economic loss to the country at large. Dr. Howard quotes Dr. James Fletcher, the Dominion entomologist of Canada, as saying that the United States leads the world in economic entomology, and that the damage to agricultural products by insects would probably be twice as great as it is were it not for the labors of economic entomologists. The General Government spends \$30,000 a year in supporting the Division of Entomology in the Department of Agriculture, and 30 of the 45 States have State entomologists who are investigating insects and publishing bulletins. At the foundation of the Department of Agriculture not a single reliable remedy was known for any injurious insect. At present there is a fairly good remedy for every insect of economic importance.

Dr. Howard says agriculture sustains the greatest loss from the codling moth or apple grub, the Hessian fly, and the chinch bug. He estimates the annual loss from these insects at \$60,000,000. (753, 754.)

3. **Insects injurious to grain.**—*Hessian fly.*—Dr. HOWARD says the Hessian fly is thought to have been brought to this country in the straw bedding of the Hessian soldiers in the Revolutionary War. This explanation has been disputed, however, and the matter can not be decided at this late date. (756.)

Dr. Howard says that an early strip of wheat is sometimes planted as a trap crop to allow the Hessian flies to concentrate, and the bulk of the wheat is planted later. Dr. Howard thinks this trap strip the best remedy yet found for the Hessian fly. Several of the State entomologists are working on that line, stimulated by the recent losses from the Hessian fly. One of the experts in the Division of Entomology is also devoting his entire time to the Hessian fly, and expects to publish a bulletin giving the results of his study. No extermination of the Hessian fly is to be expected, but a study must be made of the weather conditions and the probabilities of early or late falls in each locality. In bad years there must be some alteration of the method of

cropping. The study of crop conditions and the possibility of variation in the method of cropping is a very important point in economic entomology. (758.)

4. Wheat weevils.—Dr. HOWARD says that all the insects that are injurious to stored grain are cosmopolitan, because grain goes all over the world. There are several species of grain weevils. The one known as the fly weevil in this country is not strictly a weevil; it is a moth which lays its eggs in the grain. Where grain is stored in bulk a very satisfactory remedy is the evaporation of bisulphide of carbon on top of the grain. The vapor is heavier than air, and sinks down to the bottom of the grain and destroys the insects. Hydrocyanic acid is now being used against a new grain moth, known as the Mediterranean flour moth, which is becoming prevalent in this country. (758.)

Chinch bug.—Dr. HOWARD says the chinch bug is a difficult insect to get rid of. Almost the only feasible remedy is to attack it when it migrates from the wheat field to the neighboring corn fields, about the 1st of July. Much interesting experimental work has been done in Kansas with diseases of the chinch bug. Fungous diseases were propagated in the laboratory, and, under certain conditions, when the laboratory cultures were put out in the fields the disease was communicated to the bugs and they died in great numbers. This had to be done in very damp weather, however. The Division of Entomology has published a bulletin on the chinch bug by the Ohio entomologist, Professor Webster. (758.)

Grasshopper.—Dr. HOWARD says the migratory grasshopper bred in arid places in the foothills of the Rocky Mountains, and migrated to the fertile portions of Kansas and Colorado. They could live only one generation in the lower country. They could breed successfully in such enormous quantities only in their permanent breeding grounds, and the conditions brought about by the settling of the arid regions made that district unfavorable for their unrestricted multiplication. To this fact Dr. Howard attributes the nonrecurrence of the Rocky Mountain locust since 1876. He says the damage done nowadays by grasshoppers in the West is by the local non-migratory species. Once in a while a swarm of migratory grasshoppers will come down from the Assiniboine country and settle in North Dakota or Minnesota, but it is promptly stamped out. About 7 or 8 years ago a large swarm settled in Ottertail County, Minn. The Governor of the State authorized the purchase of several carloads of petroleum and certain destructive apparatus, and the State authorities, with the aid of the county officials, quickly wiped the pest out. When the young are hopping around a large sledge covered with kerosene is dragged over the ground and the grasshoppers light on the kerosene and are killed. Another remedy is late fall plowing, which breaks up the eggs and throws them out where the birds can reach them. There are migratory grasshoppers in South America and South Africa, where they also go down from the arid breeding ground to the cultivated land, and the same methods of extermination are used against them that are used in this country. (759.)

Dr. Howard says experiments are being made with a fungous disease brought from South Africa, which is used there against migratory grasshoppers. In localities in Colorado and in Mississippi it has been found that the disease has been readily communicated to healthy grasshoppers, and they died in great numbers. (758.)

5. Insects injurious to cotton.—Dr. HOWARD says the cotton-boll weevil is alarming Texas cotton growers very much. It has spread until it is now damaging some of the best cotton-growing regions in the State. A small sum has been appropriated for the investigation of this insect by the Division of Entomology, and the State of Texas has appointed a State entomologist to investigate it. It is a Mexican insect, but is gradually spreading northward, being perpetuated by the voluntary stalks of cotton which grow through the winter where there are no heavy frosts, and are cultivated because the Galveston board of trade offers a large sum of money for the first bale of cotton. Recent developments seem to show that it migrates north of the frost line, and perhaps it manages to survive the winter in small numbers, so that it may become much more serious than was anticipated; but it is still uncertain whether it will spread north of the line of heavy frosts. (757.)

Dr. Howard says the cotton-boll worm is a very serious evil in some parts of the South, but the planters get rid of it by diversified crops, and by using corn and cow peas as trap crops. The cotton planter now has a very good remedy for the cotton caterpillar, or army worm, which feeds on the leaves of the cotton plant; namely, an application of paris green. (757.)

Mr. HAMMOND, a cotton planter of South Carolina, says that the use of paris green, introduced through the Agricultural Department, has been very effective against insects injurious to cotton on the sea islands and the Mississippi bottoms. In the uplands there is little trouble from insects. The boll weevil has been seriously destructive in Texas, but the people seem to have been quite successful in restricting it. (833.)

6. *Insects injurious to tobacco.*—Dr. HOWARD says tobacco is attacked by the big horn worm, a very large green caterpillar, and also by a little beetle which eats holes in the leaves. The boll worm of cotton also attacks tobacco, and a new enemy has recently been discovered in the split worm, an extremely small caterpillar, which mines between the upper and lower surfaces of the leaf. Planters get rid of all the leaf-feeding caterpillars now by spraying with paris green, and experiments have shown that the paris green does not stay on the leaf. The idea is now being adopted that it is desirable to allow solanaceous weeds to grow, belonging to the same family with the tobacco plant. If they are allowed to grow before the tobacco comes up, all the tobacco insects concentrate on the weeds and are easily destroyed. This is known as using weeds as a trap crop. (757.)

Dr. Howard says that hydrocyanic gas is used against the cigarette weevil, which does great damage to tobacco. In the fall of 1900, in a large tobacco warehouse in Baltimore, it was found that hundreds of cases of tobacco were affected by this weevil. The tops of the cases were removed and the building was fumigated with this gas under police protection, because the gas is extremely poisonous. The fumigation killed the rats and mice which infested the building, as well as the weevils. (758.)

7. *Insects injurious to fruit.*—*San Jose scale.*—Dr. HOWARD says that insects have a certain range, governed largely by temperature, elevation, etc., and that some localities are protected to some extent from insect pests by climate. The San Jose scale, for example, which has been the basis for all State legislation on insects for the past 10 years, will not flourish where there is less than a certain amount of summer heat. This insect, which is one of the worst enemies to orchards, is at its worst in Maryland and Virginia, but is not so numerous in central New York and does not flourish in Michigan. It is present, however, in most of the fruit-growing States. It is found in Massachusetts, Connecticut, Rhode Island, and all the eastern and central States, and also in California, Washington, Oregon, and Idaho, but is not found in the group of States running from Iowa and Kansas west to California. The pest continues to spread, because, while 21 States have passed rigid inspection laws providing that no nursery stock enter the State without inspection, the States which have not passed such laws have become dumping grounds for infested nursery stock. (754.)

Dr. Howard says the San Jose scale was first discovered in this country near San Jose, Cal., and is thought to have come from Japan. It spread all over California, and was considered the most destructive scale in existence. It spreads almost entirely on nursery stock. About 1889 some Japanese plum stock was imported into New Jersey, and the scale was carried East on that stock, but was not recognized or called to the attention of entomologists in the East until 1893, by which time it had been distributed all over the Eastern States. When this was discovered the fact was widely published, and the States began to pass inspection laws preventing the entrance of nursery stock without inspection. In some States a certificate is required to the effect that the stock has been exposed to the fumes of hydrocyanic acid gas. In California a wash of lime, sulphur, and salt works well in dry weather. In the East a very strong solution of whale-oil soap and water is used; where that is not efficacious the use of crude petroleum on sunny days is now advocated. (755.)

Mr. CLOHAN testifies that it was discovered in 1895 or 1896 that the San Jose scale had been sent into Berkeley County, W. Va., from New Jersey, and infested 3 of the fruit farms. One of the infested orchards was in the hands of a progressive farmer, who has been constantly fighting the pest ever since, and has kept it in check, with no danger of spreading from his orchard, though he has not completely eradicated it. Another man neglected it, and the orchards all around him became infested. Apples, plums, and currant bushes were destroyed by the scale. If there had been a law giving some one authority to order the destruction of the trees, the pest could have been eradicated at very slight cost; now it exists in about 20 localities in the county. With the aid of the experiment station the farmers have held a meeting and subscribed funds to buy materials for treating these orchards. All this could have been prevented if there had been a law to prevent the sale of nursery stock unless it had been fumigated. The scale can be destroyed by fumigation in air-tight fumigation houses with hydrocyanic acid. The most effectual way to eradicate it where it obtains a hold in the orchard has been found to be by thorough spraying with crude petroleum, but if one spot on a tree is left untouched, and there is a scale there, it all has to be gone over again the next season. Some of the farmers in Berkeley County have used as much as 20 barrels of petroleum. (801.)

Other scales.—Mr. NARTZGER says the San Jose scale affects the pears, peaches, plums, prunes, etc., of California. The citrus fruit growers of southern California are not annoyed by it, but the citrus fruits are affected by the cottony cushion scale, the red scale, and the black scale. The cottony cushion scale has almost been

destroyed by the Australian lady bug, which was imported and propagated in California. The only satisfactory protection against the red scale so far is fumigation. (952.)

Mr. Naftzger says the Department of Agriculture has rendered California fruit growers assistance toward the extermination of the scales, but the chief work has been done by State horticultural commissions. Men have been sent abroad to study the pest destroyers of almost all fruit-growing countries. California has a very effective State law for subduing pests. (953.)

Codling moth.—Dr. HOWARD says the greatest apple-growing regions suffer the greatest loss from the codling moth. Certain sections, such as Michigan, western New York, and parts of Virginia, which formerly suffered great loss, have reduced the loss by the general introduction of remedies—first, the banding of trees and then spraying. (754.)

Mexican orange maggot.—Dr. HOWARD says he has on two occasions sent 2 men all over Mexico to investigate the Mexican orange maggot, and they found it in oranges in all parts of Mexico except in the State of Sonora, west of the Sierra Madre Mountains. When so many orange trees were killed in Florida in 1896 maggots were found in the Mexican oranges on the hotel tables. California fruit interests are greatly in fear of the introduction of this maggot, and want the Federal quarantine bill passed so that a quarantine can be established against Mexican oranges. The Mexicans say that the danger is overrated, and that this is simply an effort of the Californians to avoid the competition of Mexican oranges. Dr. Howard considers the matter very important, and believes that the American fruit grower should be protected. He thinks that the maggot will thrive wherever oranges grow. (756, 757.)

8. *Gipsy moth.*—Mr. STOCKWELL says the gipsy moth was brought from a foreign country by a scientist in Medford to improve on the silk worm. Professor Shaler, of Harvard, told him the danger, and an attempt was made to destroy them, but some escaped, and a few years later the people of Medford were at the statehouse saying that their houses and walks were covered with caterpillars that rendered life unbearable. The caterpillars multiply in large numbers and eat every green thing. A commission was appointed, but did not work satisfactorily, and the work of suppression was thrown upon the Board of Agriculture, which has spent \$1,100,000 in the work. In 1900, however, no appropriation was made for the purpose. The pest was under control, and in a few years would have been entirely wiped out. An investigating committee found that there was not a single large colony extant. (902, 903.)

Mr. Stockwell predicts that the State of Massachusetts will spend four times more money in suppressing the gipsy moth in the next 15 years than it would have cost to exterminate it, and at the end of that time the cost to individuals, State, and nation will have only begun. Though every reputable entomologist in the country urged forward the work, the leaders in State legislation believed it a fad. (903.)

Mr. Stockwell says many birds and some insects prey upon the gipsy moth, but not to any great extent. (903.)

Dr. HOWARD says the State of Massachusetts for some time appropriated \$150,000 to \$200,000 annually for the work of the gipsy moth committee, but in 1900 the legislature refused to make any more appropriations, and although the insect had been reduced to almost harmless numbers it is now beginning to spread again. It has not yet gone far outside of the old limits around Boston, but is very close to the New Hampshire line. Several years ago Senator Lodge introduced into the United States Senate an amendment to the agricultural appropriation bill appropriating \$40,000 to assist Massachusetts in the work of exterminating the gipsy moth, but the House did not concur in the amendment. Dr. Howard thinks that as the insect does not spread very rapidly it would be well to wait a year or two so as to judge of the rapidity of its spread before the Federal Government takes the matter up. (755.)

Dr. Howard explains that the gipsy moth spreads by the traveling of the caterpillar and by its being carried, e. g. by wagons, railroad cars, etc. Dr. Howard fully expects that if the State of Massachusetts does not resume the work of extermination the gipsy moth will in a few years be found in the surrounding States. (764.)

Mr. STOCKWELL predicts that when the gipsy moth covers the country it will be the greatest pest ever brought to America; it does far more damage here than in the Old World. Now that Massachusetts has given up the work it must be made national. An effort in that direction has been made by Congressman Thayer, and a committee was sent to Washington some years ago. Though a particularly dangerous insect, the gipsy moth can be exterminated if attacked at once. The female moth never flies, but remains near the place where it emerges; it lays 600 eggs on an average, and then dies. The pest, therefore, does not spread rapidly. The extermination of the gipsy moth is a matter that ought to be continued by the National Government, for the benefit of the whole country. (902, 903.)

9. Brown-tail moth.—Mr. STOCKWELL testifies that the brown-tail moth infests a considerable area in the eastern part of Massachusetts and is doing a great deal of damage. A strong effort is being made by Cambridge and other cities and towns to get rid of it by destroying the nests. It began in a very small territory, but spread constantly, and as the female flies over the country, extermination soon became impossible. The nest can be destroyed in the early spring; after that spraying is the only remedy, and it is hardly effective. (903.)

10. Clover-seed midge.—Dr. HOWARD testifies that the clover-seed midge does great damage to the clover crop. This insect has two generations, and the adults of the first generation issue just about the time when it is usual to cut the first crop of clover, so that they are able to lay their eggs and destroy the seed crop when it comes up. By advancing the time of cutting for hay a week or two the insect is absolutely destroyed, and this is now the general custom in Ohio. (758.)

11. Hop-plant louse.—Dr. HOWARD says the hop-plant louse, which annihilated the hop industry of Wisconsin and occasionally destroys the crop in New York, was brought to this country on imported plants. (756.)

12. Defoliation of shade trees.—Dr. HOWARD says there are three or four species of caterpillars that defoliate shade trees in all parts of the country, besides the imported elm-leaf beetle. In the moth stage they are nearly all strong flyers, and hence banding the trees is of absolutely no use as a remedy; if the band has any effect it will simply prevent the caterpillars from coming down. The elm-leaf beetle larva, however, descends to the ground to transform, so that many of them are caught; but the best remedy against this beetle is to spray the trees with some arsenical mixture and pour hot water around the trees after the larva comes down. In general there is no good remedy for the caterpillars that defoliate shade trees except spraying with an arsenical mixture. Dr. Howard says it should be the duty of every park commissioner of every large city to have a motor spraying apparatus and to have the trees sprayed at the proper time of the year. This has been done by the city of New Haven to save the large elms there, and has also been done in Central Park, New York, and Prospect Park, Brooklyn. It is very inexpensive. Dr. Howard says that in Washington, D. C., the superintendent of gardens and grounds sometimes sprays the trees in the parks after the insects have about disappeared, but even if he sprayed at the proper time it would be of very little use, because the parking commission does not spray the street trees, which the superintendent of gardens and grounds has nothing to do with, and which in some cases are very near trees in reservations, so that the insects can fly across the intervening space. The same difficulty occurs in certain other cities. Dr. Howard says the trees in the parks and the trees along the streets ought to be under the control of the same man or board.

The silver maple is one of the trees which is most affected by insects, being the favorite food of two or three of the most prominent of the shade tree caterpillars. The Norway maple is much better in that respect, and the oaks are very free from insects. The box elder is one of the worst trees that could be planted. The gingko tree, of which there are a great many specimens in Washington and Brooklyn, is the best shade tree from the standpoint of freedom from attacks by insects.

With care and the expenditure of a little money it is possible to keep these insects in check and ultimately suppress them entirely. The caterpillars are apt to do rather less injury in dry seasons than in damp seasons, being held in check by little gauzy-winged parasitic insects which can not fly in damp weather.

Dr. Howard says that in Washington, D. C., and in almost every city he knows of, only an insignificant portion of the available appropriation for trees is expended in the care of trees after they are planted, and even that portion is not wisely expended. (759-761.)

13. Agencies for suppressing insect pests.—*Importance of birds.*—Dr. HOWARD testifies that birds are very important in keeping injurious insects in check, and the shooting of birds increases the chances for the multiplication of such insects. An extensive series of examinations of the stomach contents of birds by the Biological Survey shows what birds are injurious and what are beneficial in that respect. The English sparrow is an unmitigated pest, although it will eat insects when it can not get anything else. A bird is not necessarily beneficial because it eats insects, for it may have a predilection for beneficial insects. There are probably almost as many insects that are parasitic, or that prey on injurious insects, as there are injurious insects; but the injurious species seem to be the more prolific. (761.)

Importation of parasites.—Dr. HOWARD explains that nearly every injurious insect has a certain number of parasites, the encouragement of which, however, is a very complicated matter and generally impracticable. In the case of some of the imported insects good work has been done by importing their natural enemies from the country of origin. The so-called white scale of California, which threatened the extinc-

tion of the citrus fruit industry of that State, was originally brought from Australia, where it was not very abundant. The inference was that it was kept in check there by some parasitic insect. The insect was found and brought to California, where it bred so rapidly that within a single year the white scale was practically wiped out of existence. The insect has been sent to Portugal and to Egypt, where the same pest prevailed. There have also been imported from Australia some little beetles that prey on the black scale of the olive, and have proved very efficacious in killing off the scale in certain parts of California. Recently another parasite has been brought from South Africa for the same scale. Several years ago a parasite was imported for the common cabbage worm, and another was imported for the Hessian fly, but it has disappeared. (761.)

Spraying.—Dr. HOWARD testifies that spraying is a most important remedy for the codling moth, the plum curculio, and all scale insects. (754.)

14. *State laws against insect pests.*—*Inspection of nurseries, orchards, etc.*—Dr. HOWARD says that only 21 of the 45 States have inspection laws which enable them to do any organized work against insects. The State of California protects itself admirably. Oregon also protects itself. Maryland is very well protected, though the law is not as explicit as it should be, and some of the nurserymen of other States object to its stringency. The Illinois law seems to work very well. The New York law, at least up to the last session of the legislature, did not prevent the admission of infected nursery stock from other States. California, on the other hand, prevents the admission of such stock, but does not prevent sending it out. A man who exhibits an infected tray of apples in Los Angeles is arrested and fined, but he is not molested if he ships the apples to Chicago. (763, 764.)

Dr. Howard states that nearly all of the State laws provide for the inspection of orchards as well as nurseries, and for the treatment of such as are found to be infested. Others wisely provide for the establishment of county or district boards of commissioners upon the complaint of a certain number of citizens that certain premises are affected by dangerously injurious insects, thus placing the State in a position to deal with any emergency that may arise. (768.)

Mr. FLANDERS, Assistant Commissioner of Agriculture, New York, says the State law requires that nurseries be inspected, and that means be employed to eradicate any diseases that are found. When a company receives a consignment of nursery stock from another State it must notify the department of the source and the destination of it. (999.)

Mr. MILLER says that Ohio has for some years had laws in regard to diseases among plants, fruit trees, etc., and that in 1900 an important addition was made to the laws for the suppression of the San Jose scale and other pests. An appropriation of \$15,000 was made and the matter was placed in the hands of the board of control of the experiment station, which appointed an inspector for the nurseries and orchards of the State. (618.)

State entomologists.—Dr. HOWARD says that 30 States now employ official entomologists in connection with the experiment stations. New York, Illinois, and a number of other States have very efficient service. Most of these officers were young men just out of college when first appointed, as there was a sudden demand for a class of scientists that did not exist. They have had to collect libraries and apparatus and educate the farmers, and it is only recently that some few of them have reached the position where they are able to make original investigations. (762.)

Dr. Howard says very few States make specific appropriations for entomological work, but many of them give funds to the experiment stations in addition to those given by the General Government, and these funds are distributed among the different branches of the work by the director of the station or the board of control. In Illinois, New York, and Texas, however, there are State entomologists supported by State appropriations. Dr. Howard considers the matter of sufficient importance to be dealt with by the legislatures, and thinks the work could have been done more efficiently with more liberal appropriations. (764.)

Horticultural quarantine in California.—Dr. HOWARD testifies that California has an admirable State quarantine against insects from abroad. At San Francisco a quarantine officer boards every incoming vessel and examines it for any nursery stock or vegetables which might carry injurious insects. If any insects are found the stock is fumigated or destroyed. The law has been sustained by the highest court of California. That law protects California, but does not protect the rest of the country. When the inspector finds a box of plants consigned to another State he notifies the Chief Entomologist of the United States Department of Agriculture, who immediately notifies the proper State officers, and they cause an inspection on the arrival of the stock, if they have authority to do so. In certain States, as in Massachusetts, where there are large importers of ornamental plants from Japan, there is no authority to

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require inspection, but the State Board of Agriculture notifies the importers, "and if they feel like it they cause the stock to be fumigated, but if they do not feel like it, they are not obliged to fumigate." (756.)

Dr. Howard criticises the California law for lacking the important provision of the New York law, which prevents the shipment of infested material from within the State to points outside; and also because it has no provision permitting the acceptance of inspection certificates from properly qualified officials of other States or countries. (766.)

Desirability of uniform State legislation.—Dr. HOWARD says that even when the Federal quarantine law comes into effect it will still be necessary to supplement it by State legislation. The national bill deals with only one aspect of the question, and it will still be necessary for most States to keep in operation a good crop-pest law. Of the State laws the California law has stood the test for the longest time, and it is desirable that all States should enact legislation of a similar character. The greatest reason for uniformity in State laws would be obviated by the passage of a national bill, but in the meantime uniformity in State legislation is highly desirable. (768.)

Dr. Howard says that in the 4 years which have elapsed since the National Convention for the suppression of insect pests and plant diseases by legislation was held in Washington, a number of new laws have come into existence, and much experience in their operation has been gained. He suggests that uniformity of State legislation could very properly be discussed by another national convention composed, like the first, of representatives of State horticultural and agricultural societies, of the National Association of Nurserymen, and of the appropriate Divisions of the Department of Agriculture, with, perhaps, representatives from the State attorney-generals' offices. The duties of this convention should be to unite upon the details of the needed uniform State law. (769.)

State and Federal work.—Dr. Howard says there are so many different kinds of climate in the United States that an insect may be of great importance in one location and comparatively of no importance in the rest of the country. He suggests that in these cases the State affected ought to do the work rather than the General Government, except where the insect may be reasonably expected to spread over a territory comprising a number of States. (764.)

15. Proposed national quarantine.—Dr. HOWARD says there is no national quarantine against insect pests, though a number of foreign governments have quarantines against the United States. A quarantine bill has been before Congress for 3 or 4 years in one form or another. Senator Perkins, of California, introduced in the United States Senate in January, 1901, a bill (S. 5615, Fifty-sixth Congress, second session) identical with that which was reported favorably at the preceding session by the House Committee on Agriculture. The bill provides that the Secretary of Agriculture shall have power to quarantine against any other country absolutely if he has reason to believe that injurious insects are likely to come in, and also gives him power to designate certain ports where nursery stock must be imported and where it will be subject to inspection if not accompanied by a certificate from some official of the government from which it is sent. The bill also regulates interstate traffic in nursery stock, etc., leaving to the States simply the extermination of insects within their own borders. Dr. Howard submits a copy of the bill and portions of the report thereon. (755, 756, 763, 765-768.)

Attitude of nurserymen and fruit growers.—Dr. HOWARD states that the Federal quarantine bill was opposed by the nurserymen at first, because some of them thought that as most of their stock arrives in the cold months it might be injured by being opened for inspection. Dr. Howard knows of no other good argument against it. The quarantine is being especially urged by Californians, who are greatly in fear of a Mexican orange maggot which has not yet been introduced in California. (756.)

Mr. NARTZGER testifies that the California fruit growers are in favor of the Federal quarantine bill. He understands that it failed because the Eastern nurserymen objected to requiring inspection at the point of shipment and again at the destination; but the California fruit growers would not consent to striking out that provision. The Pacific coast is much in need of a quarantine law, not so much as regards interstate business, but as a protection against importations from abroad, particularly from Mexico, where the orange orchards are infested by the orange worm or Morales maggot, of which Mr. Nartzger has seen as many as 15 in 1 orange. A quarantine is also desired for the deciduous fruits. (965.)

Memorial of the American Association of Nurserymen.—Dr. HOWARD quotes from a memorial prepared by a committee of the American Association of Nurserymen praying for the passage of the Federal quarantine bill, to the following effect: The chief danger to the nursery interests of the country arises from the passage of diverse laws by the different States, many of them very drastic and practically prohibitory, so

that an honest nurseryman is unable to send even clean nursery stocks into many of the States, while a dishonest or careless man may send infested stock to the States which have not yet protected themselves. These difficulties can be reached only by a law governing interstate commerce. Moreover, besides the actual damage done by the San Jose scale, the fact that a nursery has become infected by it has, in many cases, entirely destroyed the reputation and credit of the firm. The memorial declares that the varying requirements of the States and the lack of any law in certain States have produced a condition intolerable to nurserymen and of great danger to orchardists. Different forms of certificate are required for different States, and some States requiring no certificate are made the dumping ground for infested stock. New York prohibits the sending out of infested stock, but does not prohibit its entrance. The memorial urges the necessity for a uniform national law. (765.)

Report of the House Committee on Agriculture.—Dr. HOWARD quotes extracts from the favorable report of the Committee on Agriculture of the House of Representatives on the Federal quarantine bill. The committee reported that the bill had been indorsed by representatives of the entomologists and vegetable pathologists, as well as by nurserymen and fruit growers. The report goes on to say that at San Francisco 122 vessels had arrived during the year with trees, plants, and fruit from foreign countries, and that the quarantine officer had destroyed over 3,000 trees and plants infested with insects new to California, and thoroughly fumigated other stock with hydrocyanic acid gas. California, however, is the only one of the great ports which is thus protected, and there are many European, West Indian, and Mexican insect pests which are liable at any time to make their appearance in this country, where foreign insects thrive more than in their native homes. The California officers have jurisdiction only over shipments intended for California, so that the quarantine does not protect the rest of the country. The committee estimates that if a quarantine service such as that proposed had been in operation at all the principal ports of the United States during the past 30 years, its cost would have compared with the actual saving to the agricultural and horticultural interests of the country as 1 to 100, and that such a service in the future would result in an equal and probably greater relative benefit on account of the increased foreign trade. The committee calls special attention to the damage done by the San Jose scale, especially in Georgia, Maryland, North Carolina, and Ohio, and declares that the danger from this insect is greater in this country than in any other on account of the very extended interstate commerce conducted by nurserymen and orchardists. (765, 766.)

Need of national quarantine.—It seems to Dr. HOWARD very desirable that there should be a Federal quarantine against insect pests. There are now in this country perhaps 75 kinds of injurious insects of first-class importance, and more than half of these have been imported from abroad. They have come very largely through unrestricted commerce in plants, and are still coming in every year. The States which have no inspection laws are constantly in danger of the San Jose scale and other insects. Dr. Howard declares that either the bill must pass or the States must pass uniform laws. At present one form of certificate is required by one State and another by another, and it is necessary for a nurseryman to have before him condensations of 21 sets of laws and forms of inspection to consult when he ships stock. (766, 763.)

Mr. HALE says the entomologists have got up an unnecessary scare about the San Jose scale, which is no more dangerous than some other pests we have had in the country, and the different States have enacted various laws, which have been a very great hindrance to the nurserymen and a disadvantage to the small planter generally. In view of the necessity of some regulation, Mr. Hale approves the bill introduced in Congress putting the matter entirely in charge of the Secretary of Agriculture, requiring the inspection of stock coming from foreign countries and of nurseries in this country, and the issuing of certificates assuring admission to all the States. (400.)

B. Diseases of animals. (See also *Bureau of Animal Industry*, XVIII A 2, p. cccxlviii; *Exclusion of American cattle from European countries*, XV B 3, p. cccxlv.)—**1. Loss of animals from disease.**—Dr. SALMON, chief of the Bureau of Animal Industry in the United States Department of Agriculture, says that while American farmers have suffered from diseases of animals, especially hog cholera, sheep scab, and Texas fever, as compared with European stock raisers they have little idea of the devastation which animal plagues may cause. Pleuro-pneumonia was stamped out before it did much direct damage. Foot-and-mouth disease has been introduced several times, but each time was eradicated before it covered much territory. Rinderpest, which has at times almost exterminated the bovine population of other countries, has never reached our shores. Since the animal quarantines were placed under the Bureau of Animal Industry all these exotic contagious diseases have been excluded. Tuber-

culosis, however, which affects all warm-blooded animals and is the most fatal of human diseases, while it now affects but a small percentage of our animals, is undoubtedly becoming more common. Except in States where proper regulations are enforced, herds are frequently found containing 80 to 90 per cent of tuberculous animals, though the general average among dairy and breeding cattle is probably not more than 5 per cent, and among beef cattle still less. The inspectors of the Bureau of Animal Industry condemn more beef carcasses for tuberculosis than for any other cause, the number being 4,194 in the fiscal year 1899-1900; there were also 4,379 hog carcasses, and 1,061 parts of carcasses condemned for the same disease. In some European countries nearly or quite half the cattle are tuberculous. (748.)

Dr. Salmon thinks the loss from some diseases is as great as formerly. In other cases this is not true. He supposes the loss from hog cholera is as great as ever, the number of swine having increased, though the percentage has been lowered somewhat by following the hygienic regulations recommended by experiment stations and the Department of Agriculture. Hog cholera perhaps causes the greatest number of deaths of any disease attacking animals in this country. Glanders is probably just as prevalent as it was 10 years ago. Tuberculosis is more prevalent and constantly increasing. (753.)

Dr. Salmon says it is impossible to calculate accurately the loss from the death of animals from infectious diseases. The Division of Statistics of the Department of Agriculture sometimes states the loss of animals from disease, but it is impossible to distinguish between diseases. (749.)

Professor DAVENPORT says that a new country does not have the germs of animal or human diseases. There is more disease in this country now than when the country was new, with the exception of cholera. He thinks the thicker the human and animal population becomes, the more tuberculosis there will be. He does not consider it such a dangerously contagious disease as some do, however. (272.)

2. Tuberculosis in cattle a danger to human life.—Mr. SPEAR says that while the matter is still in dispute the evidence is convincing to him that it is possible for tuberculosis to be conveyed from animals to human beings. He does not think such conveyance is very common, but he has known of several cases in which herds of cattle were badly diseased, and in which some member of the family who had been a large user of milk was suffering from tuberculosis without any other known cause of contagion. (409.)

Mr. HAMILTON says that while doctors disagree about it the general impression among the best veterinarians is that tuberculosis is transferred from the milk of cows to human beings. (372.)

Mr. SNOW, statistician of the Orange Judd Farmer, says that there is some difference of opinion among scientists as to the exact stage which tuberculosis must have reached before it becomes a menace to those who use the milk or the meat. In the case of a dairy cow, unless the disease has affected the udder and the milk glands, the milk may not be affected. Mr. SNOW is entirely convinced that when the milk glands are affected the use of the milk is a serious danger to public health. There is less danger in the use of meat, because thorough cooking nearly insures safety.

Mr. SNOW says the most highly organized dairy cows seem most liable to be affected by tuberculosis, though all classes of cattle are attacked.

In the early stages there is very little sign of the disease. It can be detected only by the tuberculin test—injecting virus and watching for a rise of temperature. (238, 239.)

Mr. GEHRMANN says that the carcass of a thoroughly diseased animal may be so dressed and exhibited that only expert scrutiny will show the unwholesome character of the meat. A very strict supervision is necessary to prevent such practices. Diseased conditions may be overlooked. One carcass may be substituted for another, and decomposition may develop because of uncleanness in handling the meat. (635, 637.)

3. Pleuro-pneumonia.—Mr. STOCKWELL, of Massachusetts, says that when pleuro-pneumonia was brought here by cattle from Europe 40 years ago, the Massachusetts legislature made an appropriation at the very beginning and the Board of Agriculture killed every infected or exposed animal and stamped out the disease in 2 years, so that it did not spread beyond the borders of the State. (904.)

Mr. SNOW says that several years ago there was a good deal of pleuro-pneumonia in this country, the fear of which had begun to affect our export trade in meats. The Bureau of Animal Industry was organized at that time, and an appropriation was made for eradicating pleuro-pneumonia. The law authorized the condemning and killing of animals found to be affected with the disease. The result is that pleuro-pneumonia is almost completely eradicated. The matter was taken up by the National Government because it is almost impossible to get uniform and effective State legislation. (237, 238.)

4. Texas fever.—Mr. HAMMOND, a cotton planter of South Carolina, says that Texas fever has killed many cattle in his region. The stock business there has now fallen to nothing. Scarcely any animals are kept, except mules and horses. The Department of Agriculture has done a valuable work in restricting the Texas fever. (833.)

Dr. SALMON says that in several counties of Virginia the Texas-fever ticks have disappeared as the result of a law prohibiting cattle from running at large and requiring them to be fenced in on the premises where they are owned. (747.)

Dr. STUBBS says Louisiana suffers somewhat from the operations of the Texas-fever quarantine law. Only in 2 months of the year can cattle be shipped to the North. The effect of this is being counteracted, however, to some extent by the introduction of a better class of animals, which are inoculated and become acclimated. (784.)

5. Diseases of swine.—*Trichinae*.—Dr. SALMON says trichinae are found in American pork in larger proportion than in most other countries. This appears to be due to the practice of allowing hogs to eat dead animals, such as rats and mice, and particularly hogs which have died of cholera. The impression prevails in hog-raising districts that the feeding of meat lessens the losses from cholera, and so in cholera outbreaks it is quite common to encourage the swine to consume the carcasses of the animals which die, and if one is infected with trichinae that is sufficient to infect the whole herd. Two per cent or more of the hogs that come to our markets are infected, and in some large lots of hogs 25 or 30 per cent have been found with trichinae. (747.)

Swine plague.—Mr. GEORGE says swine plague prevails because the corn fed to swine is starchy, and lacks the nitrogen and phosphates necessary for muscle and bone development. Clover is a splendid ration for domestic animals, being highly nitrogenous. (223.)

6. State laws and their administration.—*Vermont*.—Mr. SPEAR, who had charge of the Vermont Cattle Commission for four years, believes that the Vermont law has been very effective in controlling contagious diseases among cattle. No animal for breeding purposes can be brought into the State without having been tested for tuberculosis. Tests are made upon the application of the owners of the cattle, and animals that are found to be tubercular are destroyed, the State paying half their value. Farmers who suspect that their cattle are infected are ready and eager to apply for inspection. They realize that a partial loss now will save a total loss later on. There does not seem to be much disposition to try to dispose of diseased cattle. Over 20 per cent of the cattle in Vermont have been tested. (409, 410.)

Massachusetts.—Mr. STOCKWELL says the Massachusetts Cattle Commission is holding contagious diseases of animals in check and preventing their influx into Massachusetts. The appropriation is not sufficient to wipe out tuberculosis. The commission is authorized to destroy infected cattle, a slight compensation being provided for, but does not go as far as formerly in cleaning out disease. (903, 904.)

New York (See also *Working of laws against tuberculosis*, p. CCLXXXIV.)—Mr. FLANDERS, Assistant Commissioner of Agriculture, New York, thinks that there is sometimes danger of prescribing the duties of State agricultural departments too specifically in the statutes. Thus his own department is authorized to suppress foul brood in bees; it is now embarrassed by the appearance of a kindred disease, black brood, which the statute does not authorize it to deal with. The New York Department of Agriculture is also authorized by law to treat tuberculosis and glanders among animals. Good results are obtained except in the case of tuberculosis, which has only just been placed under the control of the department. (999.)

Pennsylvania.—(See also *Working of laws against tuberculosis*, p. CCLXXXIV.)—Dr. SALMON, chief of the Bureau of Animal Industry, thinks that Pennsylvania probably has the best regulations for the inspection of cattle and prevention of disease. The State veterinarian, with the assistance of deputy inspectors, works under the State Department of Agriculture. The State has probably expended over \$30,000 annually of late in tuberculosis work. (749.)

Ohio.—Mr. MILLER, secretary of the Ohio State Board of Agriculture, says that the Ohio law for the prevention of the spread of diseases of animals is not very rigidly enforced. It is in the hands of a Live-stock Commission of 3 members, who serve without pay. The board has not proved efficient. Because this board has not been in position to cooperate with the United States Bureau of Animal Industry, the State has profited little by the provisions of the Federal law for the condemnation of diseased animals. (617, 618.)

Illinois.—Mr. WILSON says the law against the spread of disease among animals seems to be very carefully administered in Illinois, at least as to tuberculosis. Many cattle have been slaughtered. (255.)

North Dakota.—Mr. BUDGE says the laws of North Dakota for preventing the spread of diseases among domestic animals are executed by the State veterinarians. When stock is destroyed some compensation is made, but very little. (858.)

Kentucky.—Mr. NALL says the Kentucky law to prevent the spread of disease among animals is administered under the State Board of Health, which has a veterinary assistant. The law can not be enforced properly because the shipper from another State has certain rights under the Federal law that can not be properly regulated by a State law. Stockmen apply to the State Département of Agriculture for remedies for diseases, and Mr. Nall turns them over to the medical or veterinary department. He thinks possibly it would be better to have such laws enforced by the agricultural departments of the various States rather than the boards of health. In diseases of live stock, the live stock people know better what to do than the regular physicians. He adds, however, that the appropriation for his department would have to be increased, or the execution of the law would detract from other work. The appropriation for the bureau is \$13,000 a year, out of which are paid the salaries of the commissioner and his assistants and all printing expenses; there is not enough left to undertake to regulate diseases among live stock. It is quite an expensive thing to destroy a herd of cattle, just as a runty calf killed on a railroad sometimes becomes a very fine pedigreed animal; their apparent value increases very largely when they are taken for public purposes and destroyed. The Board of Health now has authority to destroy diseased stock, compensating the owner. (814.)

Louisiana.—Dr. STEUBBS says that in January, 1901, there was an epidemic among the animals in the parishes around Shreveport, and the veterinary surgeon spent nearly a week there destroying animals and giving instructions to the police juries of the parishes for disinfecting the stables, etc. The trouble was all due to a carload of animals brought from Idaho and Montana. (784.)

Mr. HAMILTON, Secretary of Agriculture of Pennsylvania, says that all cows brought into the State are quarantined at Pittsburg and tested for tuberculosis. The State board also inspects domestic cattle. Owners of herds are invited to ask for tests if they suspect that tuberculosis exists among their cattle. Before a test is made the owners must agree that any animals that are found diseased shall be slaughtered and that proper care shall be taken to prevent the spread of the disease. Slaughtered animals are appraised and paid for by the State—an ordinary cow at not more than \$25, and registered animals at not more than \$50. These regulations do not apply to beef cattle. In the beginning of the work, about 1896, 25 per cent of the cattle in inspected herds were tubercular. The proportion is now reduced to 11.6 per cent.

The number of cattle tested up to the time of Mr. Hamilton's testimony, June 9, 1900, was 33,147; 4,561, or 13.7 per cent, were tubercular; for these \$102,909 was paid, or an average of \$22.56 per head. The State board has a right to enter a man's premises and inspect his cattle without consent, but does not use the right. All tests are made by request of the owners. (372.)

Mr. Hamilton says that among the thousands of tuberculous cattle detected and slaughtered in Pennsylvania only one is known to have reached the butcher. That case came to light through the boasts of the guilty man. He bought the carcass for dog meat, and instead of using it for dogs sold it to the butcher. (373.)

Working of laws against tuberculosis.—Mr. NORRIS believes that great hardships arise from the law regarding tuberculosis in New York. He has been assured that there is hardly a single Jersey in the State but will respond to the tuberculin test when the animal is in just the right state. On the other hand there are diseased cattle whose owners get from the State more than they are worth. So while the enforcement of the law is sometimes injurious to cattle owners, it is at other times injurious to taxpayers. (332.)

Mr. SNOW, statistician of the Orange Judd Farmer, says that New York and Massachusetts have spent a great deal of money in trying to stamp out tuberculosis in cattle, and have succeeded to some extent, though not completely. In Illinois the State is just beginning to take the matter up. The disease is undoubtedly increasing there. (238.)

General criticism of State laws.—Mr. GEORGE says there is no uniformity in the matter of the State laws to prevent the spread of domestic diseases among domestic animals. One State may have a very severe law, and another no law at all. He thinks some of the State laws are rather arbitrary, and that lawmakers should be very conservative about condemning animals without due compensation on the theory of some veterinary surgeon that they have disease. Contagious diseases are not as injurious in this country, where cattle have free access to pure air, as in older countries. Pleuro-pneumonia, for instance, is generally confined to animals kept in stables. (226, 227.)

Professor DAVENPORT does not think it possible to be too strict in laws for preventing the spread of animal diseases. The health of animals must be protected both for the good of the live-stock interest at home and to prevent any objection to our goods abroad. He thinks there is sometimes a tendency to go to extremes in enforcing these laws, however. (272.)

7. Proposed State legislation.—In Dr. SALMON's opinion, what is most needed in the way of State work for the control of animal diseases is the thorough control and eradication of such diseases as glanders, tuberculosis, and rabies. There should also be State laws prohibiting the feeding of the carcasses of dead animals to swine, to prevent the spread of trichinæ. The destruction of the Texas-fever tick in the infected districts is also of great importance. The tick may be destroyed either by keeping cattle from a particular area for a year or two or by keeping the ticks picked off or destroyed by applications. Measures to insure the wholesomeness of the milk supply are also of great importance; and there should be more efficient measures to guard the public from being imposed upon by impure, adulterated, or renovated butter and filled cheese, the sale of which as high-grade goods defrauds the consumer and injures the dairy industry. There should also be a better local inspection of meats, and more efficient measures to secure the proper disposition of meat from diseased animals. (746, 747.)

Dr. Salmon doubts whether it is practicable to get enough money from fines for violations of milk and meat laws to pay the expenses of inspection. A man inspecting meats is morally certain of a great many violations for every case in which he can get evidence enough to convict. Where a fine is very heavy the tendency is usually to let the offender off; the law is more apt to be enforced where the fine is moderate. Dr. Salmon approves the plan of quadrupling the fine after the first conviction, as is done in some Eastern States. He thinks it more practicable to enforce a charge for all meat inspection rather than to depend upon fines to pay the expenses of inspection. (752.)

Mr. MAGIE, a dairyman and stock raiser of New Jersey, says that the dairymen of his State are sometimes troubled with tuberculosis in their cattle, and that it is very detrimental to them that there is no law to prohibit the shipment of cattle into New Jersey without being tested for tuberculosis. A great many cows are brought into the State for sale, and the dealers and their friends do not want any hindrance put upon the traffic. (101.)

Need of more efficient local meat inspection.—Dr. SALMON says that while the Federal inspection is applied to all meats slaughtered in the abattoirs where the inspection is established, the law permits the local sale of the condemned meat. The natural effect of the Federal inspection is to drive the diseased animals to abattoirs which slaughter for local consumption, and consequently much more diseased meat is put upon the market in cities where the Federal inspection is in operation than was the case before the inspection was commenced. Very few, if any, cities have a sufficient force of competent meat inspectors to protect their citizens from diseased and unwholesome products. (747.)

Dr. Salmon adds that meat inspection in the cities usually does not amount to very much, because there are not enough inspectors to control the local slaughterhouses. Almost every city has a large number of slaughterhouses in the suburbs in which diseased stock is slaughtered, and thorough inspection would require as many inspectors as there are slaughterhouses, which would mean 75 or 100 inspectors in a city like Philadelphia. The only practicable way to have inspection of animals slaughtered for local consumption is to have the killing concentrated. (750.)

Control of milk supplies.—Dr. SALMON says that in towns and cities the wholesomeness of the milk supply is usually in the hands of the health authorities, but they seldom have the money or the authority to inspect the stables and the cows from which the milk comes. As numerous diseases may be carried in milk, and other diseases and digestive derangements may result from contamination, there should be some system which would insure clean stables, healthy cattle, and a proper handling of the milk. The increase of tuberculosis among dairy cows and the danger of conveying the disease to the consumer, and especially to children, emphasizes the importance of looking after the milk supply. It appears to Dr. Salmon that this could be most effectively done by State boards applying uniform regulations to the dairies of whole States. Where it is necessary to eradicate a disease like tuberculosis, the cattle owner should be compensated for the animals destroyed. (747.)

Compensation for animals.—Dr. SALMON says there is a great difference of procedure among the States in the matter of compensation for destroyed animals, but the tendency and the precedent among lawyers are against compensation. In the veterinary profession the tendency is in favor of compensation, because it has been found in all cases that it was cheaper to give compensation and have the stock owners with the authorities than not to give compensation and have it to the interest of everyone to conceal contagious diseases. (749.)

Mr. SNOW believes that where tuberculosis is far advanced the danger to the community from the existence of the animals is so great that no property right in them should be considered to exist; but for the milder cases a payment proportioned to

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the value of the animal, taking into account the progress of the disease, ought to be made. (238.)

Difficulties of State control.—Dr. SALMON says there are two difficulties in the State regulation of animal diseases: (1) To get money enough, and (2) to enforce the law. The nearer the Government gets to the people the harder it is to enforce laws which bear upon the people of any section. The Bureau of Animal Industry, under the Federal law, can go into the States and do things easily which State authorities cannot do at all, because the people feel that the State authorities are more subject to them than the Federal authorities are. When city authorities adopt an ordinance requiring dogs to be muzzled, a large number of the citizens always object to the ordinance and say that it is unnecessary and cruel, and it can not be enforced. Even in Washington, although the Commissioners of the District of Columbia are not so much subject to the people as the officers of other cities, public clamor prevented the enforcement of regulations requiring dogs to be muzzled, and as a result, for more than a year there has not been a month without rabies, and about 30 or 40 people have been bitten and obliged to take the Pasteur treatment, at considerable expense. New York, which is one of the strongest cities, undertook to eradicate pleuro-pneumonia in 1879 and 1880, but stopped because the work was not popular; and when the Bureau of Animal Industry took up the work there was just as much pleuro-pneumonia in the State as ever. The same was true in New Jersey, where the State authorities undertook to stamp out the disease and failed. It is only in instances where the disease is not very widespread and where it can be eradicated without much hardship or inconvenience to the citizens that State authorities appear, to be able to work efficiently in such matters. (748, 749.)

Dr. Salmon knows of no State which has a sufficient inspection to prevent spread of glanders in horses, of which there is more or less probably in every city of the country. (750.)

8. *Proposed national legislation.*—Dr. SALMON believes that the Secretary of Agriculture should have authority to cause the cleaning and disinfection of stock cars and stock yards whenever necessary, to prevent the spread of hog cholera, sheep scab, glanders, and other diseases. The Department of Agriculture should also have specific authority to require the proper disposition of diseased meat. The Secretary of Agriculture should be authorized to make regulations prohibiting the shipment of uninspected meat from State to State or to foreign countries, in so far as he deems it necessary. Dr. Salmon suggests a more comprehensive penalty clause for shipping condemned meat than is now in force. He also considers it desirable that the Secretary of Agriculture should be authorized to inspect and certify pure, high-grade dairy products for export. Railroad companies in the hands of receivers should be made liable for violations of the law prohibiting shipment of diseased animals from State to State; the Supreme Court has held that the term "owner or manager" does not cover a receiver. (745, 746.)

Mr. NALL thinks there should be a Federal law to prevent the spread of diseases among animals. (814.)

Mr. CLOHAN, of West Virginia, advocates both State and national laws to prevent the spread of diseases among domestic animals. (601.)

Mr. BUDGE, of North Dakota, is not inclined to favor Federal legislation for the prevention of diseases among animals, but says it would be a good thing if the legislation could be made the same in all States. (858.)

Mr. STOCKWELL, secretary of the Massachusetts State Board of Agriculture, would recommend any legislation by which disease can be wiped out of the country. (904.)

Glanders.—Dr. STUBBS thinks the United States Government ought certainly to prohibit the importation of glanders from State to State as it does pleuro-pneumonia in cattle, for glanders is just as bad among horses and mules as pleuro-pneumonia is among cattle. There have been a dozen outbreaks of glanders in Louisiana in about 16 years, and the disease is always imported. (784.)

Tuberculosis.—Mr. SNOW believes that the Bureau of Animal Industry, which has done such splendid work in the eradication of pleuro-pneumonia, could do equally good work in stamping out tuberculosis. The experience of the States in the matter has not been entirely satisfactory. (238, 239.)

Sheep scab.—Mr. GREELEY, of South Dakota, says that in no country have local laws ever amounted to anything in driving out sheep scab, and cites the experience of Australia as an illustration. He declares that we cannot do anything with scab in our large flocks of sheep by State laws. Dr. Salmon has done a great deal of good, but he ought to be helped by some general law. (941.)

XII. BUSINESS RELATIONS OF THE FARMER.

A. How prices are fixed.—1. Demand and supply.—Mr. HYDE, Statistician of the Department of Agriculture, says 5,000,000 American farmers cultivate areas of from 3 acres to well up in the tens of thousands. Some products are consumed largely at home; one or more products, however, each farmer raises to sell. All that is raised in one place, whether for farm consumption or for local or distant markets, has some relation to what is raised elsewhere. It is finally the supply in relation to the demand which wholly or partly fixes the price and determines the profit or loss. The all-important question is how to secure the market, for, without a market, surplus production above farm consumption is a loss to the extent of its cost. (841, 842.)

2. Wheat prices in the markets of the world.—Dr. CROWELL says the price of wheat is fixed in Liverpool, the meeting point of the competing supplies. If the export prices rise, the domestic prices will rise, because Liverpool, New York, and all other places compete for the total crop. The market of largest consumption is the main factor in determining the price. (343, 344.)

Mr. BRIGHAM says the price of wheat is fixed almost altogether by the price in Liverpool, notwithstanding the fact that only 10 per cent of our American wheat is sold in foreign markets. If more than is needed to supply the wants of England is offered at Liverpool, the prices will tend to fall greatly. On the other hand, the European consumers must have their grain, and are frightened at any prospect of a shortage. If the farmers can know that a shortage is likely to occur and hold back their grain temporarily, they will make large profits. The witness does not consider it possible to form so thorough an organization of farmers as to control the market, but it may be possible to get them to withhold a part of their product when prices fall below the cost of production. It would pay them to throw away part in certain cases for the sake of a higher price for the remainder. It would be especially desirable, where there is an oversupply, to feed grain to cattle. The witness also thinks that America should not send wheat itself abroad, but only flour, keeping the bran and shorts and fertilizing material at home. (21.)

Mr. WEDDERBURN says the surplus fixes the price, and England, controlling the India surplus, tries to increase it, and pays for it in silver to beat down the price. For more than 20 years England has bought wheat at a rupee a bushel. The farmer in America must take the Liverpool price (less the cost of transportation to Liverpool), in competition with the cheap labor of India, Africa, and Russia. (627, 632.)

Mr. MORAN says that Liverpool being the chief market of the world for agricultural products, the farmers throughout the world will receive the ruling price at Liverpool, less freight, storage, commission, and other charges usually made in marketing farm products. The export trade sets the price upon the wheat sold at home. The Chicago, Minneapolis, and Duluth boards watch the cable news. Home consumption has nothing whatever to do with setting the price upon wheat. The surplus of wheat, though small, usually from 100,000,000 to 125,000,000 bushels, sets the price upon every bushel of wheat raised in the United States. If the surplus could be wiped out by procuring an additional market, we should not be at the mercy of the Liverpool market as now. (712, 714, 715.)

Mr. BUDGE says the markets of Chicago and Liverpool are very close together, but he thinks the price is fixed where the wheat is consumed. To a certain extent the surplus makes the price; if there were no surplus the price of wheat would be higher. (857.)

Mr. PRATT, of Aberdeen, S. Dak., says the price of wheat for that section is fixed at Minneapolis. He is inclined to think that Liverpool fixes the price of wheat in the United States to a large extent; when other producing countries throw their wheat into Liverpool we have to compete with them. If the Liverpool price advances, it affects Chicago and the Southern States, and they affect Minneapolis to a certain extent; but Minneapolis will be above Chicago, because of the local demand. (727.)

Mr. TURNBULL declares that the price of wheat to the California farmer is the Liverpool price, less the freight. (985.)

Mr. MILLER says plenty of economists claim that the value of grain is always fixed at Liverpool, and argue that an export bounty would increase the value of home products by the amount of the bounty. Mr. Miller believes that the conditions all over the world, including the weakness of human nature, makes the prices at Liverpool, and that the farmer does not always get the worst of it. (617.)

Mr. POWERS says the prices of our products are fixed very largely in the world market, but the markets of the world are dominated by the products of American farms. The price of wheat on the farm is the price in Liverpool, or any great mar-

ket, minus the price of sending it there; but during a series of years the price of wheat in the markets of the world is determined by the cost of production and transportation. The farmer who can produce large quantities of grain cheaper than the rest of the world does more to fix the price than any other individual. Foreign production and consumption unite with home production and consumption in fixing the price of any common product of the farm or shop. The price is highest where the people buy most and produce least; Liverpool for wheat, Asia and Africa for iron. The farmers of Minnesota, who raise millions of bushels and determine the price of wheat, are not suffering as much as the farmers of New England who are raising only a little. The Western farmers who are dominating the market are not suffering, but the men in the East who are seeking to produce farm products in competition with them are suffering. The price of wheat is determined by the small farmer of the West, who, by having a widely diversified system of farming, works 300 days in the year, and not by the farmer of Argentina or India, who works 60 days in the year. When a man who works only 60 days a year raises wheat and comes into competition with those who work 300 days a year, he must go to the wall. (175, 176, 188.)

Mr. Powers says the manufacturer and miner have the same competition to meet in foreign markets that the farmer has, but in so far as they produce articles which are not produced in sufficient quantities to supply the home demand, and on which there is an import duty, the price is not wholly fixed in the world market, and they have a margin of advantage. (176.)

Mr. GEORGE says the prices of agricultural products are fixed by competition with the products of the world in foreign markets, though there are some causes in operation in this country affecting prices unfavorably, which might be remedied by legislation. Our surplus is usually large enough to make it necessary for the foreigner to fix the price in large measure. (221.)

3. **Value of agricultural statistics.**—Mr. DYE says there is too little knowledge on the part of farmers as to the demands of consumers throughout the world and the acreage of various crops. Accordingly there is often undue planting of some particular crop. To remove this ignorance the State and national departments of agriculture should give out as much statistical information as possible. Foreign consuls should be called on for reports as to the conditions in foreign countries. If the farmers, moreover, were better informed as to the probable supply of different products, they would know when to hold back their crops in order to secure higher prices. (95, 96.)

Mr. HYDE says that statistical information relative to the condition, prospects, and actual products of agriculture has the strongest influence in maintaining a reasonable equilibrium between production and demand and assuring profit to the producer. (842.)

B. Speculation in farm products.—1. **Beneficial effects.**—Mr. S. H. GREERLEY, a commission merchant of Chicago, believes that speculation in grain is a good thing, if the buyer is on equal footing with the seller, because when the price gets too low some one will take the grain as an investment. The board of trade is an institution organized for the dispatch and convenience of business. It is the system which has grown up within the board, and not a part of it, which hurts business and hurts the producer. (235.)

Mr. JUMPER, of South Dakota, has always thought that grain gambling helped the price of wheat. Up to the time of the Leiter deal wheat ran along in a rut for years. Mr. Jumper believes that the Leiter deal took it out of that rut, and the price has not been as low since then as it would have been otherwise. It was not so beneficial at the time because the farmers have but little wheat in May, but it has been beneficial ever since. (737.)

Mr. BUDGE, of Grand Forks, N. Dak., does not think dealing in options and futures hurts the price of wheat. Sometimes the producer gets the best of it; for the past 2 or 3 years the producer has had the benefit of higher-priced wheat than he would have had without the future business. The Leiter deal in the spring of 1898 helped some of the farmers; it injured some people who had a notion that the price was always going to remain high, but those who had good judgment did not get caught. The farmers always complain that wheat goes up when they have none to sell. (856, 857.)

Mr. GEORGE says corners are sometimes run apparently in the interests of farmers. The Leiter deal is the only corner he ever saw that really helped the farmer; he thinks that helped the entire country, because wheat was sold abroad at higher prices than would otherwise have been obtained. (225.)

2. **Injurious effects.** (See also *Bucket shops and Bear speculators*, XIV., B 14, p. cccxxxiii.) Mr. BRIGHAM believes that illegitimate speculation or gambling in farm products on the exchanges tends to injure the farmer. When crops are good the

dealers have a motive to hold the prices lower than they should be. Large quantities of grain are offered which do not really exist, and foreign markets may be influenced by the impression that real grain is available in such quantities. Such fictitious grain also may be nominally sold to those in league with the speculators at prices lower than the supply would warrant. It is of course impossible to keep prices down long when a real shortage exists. The handling of grain on margins especially tends to injure the market. The sale of actual grain is not to be considered gambling. The witness understands that warehouse and insurance charges are often paid on fictitious grain, and this burden must ultimately fall on the farmer. The fact that oats, corn, and barley are less subject to gambling explains the fact that their prices are more satisfactory than the price of wheat.

The witness does not desire to stop legitimate speculation, and recognizes the difficulty of distinguishing properly between it and grain gambling. Future sales and option sales are legitimate, but "puts" and "calls," especially those dealt in outside of the exchanges, should be suppressed. Many of the legitimate dealers of the exchanges supported the bill before Congress for prohibiting such practices.

The States are unable to legislate satisfactorily on this subject. Congress can probably act under the authority to tax. The right of Congress under the interstate-commerce clause of the Constitution is more doubtful. The National Grange took an active part in pushing the Hatch bill before Congress, and is strongly in favor of Federal legislation on this subject. (24-26.)

Mr. DYE also is of the opinion that "grain and cotton gambling" is injurious both to the producer and the consumer. Although there are bulls as well as bears on every market, the tendency is to depress prices at the time of harvest, even though they may be kept up later on. The offering of fictitious grain must have this influence. The farmers do not secure correct information, through the speculators or in any other way, to enable them to know what the prices of their products should be and to hold them back when desirable. (97.)

Mr. NORRIS, master of the New York State Grange, thinks dealing in futures has a very bad influence on prices, and ought to be regulated by stringent laws. If a man buys 10,000 bushels of wheat and controls 50,000, the tendency is to make fictitious values, keep up an unrest in prices, and affect the producer injuriously. (331.)

Mr. WILSON says the farmers of Illinois have no objection to the legitimate work of the board of trade, and realize that it is a necessity; but they think there is no advantage in selling more wheat in Chicago in a day than is produced in the United States in a year, and that the manner in which the speculation is carried on at present depresses prices as a rule. When the price is raised by manipulation on the board of trade it seldom affects the farmer. At the time of the great corner grain was sold in Chicago 35 cents higher than it was sold the same day in Magnolia. The farmers call this gambling, and have never been able to see where it benefited the producer, though members of the board of trade have tried to show them that it increased the price of their products. Mr. Wilson thinks the large elevator men very largely control the price of wheat in Chicago. (253, 254.)

Mr. MORAN, president of the National Grain Growers' Cooperative Association, desires the abolition of trading in futures, as one of the greatest influences destroying the value of farm products. In particular, he desires the abolition of bucket shops as a destroyer of values. Mr. Moran says his association has no objection to the buying of grain to be delivered at a future date, provided it is actually delivered, but objects to the selling of millions of bushels of wheat where never a bushel changes hands. Every bushel of "wind" wheat put on the market has a tendency to depreciate the price, by giving foreign buyers the impression that there are immense volumes of wheat in the elevators. (720, 723.)

Mr. GRAHAM, president of the North Carolina Farmers' Alliance, has no doubt that dealing in futures has much to do with the low price of farm products, and believes that the Government ought to treat such dealing as it did the lottery. (435.)

Mr. WEDDERBURN believes that the effect of dealing in options and futures is absolutely ruinous. If a man has a right to sell something he does not own and never expects to have, in competition with actual wheat and at a lower price, it is bound to bring the price down. The selling of many times as much wheat as is raised, for delivery at future dates, makes it necessary for the men who have to deliver the wheat to work to keep the price down. Mr. Wedderburn does not believe the opposing attempt to keep the price up works. He says a report of the House Committee on Agriculture in the Fifty-second or Fifty-third Congress covers the whole subject in the most admirable and thorough manner. (632.)

Mr. HALE thinks speculation in grain and cotton is an injury to the producer. (399.)

Mr. PEEK believes dealing in futures to be a great drawback to the farmers, "and

it keeps things unsteady." He thinks the prohibition of gambling in futures would help the farmers. (461.)

Mr. STEVENS, Commissioner of Agriculture of Georgia, says grain and cotton gambling has been very harmful to the farmers of the South and to industry in general. He believes that if all gambling in futures could be suppressed the price of commodities would advance, and the farmers would be in a much better condition. (916.)

Mr. GEORGE thinks it just as possible for a combination of large capitalists to bear the market—that is, to sell whenever there is any tendency for prices to advance—as to bull the market, and perhaps easier. He thinks that in years of comparative plenty prices are depressed too far, and that prices are often depressed by the elevator men from September to January, when most of the farmers are compelled to sell their grain. Many dealers buy farm produce to carry in cribs, as well as to fill up their city elevators. (225.)

Mr. PROM, a banker and farm owner of North Dakota, thinks gambling in "wind" does the farmers harm; it sometimes increases the visible supply artificially, and therefore lowers the price where the supply does not exist. The future sale of actually delivered wheat does not affect the spot price, but "those sales and purchases are made by men who never saw wheat and who have no wheat to sell." Mr. Prom thinks it would be better for the farming community if the practice were prevented. (794.)

Mr. BROWN is of the opinion that dealing in options and futures has a tendency to demoralize the prices of cotton, and on the whole to depress them. Forty, 50, or 100 times as much cotton is sold in a week on the exchanges as is raised in a year, and this apparent greater supply naturally reduces the price. The witness does not see the necessity or desirability of future sales, enabling the manufacturer to buy cotton before it is raised. (74.)

Mr. LOVEJOY believes that the excessive production of cotton in the South doubtless has some tendency to keep prices down, but that speculation on the exchanges has fully as great an influence. Nineteen out of 20 deals on the exchange are fictitious, and the apparent supply is much greater than the real supply. The witness further believes that there is something in the nature of a combination among buyers in the Liverpool markets to fix prices, the comparative absence of fluctuations within the year pointing somewhat in this direction. (75, 76.)

Mr. MILLER, secretary of the Ohio State Board of Agriculture, says that at times values are undoubtedly enhanced or depreciated by dealing in options and futures, but is not prepared to say that they affect the farmer injuriously in the long run. (615.)

Mr. BARRETT does not believe that speculation on the exchanges has the slightest effect on the price of cotton. (58.)

Mr. HAMMOND, a cotton planter of South Carolina, thinks that speculation probably has a steadying effect upon prices, but it is demoralizing to the planter, because he is led to take part in it. The people of the South are losing more by betting on cotton than by producing it. (831.)

3. *Relation between spot and future prices.*—Mr. PRATT, of Aberdeen, S. Dak., thinks the sale of "wind" wheat has no effect on the spot price. He admits that the Leiter-Armour deal had some effect on the price of wheat, but not as much as it might have had, because the buyers had been grading so liberally that they could not get the same grades at Chicago. (728, 729.)

Mr. JUMPER thinks the price of "wind" wheat has much to do with the actual price of wheat on track and the price paid to the farmers. (730.)

Mr. Jumper says the price of wheat on track in Minneapolis is usually from 1 to 3 cents less than the distant future, but sometimes when there is a scarcity of wheat the cash price in Minneapolis will be higher in January than the May price. (731.)

4. *Hedging by millers.*—Mr. POWERS says the city men who handle actual wheat do less speculation than is popularly supposed. The great mills of Minneapolis, when they buy wheat in the fall, protect themselves against fluctuations by selling a future against it and buying it back when they grind the wheat. The price at which they sell the flour will be governed by the price at which they buy the option. They are certain that in the long run the variation in the price of wheat will cause more loss than profit, and they make some one else carry the risk. A few years ago the Chicago speculators used these futures to squeeze the Minneapolis millers. They manipulated the grain inspection in Chicago, and would not take No. 1 Northern, the Minneapolis grade, as equivalent to No. 2 Chicago, and so forced the price up. (190.)

5. *Proposed legislation.*—Mr. S. H. GREELEY, of Chicago, believes that there should be national legislation affecting railroads, bucket shops, and public warehouses, which would make it impossible for bucket shops to exist. (235.)

5. Mr. MORAN says a law should be enacted to prevent gambling or option dealing in

grain. He believes that it would be to the interest of the farmers to have both the bucket shops and the boards of trade stop selling options. Gambling in grain is detrimental to the farmers' interests. (723.)

Mr. MILLER's personal belief is that dealing in options and futures is not a crying evil requiring serious attention, but he does not claim to represent the average agriculturist of Ohio in this opinion. He has never had any particular confidence in legislation for controlling such dealings. (616.)

C. Prompt and deferred sales.—1. Wheat.—Mr. HANLEY says the necessities of the farmer oblige him to market his grain at the time of the year when the great volume of grain is being thrown on the market. The farmer himself assists in breaking down the price of his own products and plays into the hands of the speculators, who juggle the prices so that they are generally lowest when the farmers are parting with their grain and highest when the farmers have no grain for sale. The farmer finds himself at the mercy of the greedy and unscrupulous grain buyers, who rob him on grades and dockage. He has no means of intelligence from the General Government except that which is often used against his interests by speculators. (286.)

Owing to lack of storage room and their pecuniary circumstances, Mr. JUMPER says, a large percentage of the farmers are compelled to sell their grain within 3 or 4 months of thrashing time; not more than 60 per cent of them, however. Mr. Jumper thinks the averages show that the price is generally lower during these months than at other times. The best time to sell wheat, however, is immediately after thrashing; the experience of every farmer is that he gets the best price immediately if he can get to the market first. If he keeps his wheat 6 or 8 months he ought to get 3 or 4 cents advance, but there is a loss by mice and rats and shrinkage in the granary or warehouse, besides the expense of putting it away and taking it out. (736, 739.)

Professor DAVENPORT says an assistant of his once made a study of the best time to market wheat, considering interest on its value, damage by rats, etc., and found that in the previous 20 years there were only 2 or 3 years in which the farmer would have gained anything by storing his grain 2 or 3 months instead of selling it as soon as it was thrashed. (273.)

From an examination of the wheat prices in Chicago, the greatest speculative market of the world, and in Minneapolis, the greatest market for the handling of actual wheat, Mr. POWERS finds that by buying cash wheat the first of September and holding it in storage until the first of May one would lose on an average 2 cents a bushel. Throughout the Northwest the boards of trade have their prices in the fall nearly always raised 2 cents above the average which the situation the following spring will justify. The farmers and those associated with them are always bulls on the market. As a rule, the expectation of a rise is not realized, and taking the last 30 years as a whole, the farmer selling his wheat at harvest receives 2 cents a bushel extra, which comes out of the speculators. A great many options are purchased by farmers and persons who live in the country, who always think there is going to be a higher price than is actually realized. (190.)

Mr. PROM, of North Dakota, says nearly all the farmers sell within 3 months after thrashing. He thinks 75 per cent of the grain is sold at once. Ordinarily there is no advantage in holding the grain. The average price during the 5 months from September to January, inclusive, varies less than a cent. The only probable advantage would be to hold the grain until June or July, and by that time the wheat will be shrunken and the demand reduced. (800, 801.)

Mr. PRATT, of Aberdeen, S. Dak., says the farmer, instead of selling his wheat in September, can store it and borrow money on the receipt, and so carry the wheat. The bank at Aberdeen is very glad to get these local wheat checks. Mr. Pratt is of the opinion that early sales are best, however, even if the farmer has his own granary. Mr. Pratt says he has tried both ways and thinks it better to sell direct from the machine. Those who pursue that course have the money to use, and there is no shrinkage and no loss. No man can tell the future of grain. (728, 729.)

Mr. BUDGE, of Grand Forks, N. Dak., says that in the fall the price is generally best at the beginning. In about 6 weeks the market may drop off, or it may go up. The farmers generally will not sell when the market goes up; they wait until it goes down. Mr. Budge has never seen any indication of any combination to control the price when the bulk of the wheat is coming in, except that the price generally goes down when there is a rush of cars going into Duluth. (856.)

2. Cotton.—Mr. MOSLEY, a cotton dealer of Memphis, believes that there has been a fluctuation from one-fourth of a cent to 2 cents a pound each season for the past decade. His impression is that the average price is lowest between the latter part of November and the 1st of January, when the bulk of the crop is being marketed and

the receipts are largest, and when buyers are therefore in no hurry to buy. The great trouble with the cotton market in Memphis is that the cotton is rushed into the markets in immense volumes in the fall; the farmers have obligations that compel them to unload their cotton. (515, 516.)

Mr. WHITE says a great many farmers in North Carolina hold their cotton for the rise in the fall, but a great many have to sell as fast as they pick it to satisfy their obligations. (419.)

Mr. BARRETT says that the practice of giving crop mortgages on nearly the entire cotton crop forces it to be placed upon the market within a short time in October, and greatly depresses its price. The average amount received by the farmers of Georgia for their cotton in 1898 was a little over 4 cents a pound on the farm. (50.)

Mr. NUNNALLY, of Georgia, testifies that he sold his cotton in one lot in February, 1900, at $7\frac{1}{2}$ cents. He says that not one in ten of the farmers in his locality are able to hold their cotton. The farming is done by small farmers on one or two horse farms, on the tenant system. (454.)

Mr. PEEK, of Georgia, testifies that 90 per cent of the farmers are compelled to sell their cotton in the fall, and that the price always goes up after the cotton is in the hands of the broker. (458, 461.)

Mr. GODWIN, of Tennessee, says a great many people who are not pressed for money will take their cotton to market, not caring to take the risk of having it about home. (476.)

Mr. KYLE says the tenants of Mississippi do not generally hold their cotton for an advance, but he estimates that not more than 25 per cent of the farmers are compelled to sell their cotton immediately after harvest. Some landlords take the crop of their tenants at market prices and dispose of it later, but he himself has never held his cotton. He thinks, as a rule, the prices are as good at the beginning of the season as later. (470, 474.)

Mr. GRAHAM, president of the Cotton Growers' Association, says the association is endeavoring to make arrangements so that farmers can hold their cotton crop. The price of cotton was at a very good figure at the date of Mr. Graham's testimony (March, 1900), but the farmers had nearly all sold out at the close of the crop. (433, 435.)

D. Middlemen.—1. *Relation to prices.*—Mr. WILSON thinks that the cost of transportation is too high, and that there are too many middlemen between the producer and the consumer of farm products. He thinks the consumer is paying about what he should pay, but it costs too much to handle the grain. (249.)

Mr. POWERS says that in the years 1870 to 1874 it cost from 1 to 2 bushels of wheat to take 1 bushel to Liverpool. The farm problem was the elimination of the middleman. The farmer reasoned that he ought to have one-half the benefit of the elimination, and the purchaser in Liverpool the other half. He thought there would be an advance in the price of wheat in Iowa equal to one-half of the change in the cost of transportation. To-day it takes only a little more than half a bushel of wheat to take a bushel from Iowa to Liverpool, but so far as the price of wheat is concerned, the Western farmer has gained nothing by the elimination of the middleman. His gain is found in the decreased cost of the goods he purchases. The purchaser of any article will always get the benefit of any economies in its manufacture, transportation, or handling. The price of wheat is substantially what it was in the early seventies. (181.)

Mr. HOLMES says farmers are so numerous that they are subjected to severe competition with one another in the disposal of their products, and are naturally at the mercy of middlemen probably more than any other class of producers. The farmer, being isolated and lacking capital, is unable to reach the consumers direct; the middleman buys from him practically upon commission, thus compelling the farmer to supply the capital for his operations, and making him suffer for losses by bad debts and other causes, to say nothing of the frequent dishonesty of the middleman and his false reports as to the prices received. The tobacco buyers visiting a certain neighborhood are perhaps in tacit or express agreement as to the prices they will pay, and as the individual farmer can not reach a tobacco warehouseman or manufacturer, he is compelled to accept what the buyers offer. The position of the farmer acting alone is economically weak, and one of the reasons why he is discontented is because he has fought the battles of production and trade single handed. (158.)

Mr. Holmes adds that agriculturists can not get along with the middleman, who is a necessary link between the producer and the consumer in all industries; but he would like to see the farmer become his own middleman. (162.)

Professor DAVENPORT thinks there is still the feeling among farmers that in the sale of their products there are too many middlemen. He thinks that wheat at 60

cents a bushel is hardly compatible with bread at 5 cents a loaf and bran at \$15 a ton. (268.)

2. Grain buyers.—Mr. GEORGE says that in marketing their grain, in order to save the middleman's tolls, the farmers come in contact with the grain buyers, who have State associations and a national association, and in a measure control the prices of the grain. (224, 225.)

3. Commission merchants.—Mr. MILLER says the shipping of Ohio grain to the seaboard is done almost entirely by commission men, the farmers getting the going rate for their grain where it is sold. The merchants say openly that they have to protect themselves against the possibility of being "held up" by taking more than would otherwise be necessary. (616.)

Mr. KETCHUM testifies that commission men in New York often buy the goods sent them at the market price, in the case of articles that can be held. In reply to the suggestion that farmers might choose men of their own class to buy and sell for them, Mr. Ketchum intimates that they might become as bad as the original commission men. (137.)

Mr. CLOHAN, a fruit grower of West Virginia, says he knows some commission merchants who are men of the very highest honor and integrity, but shipping to commission houses is very uncertain. He thinks they have favorites, perhaps in the canning houses, and will often unload a car of fine fruit as being damaged. Mr. Clohan once shipped to Pittsburg, at a time when he expected a drop in peaches, 100 crates on Monday and 50 crates the following day. The returns from the 50 crates were \$1.50 a crate, and for the 100 crates about 40 cents. He was notified that the 100 crates had arrived in the glut, but he was satisfied that there was something wrong.

Mr. Clohan thinks the solution is to hunt out a commission man thought to be thoroughly honest and trust him implicitly. It is not wise to change the market frequently; if some other merchant offers a big price he is going to make it up. (597.)

4. Cotton factors and brokers.—Mr. PORTER, a cotton broker of Memphis, testifies that he buys almost entirely from factors; that is, commission merchants. The farmer ships to the factor for sale on commission; the factor takes samples and spreads them out on his table, and the broker buys from him and sells to mills in New England, Canada, and Europe. Mr. Porter prefers buying from the factor rather than from the farmer, because it is less trouble. He says it is undoubtedly an advantage to the farmer to employ a factor. The cotton factor's commission is $2\frac{1}{2}$ per cent, and he frequently makes more than the broker, his profit being certain and the broker's very doubtful. (480, 481.)

Mr. Porter says the cotton brokers sell on firm orders, at a certain price landed at the mill, and make what they can out of it; they have to calculate freight, drayage, etc. Competition is so keen that their profit is practically a fixed brokerage. (482.)

E. Local markets.—1. **Importance of home markets.**—Mr. KETCHUM, of New Jersey, thinks the American farmer is dependent upon a good home market. In selling to foreign countries he competes with the cheap labor of those countries. An increasing city population benefits the farmer by increasing his market. (135, 136.)

Mr. POWERS says the capacity to consume is a factor slowly modifying prices, having far greater influence with certain articles than with others. The amount of bread and breadstuffs used for human food varies but little, but the consumption of strawberries and other fruits may increase enormously with but little decrease in the consumption of other things. Minneapolis, as a center of consumption and distribution for the Northwest, has shown a doubling of fruit sales once in 3 years, or 8 times as fast as the population. The amount of canned fruits, vegetables, fish, and meat consumed in this country, measured in quarts and pints, is very great, being equal to the total consumption of alcoholic liquors, though canning began only about 1865 or 1870. The relief of agriculture must come partly from an increased consumption of these things, which represent a relatively large amount of labor. The increased demand for these luxuries in the United States means about as much to the farmer as increased exports. (186, 187.)

Mr. STOCKWELL says home markets are the sources upon which New England agriculture must rely for its profits. The more people and industries and the more prosperous the industries, the better it is for those who furnish the home-market products. The laborers of New England are the consumers. They usually have large families, and the farmer and the market gardener are the gainers. This diversifies agriculture and draws it into more profitable channels. The old lines of agriculture have passed away near these centers of population; it is the market garden and improved methods that are now profitable, and because of this agriculture is more profitable in New England—certainly in Massachusetts—than a few years ago. (886.)

Mr. BATCHELDER also says that the New England farmers are almost altogether dependent upon local markets; they export very little. The vegetables, fruits, etc., raised in New Hampshire are mostly used in the cities of that State. Whatever legislation is possible to increase the local markets will be of benefit to the farmers. (40, 42.)

Mr. PROM thinks a man engaged in manufacturing in Chicago would consume more Dakota farm products than one similarly engaged in London. The American laborer lives better than the European, and the latter buys his agricultural supplies from several countries. (794.)

Mr. WEDDERBURN thinks the horticulturist, dairyman, poultryman, and vegetable farmer probably have an increasingly valuable home market, by reason of the large manufacturing, mining, and transportation industries of the country; but that the men who produce wheat, corn, cotton, and tobacco have not, because the prices are fixed at Liverpool, and the surplus fixes the price. The prices of products which are not exported, such as butter, eggs, cabbages, etc., are fixed at home. (629, 630.)

Mr. SPEAR says the main market for Vermont farm products is Boston. (407.)

Mr. COLES, of Salem County, N. J., says the main bulk of agricultural products from his section goes to or through Philadelphia, though some shippers ship to New York and Boston and along the Delaware River. Early potatoes and watermelons are shipped all through northern Pennsylvania and New York, as well as to Boston. (127.)

Mr. PROM says the North Dakota farmers can not sell their grain in North Dakota; that is the great trouble with them. The increase of population of Western towns and cities would not help the grain market so much as it would aid the farmer in diversifying his crop, and in raising chickens, garden truck, sheep, and stock. Mr. Prom does not see how manufacturing can develop in North Dakota because of the absence of fuel and power. (794.)

2. Need of facilities for direct marketing of products.—According to Mr. DYE, secretary of the New Jersey State Board of Agriculture, a special need of the farmers is that city authorities should provide better facilities for marketing truck products directly by the owner. At present the poorer classes in the cities have to get their vegetables largely from hucksters, and they are accordingly often stale and unfit to eat. Direct marketing by the producers is difficult because of the large number of hucksters and other dealers. (91.)

F. Cooperation in the marketing of products.—**1. Need of organization.**—It seems to Mr. WHITNEY that the introduction of business methods and organization in the marketing of crops is one of the most important factors in the reclamation of abandoned lands and the introduction of new crops. The success of the truck industry at Norfolk is largely due to the splendid organization of growers and to the way in which truck farmers place their crops in certain markets according to the demand, an essential thing in truck farming, because vegetables must be sold as soon as they reach maturity for whatever they will bring. The organization gets daily returns of the market conditions in different cities, and is able to divide the crops and ship them accordingly. (878.)

Mr. Whitney calls special attention to the necessity of considering the possibility of marketing fruit. The problem has been solved to a considerable extent by marketing it in a dried and canned condition. The exportation of dried fruit is increasing in importance, especially on the Pacific coast, where large quantities of fruit are being consigned to China and Japan. (877, 878.)

Mr. REDDING says there is need of cooperation and education to show the farmer that he should not sell his products for less than a fair market value. The butchers in Georgia pay 2½ cents a pound for steers and sell them for 4½ to 5 cents, or 6 or 7 cents for dressed beef. (447.)

Mr. AGER suggests that the prices of farm products might be controlled in some instances by combinations of farmers shipping to certain points. He thinks the formation of a trust to regulate the prices of farm products would be a good thing for the farmers, but is the last thing they would be able to accomplish. It would be the worst trust in existence, if it could be formed, because people have to have something to eat. The Grange has never formally discussed the formation of a trust. (111.)

Mr. HALE says there is a combination among part of the fruit growers in Georgia, but it has not been of very great assistance except in bringing them together and getting them acquainted. There is need for cooperation in distribution, especially among the smaller growers. To get the best service they must be able to load full cars promptly and ship promptly. (399.)

2. Milk Producers' Union.—Among the associations of farmers, commonly termed coop-

erative, which he deems to be virtually trusts, Mr. HOLMES mentions the Milk Producers' Union which supplies Boston with milk. The dealers in Boston have had an association for some time, and the farmers were at a disadvantage until they formed an association for the purpose of dealing through their representatives with the representatives of the Boston Milk Dealers' Union. Representatives of both organizations meet every year and agree upon prices for the remainder of the year. This arrangement is satisfactory to both parties, and the individual farmer finds himself in a much better position than formerly. (158.)

Mr. AGER testifies that there is a milk dealers' trust in New York City, formed to handle milk and get it from the dairymen at its own price. Through the influence of the American Agriculturist the farmers have formed the Five States Milk Producers' Association, with agencies at nearly every point on the lines that ship milk into New York City. They have a man in New York to tell them how much milk should come from each station, and by keeping the surplus off the market they obtain fair prices. They made a contract with the New York syndicate to furnish milk at \$1.17 per 100 pounds, whereas they were formerly getting only 80 cents, or about 2 cents a quart in summer and 3 cents in winter. The association puts up creameries and cream separators at various stations. (11.)

Mr. DYE says that in 1898 a movement was started by Mr. Myrick, editor of the American Agriculturist, to organize the "Five States Milk Association." Its aim was to combine the milk producers and to control the output of milk so that there should be no more than enough to satisfy the daily demand in New York. The project has not yet succeeded and Mr. Dye doubts if it ever will. A similar effort in Philadelphia a few years ago finally failed. (99.)

Mr. KETCHUM says the Five States Milk Association, with headquarters in New York, affects the extreme northern counties in New Jersey, but he has been told (June, 1899) that it is hardly in working order and has not yet accomplished much. (135.)

Mr. COLES, of Woodstown, N. J., thinks there is no milk trust among the farmers in his section of the State. (126.)

3. Fruit growers' associations.—Mr. HOLMES says the California fruit growers have been compelled to form a trust for the purpose of suppressing competition among themselves, getting lower freight rates, finding responsible customers, and getting remunerative prices. The fruit growers of Santa Clara Valley, for instance, have organized an exchange, with an expert manager, acquainted with the conditions of the market, to make their sales for them. Numerous fruit associations have grown up all along the Pacific coast, and they are coordinated by a central exchange in San Francisco. There is no other such immense fruit trust in this country, but there are smaller ones in Florida and in western New York, New Jersey, Ohio, Michigan, and nearly all the other fruit-growing States. The associations require cash for sales, and those which conduct a buying business do not as a rule buy on credit. Mr. Holmes does not understand that these organizations undertake to lessen the product, and does not think they have raised the price of farm products, but they have reduced the cost of transportation. The cooperative marketing of fruit has been developed to a great extent along the Atlantic coast from New York City to Florida, and on the Pacific coast it has been developed to a great extent in the truck-garden business as well as in the fruit business. (158, 159, 162, 163.)

Mr. DYE says the combinations of fruit growers in California control a large proportion of the total output of fruit. They are not in the nature of trusts and do not seek to regulate prices, but merely cooperate in shipping and in pushing the sale of fruit. (97, 98.)

Southern California Fruit Exchange.—Mr. NAFTZGER describes the Southern California Fruit Exchange as a cooperative organization of citrus-fruit growers engaged in marketing oranges, lemons, and grape fruit for its members. The fruit is marketed for all members alike on a level basis of cost. The exchange confines itself to the purchase of the necessary supplies for packing and to the business of shipping and selling. It consists of 11 members, all of whom are directors, nominated by district exchanges. The organization is a marketing agency for the local or district exchanges, which in some instances are incorporated under the cooperative law, but in most instances are regular statutory corporations. Each member contracts to leave his fruit for the season under the control of the organization, to be marketed entirely under its direction. The object of the organization was primarily to avoid the disasters of the commission system. Prior to the organization of the exchange fruit was sold to a limited extent f. o. b. California; but in a very large number of cases it was consigned to commission houses in various cities to be sold for account of the shipper. This proved disastrous to California citrus-fruit growers because of the long distance from markets, the possibility of decay, etc. The organization was effected for the

purpose of taking the marketing of the product out of the hands of the middlemen and substituting an independent system under the absolute control of the growers. The organization was incorporated in 1895. Before that, for two years, there had been a compact among the growers, and they attempted to sell f. o. b. California, but with very poor success, and in 1895 the present corporation established its own agencies to sell the fruit delivered. The goods are forwarded to the agents of the exchange, who are in nearly all cases salaried men (the exchange has over 20 salaried officers in the principal cities of the country), and are offered to the trade in the regular course of business at the best prices obtainable. The organization began with about 25 per cent of the crop and now has about 50 per cent, and fruit growers are still steadily joining. With 50 per cent of the crop beyond its control it is not able to control the distribution of the fruit; but being able to put a liberal supply in any market at any time, it can exercise a very powerful influence over the conditions of the market. The exchange does not have any of the ordinary features of a trust. It does not attempt to control production in any way. Independent producers still reach the markets through their own brokers.

Some of the agents sell, under the direction of the exchange, dried fruit and canned fruits for other cooperative associations of growers; but this business is not under the control of the exchange in California.

The advantages accruing to the producer from the exchange are that they get their fruits sold at better average prices and sustain smaller losses than under the commission system. Before it was organized the fruit was handled in a haphazard manner through commission men, and in very many cases the grower, guaranteeing all charges, came out in debt, as sometimes still happens with those who contract with commission firms. Values were depreciated and the fruit-growing industry was in a very bad condition. It is now in a sound condition, though it has its fluctuations like any business in agricultural products.

Through the association every sort of information is given to the growers as to what is desirable in the markets, the class of fruit, character of package, manner of handling, etc., and thus, to a certain extent, influences are brought to bear on the growers to do good work. (945-948.)

Mr. Naftzger says most of the local associations have what they call a Christmas pool of oranges, or a monthly pool of oranges or lemons, although some associations pool for the whole season. If it is a monthly pool, the manager of the association will send out notice to the growers who are members of the association to bring 10 or 15 per cent of the crop, as the case may be. The fruit is brought into the packing house and a ticket is issued for it. The fruit is then culled and graded as to whether it is fancy, choice, or standard. When the fruit of that month's pool has been marketed, the money is distributed pro rata among the growers who were in the pool. All members have the opportunity to go into every pool and get the advantage of all markets at all seasons on a level basis. They may agree among themselves as to separate pools, or they may agree that each man's fruit shall be handled for his separate account. If a man is dissatisfied with the methods of his association he can file his complaint and have an investigation, or at the end of the season he can go into another association; but there are very few complaints. (960.)

Mr. Naftzger testifies that the exchange is organized with a nominal capital stock of \$10,000. It has no capital paid up except what it has in office furniture and fixtures, amounting to a few thousand dollars. It buys nothing but packing materials for the local exchanges, who pay for them on delivery, and requires little or no capital. At the end of each month the local exchanges are called upon to pay for what is estimated to be the expenses of the month, and the accounts are adjusted at the end of the season, all fruit being assessed alike for the actual expenses of operation. (948.)

Mr. Naftzger doubts whether the effect of the exchange has been to increase the price to the consumer at all. The object in organizing was to save the losses and lessen the expenses between the producers and consumers, and to create a wider distribution and consumption of the product. With the increase of the product the level of prices falls from year to year. (949.)

Other fruit associations.—Mr. NAFTZGER testifies that there are 2 other cooperative organizations in California dealing in prunes and raisins. The Cured Fruit Association devotes itself chiefly to prunes, the Raisin Growing Association entirely to raisins. These associations are similar to the Southern California Fruit Exchange, except that they undertake to establish an arbitrary price f. o. b. California. Previous to the organization of these 2 companies the prune and raisin trades were both in a very bad condition. The raisin association, having operated some 3 years under its present form, has done a very good business. The prune association began operations in 1900, and has had very great difficulty. There was a large quantity of the

product which it did not control, and the establishment of prices f. o. b. California enabled the outsiders to shade the association price. Mr. Naltzger regards the attempt to fix an f. o. b. price as impracticable and as the source of the difficulties of both these associations. He believes the products must be marketed at whatever price the consumers will pay. (948, 949.)

Mr. TURNBULL says that there is at San Jose what is called the California Cured Fruit Association. He believes it handles only raisins and prunes. Of prunes it handles about 3,000,000 pounds a year. It is said to fix a price on prunes and to refuse to sell them for less. The condition of the prune and raisin industries was very low before the association was formed, and now the raisers are doing fairly well. Mr. Turnbull believes the association sells its goods through its own agencies. (984.)

Mr. HALE says there is a peach growers' organization at Deckertown, Sussex County, N. J., that has marketed the crop to fairly good advantage. He also refers to a similar association at Hammononton, N. J. (399.)

4. Difficulties of cooperative fruit selling.—Mr. CLOHAN says it is hard to combine in the shipping of fruit, because the farmer is no more honest than anyone else, and some farmer may put his knotty and wormy fruit into the car. The selection of the fruit is a difficult thing to arrange. (597.)

G. Various matters affecting farmers.—**1. Need of economies in production and distribution.**—Mr. HOLMES says that in order to hold his footing in the face of declining prices the farmer has needed to depend upon (1) reducing the cost of production, (2) cheap transportation facilities, (3) an increase of product, and (4) combinations to keep up or increase farm prices. (156.)

2. Farm accounts.—Mr. FLANDERS, Assistant Commissioner of Agriculture of New York, says that some of the farmers of the State, especially the younger ones who have been educated at the agricultural college and many who are taking the advice of the institute workers, keep accounts with their crops, so that they know at the end of the year whether they are profitable or not. Many are learning to apply tests periodically to the milk of each cow, so that they know which cows are returning a profit and which should be got rid of. (995.)

Mr. NORRIS, of Sodus, N. Y., says a system of time cards is used in that section; at the end of the month the foreman charges up the work done by every man and horse on the farm, showing just what is charged to each crop. Mr. Norris believes the nearer farmers come to a correct system of accounting the better they will do. As a rule the farmers in his section know how much money they put into their business. (321.)

3. Agriculture by amateurs.—Mr. FLANDERS, Assistant Commissioner of Agriculture, New York, refers to Briarcliff Farm as one of the many that are run by men who spend upon them money which they make elsewhere. He does not say they are generally unprofitable, but they are run rather for pride than for financial gain. A number of them do not pay. (998, 999.)

4. Farmers' purchases.—Professor DAVENPORT does not think the farmers feel the prejudice against the middlemen from whom they buy that they did 20 years ago. The large merchants have sought out the farmers, have sent traveling men to them, and have dealt with them directly. The farmers come into direct relations with the manufacturers, and have learned that their local dealers will order goods for them in large cash orders at rates considerably below the retail price. He thinks the farmer pays cash more than formerly and buys in larger quantities. (268.)

XIII. TRANSPORTATION.

A. Relation of transportation to agriculture.—**1. Effect of freight rates on land values.**—Mr. WHITNEY says the value of farm lands is often controlled to a considerable extent by the rates of freight locally applicable. The building up of agricultural industries in certain localities may be prevented by the impracticability of marketing the products profitably on account of the distance or expense. The products of Florida have to be rushed to the Northern markets on the fast freight or passenger schedule in ventilated refrigerator cars and placed on the market in the shortest possible time, and it requires a very close calculation in many cases to determine whether it is possible to send a crop North with any profit. The development of the truck industry in southern Maryland was very great a few years ago, but the product had to be sent by river steamers to the Northern market, and the transportation service was so irregular and the time consumed in getting the crop delivered at Baltimore, Washington, or Philadelphia became so great that the industry was given up on large areas for that reason. (865.)

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2. Development of new territory by railroads.—Mr. BUDGE, of Grand Forks, N. Dak., states that 20 or 25 years ago what is now North Dakota was little less than a portion of what was formerly known as the American Desert. The Indian and the buffalo roamed at will over the western part of the Territory, where intelligent citizens are now tilling the soil, raising stock, mining coal, etc. The cause of the transformation Mr. Budge finds in a large degree in the developing power of the railroad systems. The companies realize that the welfare of the people is their welfare, and do whatever they feel they can reasonably afford to do toward developing the country by extending branches, fostering industries, affording reasonable shipping facilities, and granting fair rates of shipment. Branches are often operated at little or no profit. Increased equipment and fast trains make it possible to handle the enormous amount of grain on the short notice which is necessary under present conditions. Rates on the leading products have been steadily reduced until now wheat is carried from Grand Forks to Duluth for $8\frac{1}{2}$ cents a bushel. Twenty years ago it would have cost 17 or 18 cents. (843.)

3. River navigation in North Dakota.—Mr. BUDGE says river navigation has not developed to any great extent in North Dakota, because there are only two rivers of sufficient size to warrant the use of boats—the Red River of the North and the Missouri. The navigation is carried on by small flat-bottomed steamboats and freight barges, and for years considerable freight has been carried on these two rivers. On the Missouri the freight is very diversified, building materials and provisions coming in and grain and coal going out. The chief impediments to navigation are the sand bars, which are formed because of the shallow water and wide banks. Before the railroad reached the Red River Valley there was considerable freight of all kinds carried by boat from Fargo and other points, but since the railroads began operating the river freight has been reduced to little else than grain. Mr. Budge gives a statement of the amount of grain handled annually by the Red River Transportation Company, which does about two-thirds of the shipping on that river, from 1895 to 1900, inclusive, showing that it varied from 217,354 bushels in 1897 to 510,375 bushels in 1899. In river transportation the same rates prevail as by rail, and many points are reached more easily than by rail. (844, 845.)

Needed river improvements.—Mr. Budge says the channel of the Missouri River should be dredged and provided with a series of pile bars, similar to those placed in the Upper Mississippi, to confine and narrow the stream. This would extend the river navigation, develop the adjacent country, and prevent destructive floods. A series of bars and locks on the Red and Red Lake rivers would also not only aid navigation but would prevent disastrous floods and be of value as a sanitary precaution, since in the late summer and fall the stream is very low, sluggish, and charged with impurities. Many towns which depend upon the river for water have suffered from this cause, and Grand Forks was forced to put in a filtering system. A series of locks and dams would be comparatively inexpensive, because the banks are generally high enough and the river channel is very narrow. Mr. Budge submits a statement showing the fluctuation in the flow of the Red River of the North in each year from 1896 to 1900, inclusive. (844, 845.)

4. Electric railways.—Mr. SPEAR, of Vermont, predicts that the building of good roads and electric roads through that State, doing away with much of the isolation of farm life, will be an important consideration in the next 20 years. (402.)

Mr. MAGIE says there are no electric railways running into the country from Elizabeth and Newark which can be used for shipping (June, 1899), but the question is being agitated. One can travel by trolley all the way from Elizabeth to Passaic. (101.)

The machinery of the street railways in cities after midnight being practically idle and the streets practically vacant, Mr. DODGE recommended in 1891 that these roads be extended and authorized and required to carry perishable food products to market. The cars could be brought up to the city limits in the daytime and held there until about midnight and then taken through the streets of the city to the various markets, commission houses, etc. Mr. Dodge hoped that this system would be introduced by public enterprise and aided as the canal system was, but he now thinks it should be done by private enterprise. (701.)

While a member of the Ohio legislature Mr. Dodge had a law passed authorizing the use of electric railway tracks for the carriage of farm products. He maintains that the owners of abutting property ought not to have power to forbid the use of the streets for this purpose. He thinks the experiment has succeeded very well in the city of Cleveland. (702.)

The difficulty with electric trolleys, according to Mr. Dodge, is that they require too expensive a central plant where there is comparatively little traffic; it is necessary to have a vehicle containing its own power. Various machines propelled by other

power than electricity have been developed, but the first great trouble was their excessive weight. A heavy vehicle requires a heavy substructure, which makes the cost of road improvement prohibitive. It is necessary to have a vehicle that does not weigh any more than it carries. (698, 699.)

Mr. Dodge says that very commonly the vehicle weighs about as much as the burden it carries, but he thinks that the improvement of roadbeds will lead to the lightening of vehicles in proportion to the load. He believes it possible to make a 4-wheeled vehicle that will safely carry 10 times its weight. He has experimented with models, and has produced a model of a vehicle for use on electric railways which will carry 20 times its weight. (693, 702.)

5. Railroad facilities for agricultural products.—Mr. PROM, of Milton, N. Dak., says the Great Northern road gives good shipping facilities in the fall, the main shipping season. A stock car can be obtained at any time. (795.)

Sheep and mutton.—Mr. GREELEY testifies that 12 years ago it took one-third more time to get a sheep from South Dakota to Chicago than it does now. There are now better facilities, better cars, and better facilities for ocean shipments. Many sheep now go from St. Paul for export. Mr. Greeley says refrigerator cars are used more by South American and Australian than by American sheep growers, and suggests that if they had not been invented American mutton would, nevertheless, go to Europe and get better prices than it does. (943.)

Fruit—California.—Mr. NAFTZGER complains that the California fruit growers have experienced an insufficiency of transportation facilities, particularly in 1900 and 1901. In 1900 the green fruit shippers were unable to market all of their product for want of transportation, and during the following winter the citrus fruit growers were unable to market all of their oranges. The railroad people themselves have estimated that 3,000 carloads of oranges were lost for want of transportation facilities. In some cases the fruit was thrown away entirely. About 200 carloads of fruit a day should go out from southern California from the middle of January until the 1st of May; but the railroads were entirely unable to haul that number. They hauled an average of about 150 cars a day a part of the time, but some of the time fell to an average of about 120 cars. The particular difficulty was a shortage of engines. Mr. Naftzger is assured by President Hayes, of the Southern Pacific, and President Ripley, of the Santa Fe, that ample facilities will be provided in the future. Ordinarily, in previous years, it took about 12 days to send fruit from California to New York, but this last year it took as long as 20 or 25 days, and much of the fruit decayed in transit. (955, 956.)

Georgia.—Mr. HALE testifies that refrigerator cars are used in shipping fruit from Georgia. Peaches are packed in crates holding 6 4-quart baskets, of which about 500 are packed in a refrigerator car. Some fruit growers have taken the cars belonging to the railroads and attempted to do their own re-icing along the line, but better service is obtained by contracting with the refrigerator car companies, who own their cars and reice them. The Southern Railroad and the Central Railroad of Georgia have given the fruit growers very fast time and charged a pretty good rate for it, but Northern rates are exorbitant as compared with the Southern's. The railroads make a special peach rate of \$265 a car to New York, which is the same to all fruit growers whether they ship 1 carload or 200. Mr. Hale estimates that the Southern Railroad brings 80 per cent of the Georgia peaches to the northeastern part of the United States, turning the freight over to the Pennsylvania road at Washington. (378.)

Mr. Hale says there is a general improvement in transportation in the South. The railroads he has come most in contact with are willing to do everything possible to foster new industries. They carry freight to New York from Fort Valley, Ga., in 48 to 50 hours. Mr. Hale complains of excessive rates on the Northern roads. On the car that goes 1,000 miles to New York for \$265 the charge is \$90 more to Boston and \$70 to Hartford, a distance of 110 miles. (398.)

Mr. Hale says the railroads make a rate on fine fruits of \$265 a car of about 24,000 pounds from Georgia to New York City, and \$90 more to Boston. Watermelons they have to carry at a very low rate or they could not do any business. Georgia fruit growers pay far more proportionately than California. (390.)

West Virginia.—Mr. CLOHAN, a fruit grower of Martinsburg, W. Va., says the transportation facilities from that section are excellent. The time is 3 or 4 hours to Washington, about 6 hours to Philadelphia or Pittsburg, 8 or 9 hours to New York, and about 12 hours to Cleveland. By wiring the fruit growers can generally learn the condition of the market and ship accordingly. Those who have large shipments use the fast freight, and the biggest growers now cut their own ice and ice their own cars, the Allegheny Orchard Company having shown that that is the best way. (596.)

Shipment of fruit by express.—Mr. CLOHAN says fruit keeps better in refrigerator cars than when shipped by express, but it is necessary to have a carload in order to ship

in a refrigerator car. It costs about 17 cents a crate to ship fruit to New York in refrigerator cars, while by express, without refrigeration, it costs from 50 to 60 cents. The difference between the two rates is a great deal more than the profit, so that whatever can not be sold in the local market might as well be thrown away. Mr. Clohan declares that this is the greatest drawback to the small grower. The fruit growers are attempting to overcome the difficulty. Eight or 9 have planted some 40,000 trees at the same time with the intention of cooperating and shipping by the carload when the trees bear. (596, 604.)

Mr. Clohan says there are two express companies doing business in his locality. At one station where there is only one company the rate on fruit is 10 cents less a crate than a few miles away where there is competition. Mr. Clohan has sometimes hauled his fruit 12 miles to get the advantage of the lower rate. He explains the discrepancy on the supposition that the two companies make an arbitrary tariff and agree not to cut rates. The general opinion among the farmers is that the express rates are excessive and unreasonable. (603.)

Refrigeration rates.—Mr. NAFTZGER says fruit is shipped from California in privately owned refrigerator cars, operated under contracts with the railroads. The railroads get the cars at practically no cost to themselves, and permit the car lines to make an excessive tariff which the railroads collect from the shippers for them. This condition of things has been attacked before the Interstate Commerce Commission, and the case was pending at the date of Mr. Naftzger's testimony (June, 1901). The existing contracts expire in the autumn of 1902, and the railroad managers promise that they will not be renewed. During the life of the present contracts there have been 3 refrigerator car companies—the Santa Fé Refrigerator Line, more or less under the Santa Fé Railroad itself, which owns part of the cars and leases part of them; the California Fruit Express, owned by Mr. Earle, the head of the Earle Fruit Company, and the Fruit Growers' Express, owned by Armour & Co. The California Fruit Express was recently reported to have been sold to Armour & Co., but it was still operated as a separate line at the date of Mr. Naftzger's testimony. These refrigerator cars are operated in the fruit and vegetable business exclusively, except on the west-bound trip, when they are held for loads of other freight.

The refrigerator line agree to furnish the initial carriers certain numbers of cars, the carriers paying nothing for the cars for deciduous fruits, and the car companies maintaining the cars and paying insurance and taxes, and getting no mileage until the cars reach the terminal of the Southern Pacific or a corresponding point on the Santa Fé. In the citrus fruit traffic they get three-fourths of a cent a mile, the usual refrigerator mileage one way to these same points. After leaving these points, or getting onto connecting lines, they have the usual rate of mileage. The refrigerator cars get their compensation out of an excessive refrigeration tariff which the railroads collect as part of the expense bill and pay over to them.

A car going from Los Angeles to New York on the Southern Pacific is refrigerated first at Los Angeles, again at Truckee or Boca, at Ogden, and once between Ogden and Chicago, or at or near Chicago, and possibly once between Chicago and New York, depending upon the weather and the amount of ice in the bunkers at Chicago. For deciduous fruit, which is shipped in warmer weather, more frequent icing is required, and the rates are much higher than on citrus fruits.

The refrigerator tariff made by the car companies is graduated. In the case of citrus fruit, the first rate, covering Western points, is \$50; the rate for icing the cars from California to Chicago is \$75 a car; the maximum rate to Boston and New England points is \$95; it was formerly \$90. The freight rate, at \$1.25 a hundred, with a minimum of 26,000 pounds, is about \$325 a car to New England. The Southern California Fruit Exchange for 2 years leased and operated its own cars in order to compete with the Earle Fruit Company, which had a car line, and with another company which was understood to have the benefit of the Armour line, and found the average cost of refrigeration to be \$46 a car on the \$75 rate and \$50 a car on the \$90 rate. Both President Hayes and President Ripley have said to Mr. Naftzger that they considered the refrigerator rates excessive and that steps would be taken to reduce them. Mr. Naftzger believes it to be the policy of the Santa Fé to put on its own refrigerator cars, of which it now owns a good many.

Mr. Naftzger is informed that up to last year the Santa Fé carried less than 10 per cent of the refrigerator cars west empty. They were held at various points for loads, and freight was transferred to them out of other cars. (956-958.)

Mr. Naftzger calculates that the freight on a box of lemons from Los Angeles to New York City is \$1.05 and the charge for refrigeration 30 cents. California lemons bring about \$2.50 per box of 300 in New York, or a little less than a cent apiece; late in the season they bring a little more than a cent apiece. If a box sells at \$2.70 the railroad gets half. Mr. Naftzger thinks it safe to say that the carriers get

at present approximately half the gross proceeds of California fruit sales of citrus fruits. The California fruit growers can not put their fruit in New York as cheaply as the Florida fruit growers can. (959.)

Refrigerator cars and cold-air funnels.—Mr. HALE does not think the cold-air funnel is a commercial success as yet. He once experimented with a car so equipped, but it was poorly handled at the farther end of the line. It was claimed that the road did not handle it properly because it had an interest in having the refrigerator cars maintained. Mr. Hale believes, however, that it will be possible to do away with the heavy refrigerator car and save the hauling of tons of ice. (398.)

B. Freight charges.—1. *The decline in freight rates.*—Mr. HOLMES says transportation has done great things for the farmer. The freight rate on wheat per bushel from Chicago to New York has decreased from 32½ cents to 12 cents since 1867. The all-rail rate on a bushel of corn from Chicago to New York was 36½ cents in 1858 and 11½ cents in 1897. The reduction in freight rates has given the farmers a world market, and has created foreign competitors and made American farmers competitors with one another. The Eastern farmer, when he found himself in competition with the West, had to diversify his agriculture. Mr. Holmes suggests that the gradual extension of the area of competition and of the number of competitors may have been an important cause of the falling prices, and have checked the further increase of prices of those products which have increased in price; but he adds that were it not for the present means of transportation the farmer would be living in the ways of the backwoods. (156.)

Dr. CROWELL says transportation rates on agricultural products have decreased during the past 50 years, largely through the competition of railroads for freight, with the effect of enlarging the markets for the farmer, but not greatly enhancing prices, because it has obliged him to compete with the surplus product of the world. The decline in rates has brought immense advantage to the consumer, but not much to the producer as such, though transportation facilities, including the mail, have enabled the farmer to avail himself of comforts and facilities for self-improvement and increased knowledge, probably the main factor in enabling him to maintain a high standard of living. (344.)

Mr. AGER, master of the Maryland State Grange, testifies that there has been quite a decrease in transportation rates, especially from the West to the East. This has affected the Maryland farmer adversely, so far as the sale of his products is concerned, by lowering prices as the trade from the West has increased, but it helps the dairy-men in buying bran and mill feed from the West. (115.)

Mr. GEORGE testifies that transportation rates have fallen materially as the equipment of the railroads has been improved. The producers, to some extent, get the benefits of the progress made by the railroads. (223.)

Mr. BRIGHAM believes that farmers pay every cent of transportation charges on agricultural products. The fluctuations in transportation charges are immediately felt in their full force in the price of the product to the farmer. Transportation rates have been largely decreased during the last 30 years, but the railways take advantage of large crops to raise their rates. The lowering of railway rates has deprived the farmers of the Middle States of the advantage of their location, especially since the through rates from the West are relatively much lower than the local rates. (23.)

Mr. STREVEN testifies that transportation rates have been very greatly reduced in Georgia since the organization of the State commission under whose control the railroads are operated. (916.)

2. *Cases of increased rates.*—Mr. KETCHUM, of Mercer County, N. J., says there has been very little change in transportation charges from that vicinity to New York and Philadelphia within recent years. The rates on some things, especially live stock, to New York were increased a few years ago. (136.)

Mr. MILLER, secretary of the Ohio State Board of Agriculture, says complaint of high transportation rates is general among the farmers of Ohio, and there has been much agitation for legislation.

Mr. Miller testifies that freight rates increased during the year preceding the date of his testimony (June, 1900), with the effect of reducing the value of the farmers' products. People who live 50 and 100 miles east of Toledo are obliged to pay freight to Toledo, and from Toledo to New York, in order to ship their products to the seaboard. A large part of the cereal products of Ohio is shipped west to Toledo before being started east, and the rate to the seaboard is greater from the eastern part of Ohio than from Toledo. Shippers in the interior points have trouble to get cars in the busy season. Mr. Miller is not in favor of making all the smaller stations through billing points, however. (613, 614, 616.)

Mr. NALL testifies that since 1895 there has been an increase of freight rates of from 10 to 30 per cent in Kentucky. The average increase would perhaps be 12½

per cent. In passenger rates there has been no change. The railroads justify the increase by the claim that commodities are worth more and should therefore bear a greater carrying charge. (813.)

3. *Excessive freight rates in the South.*—Mr. BARRETT considers the railway freight rates on cotton in the South excessive. It cost 90 cents to transport a 500-pound bale 32 miles from his home to Augusta. The rate from Augusta to Savannah is about \$1.30 per bale. The ocean freight to Liverpool, 3,000 miles, is from \$2 to \$2.50 per bale, so that the railway freight for a much shorter distance is almost as great. An official of the Georgia Railroad recently said that the company would be willing to reduce rates on cotton in round bales from competing points, but not from non-competing points. Sixty thousand pounds of cotton can be put into a car in round bales, and only 20,000 in square bales. (51, 52.)

Mr. PORTER, a cotton broker of Memphis, says there would be a great outlet for cotton in North and South Carolina if it were not for the prohibitive freight rates. The freight rates for uncompressed cotton are 59 cents a hundred to the Carolinas, and only 55½ cents to Lowell, and 50½ cents to New York. Mr. Porter has seen the time when he could send cotton from Memphis through Charlotte, N. C., to Liverpool for 42 cents, when it cost 59 cents to stop it in Charlotte. There is a physical division of the cotton business of the railroads which makes the rate to Carolina points noncompetitive. The cotton dealers have been endeavoring for some time to get the rate reduced, but without success, though for a little while they had it down to 42 cents. All they have ever asked is to have the Norfolk rate, which Mr. Porter thinks is 42 cents, apply to intermediate points. Mr. Porter thinks that if the Carolina planters would join in the effort, something might be accomplished. The reduced rate would be of benefit both to the raisers of cotton and to the planters in Carolina, and the railroads would have more cotton to haul. With the increased spinning capacity of the Carolina mills, the local supply of cotton is inadequate, and there is nothing to prevent building up business with them if a fair freight rate could be obtained. (481, 482, 485.)

Mr. MOSELEY, of Memphis, testifies that the river rate on cotton is a little cheaper than the rail rate, but the transportation lines stand by their agreements pretty well, and there is not much cutting of rates. (517, 518.)

Mr. PEEK, of Georgia, thinks the expense of transportation is one of the great drawbacks to the farmer. Mr. Peek lives 31 miles from Atlanta, and pays on freight to that city 15 cents a hundred for cotton and 4 cents a bushel for corn. A recent report of the Georgia Railroad Commission shows that the railroads have earned a dollar for every linear yard of road. (461.)

Mr. LOVEJOY says it is difficult to raise vegetables and fruits in Georgia for sale in Northern markets on account of the excessive freight rates. It costs much more, sometimes even twice as much, to ship goods from Georgia to New York as it does to ship them from New York back. This is probably due to the fact that there is no competition in taking goods north from any particular town, while there is competition out from the great cities. The rates to and from certain competing points in Georgia are much lower than elsewhere. Often it costs less to haul goods a greater distance on this account. Generally speaking, over the entire country there is discrimination in favor of large cities as against small towns. This practice is in a certain sense injurious to the cities as well as to the rest of the country, since it draws large numbers of laborers to work in the industries which are driven to the cities, and attracts others with the unwarranted hope of obtaining labor. When a depression comes there are great numbers of unemployed. Were the laborers scattered more throughout the country and employed in manufacturing in small places there would be much less difficulty from unemployment.

The two railways which reach the locality where Mr. Lovejoy lives, the Central and Southern systems, are under one management, although they claim not to be. There is some water competition, the city of Hawkinsville itself owning a line of small steamships, and this helps greatly in keeping rates reasonable.

The witness has nothing to suggest as a remedy for these discriminations beyond the present efforts of the Interstate Commerce Commission. (80-82.)

Dr. STUBBS, of Louisiana, believes that since the creation of the State Railroad Commission transportation rates have been regulated a little more satisfactorily. He believes the railroads have done everything the commission required, and the planters are not complaining about the rates. The great trouble about going into truck industries in the South is the high transportation charge to New York and Western markets, but that is a question of interstate commerce. (784.)

Mr. WEDDERBURN says the farmers of Virginia think the transportation rates are a little too high, but there is not as much complaint as in the past. Owing to the lack of organization, the farmers do not get together and talk over their grievances so

much. Moreover, there is a better feeling between the people of the State and the railroads than there was a decade ago. The railroads have better facilities and slightly more competition than formerly, and the managers are finding out that it is better not to antagonize the people so much; but there is still room for improvement. (632.)

Mr. CLOHAN says there is no board of railroad commissioners in West Virginia. The nearest approach to it is the Board of Public Works, which controls only the valuation of railroads for taxation. He favors having a board of railroad commissioners, with power to remedy unfairness in rates and accommodations. Frequent complaints of excessive rates have been made in the governor's messages and elsewhere. (604.)

4. **Rates on California fruit.**—Mr. NAFTZGER, president and general manager of the Southern California Fruit Exchange, testifies that the freight tariff is exactly the same now as it was in the infancy of the traffic, while the cost of operating has gone down all the time. This applies generally to the Pacific coast traffic, except such as is under the influence of water competition. Most of the California products are fruit, in which rail transportation is necessary. The cereals go by water to Liverpool. A considerable portion of the freight shipments to California have water competition, and pay about half the rate paid on fruit leaving the State. (964.)

Mr. Naftzger declares the existing freight rates too high. In the early history of the orange business in California they were, perhaps, not too high, as the prices were then high and the product comparatively limited. Now the citrus fruits amount to about 25,000 carloads and are steadily increasing, and they are much cheaper; consequently the margin between the selling price and the freight tariffs is diminishing, and, considering these conditions, the freight rate is excessive. The freight rate to mountain points, such as Denver, Pueblo, Cheyenne, Salt Lake, and Montana points, is \$1.124 a hundred. For all points farther east the rate is \$1.25 a hundred everywhere. If the Southern California Fruit Exchange had control of the entire product for distribution, a graduated rate on a mileage basis would be preferred. The cheaper class of fruit could be put into the cheaper territory of the West and Northwest, and the continual forwarding to other markets would be eliminated. About 5 per cent of the California fruit is sold on the Pacific coast; another 5 per cent is sold in the mountain territory; about 18 per cent goes to Missouri River points; Chicago and other Mississippi River territory take about 17 per cent; the trunk-line territory about 15 per cent; Buffalo and the East about 38 per cent, and the rest is scattered through the South. (961, 962.)

Mr. Naftzger says the Southern California Fruit Exchange loads a car with its minimum load of 26,000 pounds and pays \$1.25 a hundred. There is a "postage-stamp" rate on citrus fruits—that is, the same rate prevails to all points east of the mountains. (947.)

Mr. Naftzger says most of the other classes of freight are hauled at a much lower rate than fruit, and some of them on equally good time. The railroads claim that fruit is very expensive to transport, because it has to be hauled on expedited trains. (956.)

It seems unreasonable to the people on the Pacific coast for the carriers to say that in competition with water rates they can haul goods from New York or Chicago to the Pacific coast for 50 cents a hundred, but that they can not afford to haul California products for less than \$1.25 to \$1.60 a hundred. If the water competition makes the business unprofitable the carriers ought to let it go by water. A very large percentage of the cost of operating is in the handling of the freight itself; but the carriers never handle the fruit. Mr. Naftzger concedes that one of the reasons for the high rates is that the cost of hauling the transcontinental or mountain freight is about twice the cost on the prairie roads. (962.)

5. **Recent freight reductions in the Northwest.**—Mr. HANLEY, business agent of the National Farmers' Alliance and Industrial Union, says that the association had a bill to reduce freight rates in general 20 per cent, and was going to make a campaign issue of it. As a compromise Mr. Hill, of the Great Northern, reduced the rates on grain about 14 per cent, and the other roads had to follow the reduction. The reduction amounted to about \$1,100,000 on the Great Northern and about \$3,400,000 on the other roads. Mr. Hanley believes that the rates are still too high. (280, 281.)

Mr. MORAN says that in 1898 associations of farmers secured a reduction of freight rates in the wheat belt of the Northwest amounting to about 14 per cent on wheat. They asked for 20 per cent, and had a committee nominated to present the measure in the State legislature, but this became unnecessary, as one of the roads voluntarily reduced the rates on grain. The president of this railway said he proposed to donate \$1,098,000 to the farmers by reducing rates on grain 1 cent per 100 pounds the first

100 miles, 2 cents for the second 100 miles, 3 cents for the third 100 miles, and 4 cents for the fourth 100 miles from the terminal market, etc., giving the farmer farthest away from the terminal market 4 times as much reduction as those near by, thus helping to equalize freights. The reduction which this road inaugurated on grain rates from the wheat fields of the Northwest to terminal markets of Duluth and Minneapolis compelled other roads to meet the reduced rates, and the reduction on that season's crop was computed at \$3,400,000. (712.)

Mr. JUMPER testifies that in 1898 the freight from Aberdeen to Minneapolis was reduced 2 cents, from 12 to 10 cents a bushel. (737.)

Mr. PROM testifies that the freight rate on the Great Northern Railroad was voluntarily reduced about 2 cents a 100 pounds throughout North Dakota since 1897. (795.)

Mr. BUDGE thinks that the rate from Grand Forks to Duluth is 14 cents a 100 pounds, or 8.4 cents a bushel. Formerly the rate was 17, 18, or 20 cents. The decline has added something to the value of farmer's crop. (853.)

Mr. GREELEY, of South Dakota, says that transportation rates have sometimes fluctuated a little in recent years, but the tendency has been downward. Much time has also been gained in stock shipments. Stock is sent to Eastern markets with one-half the shrinkage formerly experienced, and at lower rates. (938.)

Mr. PRATT, of Aberdeen, S. Dak., says freight rates have fallen in the past 10 years, and every time the railroad reduces the rate the reduction goes into the producers' hands. The lower the rate the more the farmer gets for his products. (727.)

6. Farmers not benefited by reductions of freight. (See also XII D 1, Powers, p. cxcxii.)—Mr. MORAN declares the general belief that any reduction in freight rates on grain will go to the producer to be entirely erroneous, so far as it applies to wheat. The reduction secured in 1898 did not increase the price 1 cent the day the rates went into effect. The farmers have therefore concluded that the reduction of freight rates on grain crops is of no practical benefit to them. The reduction which was intended for the producer in fact went to the consumer, reducing the price to the farmers of the entire world, while the railroads lost the amount of the reduction. The various wheat countries of the world bring all the surplus wheat of the world to Liverpool, and the buyer in that market makes the price. A man sending wheat to Liverpool who has a larger margin than he ought to have may, by reason of that margin, make his bid lower than the other sellers, but his competitors will immediately "drop" to get the order. Even if the entire freight charge were wiped out, it would not, in the long run, add a penny to the price received by the farmer, because sellers in the Liverpool market would offer wheat lower. Other countries would reduce their price level, even if they had to sell their product below cost, because there is a surplus, and it must be marketed. Mr. Moran declares it to be the opinion of the Grain Growers' Association that the abolition of the freight rate would work no advantage to the producer. As long as Liverpool is the market of the world, he says, and all the agricultural nations are competitors in that market, Liverpool will always be able to dictate the price at which the products must be sold. (712, 713.)

Mr. Moran says the farmer pays the freight on wheat, the farm price of the wheat being reduced by the amount of the freight; but reductions in freight rates benefit the consumer, not the producer. (714, 715.)

Mr. Moran testifies that the 14 per cent reduction given by the Great Northern Railroad went into effect July 16, 1898. Mr. Moran watched the price of wheat to see if the change made any difference, and to his astonishment found that there was no difference whatever. He made comparisons with the price paid the day before the reduction took effect, and also with the price a week later and a week earlier; he also learned as far as he could through the public press the state of the foreign market and the price at other stations, without finding any difference. The reduction of 14 per cent did not amount to quite 2 cents a bushel. Mr. Moran admits that if the freight rate to Minneapolis and St. Paul were cut in two the farmers might for a very short time receive some small benefit. (718.)

Mr. Moran testifies that the farmers connected with the National Grain Growers' Cooperative Association generally believe that a reduction of freight rates would not benefit them. Outside of that organization they have not generally come to that conclusion, but still believe that the benefit of a reduction of freight goes to the farmer. Mr. Hill, at the time he made the reduction, firmly believed that the difference would go into the pockets of the farmer, but he changed his views, and now believes that the farmer does not get the benefit of a reduction on wheat. (718.)

Mr. Moran believes that when the freight was reduced the country buyers or shippers understood that they received a temporary benefit. (722^c)

C. Railroad combinations.—1. Rate agreements.—Mr. RICHARDS is satisfied that there is just as much of a railroad pool as there ever was. The Traffic Associa-

tion is nothing but a pool, which has been doing business on the same lines as in the past; he has no reason to believe that its methods have been materially changed, though it may be a little more cautious. (209, 210.)

Mr. CLOHAN says the farmers of West Virginia sell their grain largely at Baltimore, and the rate is about the same as from Chicago. There are two roads, but apparently there is a combination between them to maintain rates. (603.)

Mr. PORTER, a cotton broker of Memphis, refers to a cotton committee representing the various railroads, which, he understands, has a secretary paid by the different railroads, who promulgates all the cotton rates. (484.)

Mr. NORRIS says New York farmers are not so materially affected by combinations of railroads and elevator men as those in some Western States, because there is such competition between different lines of road, and the Erie canal is a balance wheel. The railroads can not pinch the farmers as hard as they do out West, except between noncompetitive points. (331.)

2. *Pooling of cotton.*—Mr. GAGE testifies that the different railroads carrying cotton and cotton goods from Memphis to New York, Boston, and other ports have a pooling contract which he thinks has been very rigidly adhered to. (495.)

Mr. PORTER, of Memphis, thinks a better freight rate could be obtained if the physical division of freight among the railroads could be done away with. When the Southern, for example, has as much freight as it is allowed by the arrangement, it has to turn the remaining cotton over to some other road. Each road is allowed its percentage on the cotton freight, whether it hauls it or not. There was a lawsuit about this in 1899, but the Supreme Court of Tennessee decided against those who attacked the pool. (484.)

Mr. MOSELEY, a cotton dealer of Memphis, testifies that a great deal of business has been lost to Memphis shippers because certain large spinning establishments in the East want their cotton shipped over certain lines, and the cotton shippers in Memphis can not choose their routes on account of the physical division of cotton among the railroads. Until a few years ago there were fast freight lines whose agents made export rates; but they can not do so any more, because initial lines dictate the road that cotton must go over, and have thus cut off the competition which enabled the shippers to get very much better rates. Mr. Moseley thinks pooling is opposed to the best interests of Memphis. (517.)

3. *The California fruit pool.*—Mr. NAFTZGER testifies that the Southern California Fruit Exchange at one period got a railroad rebate, as did everyone else, but now gets none whatever. There was a time in the history of the California business when almost every commodity had its special privilege or rebate in some form. Under the existing order of things the rate is firm by reason of the arrangement between the carriers. The two initial railroads operating in California—the Atchison, Topeka and Santa Fe and the Southern Pacific—divide the business between themselves and parcel it out to their connections. Formerly the flexible rates were usually made or the rebate obtained through a private car line, several of which were operating. Speculators whose sole hope of reward was in the rebate dipped into the traffic, contracting with the producers to handle the crop. The producers were no better off for the rebate, and usually the crop was poorly handled. The system was extremely demoralizing to the business, putting it into the hands of those who were not prepared to handle it properly. The establishment of a steady rate eliminated these so-called pirates. While Mr. Naftzger understands that an association as large as the Southern California Fruit Exchange is very likely to get special benefits from shifting rates, he believes the steady rate desirable in the interests of the industry, as well as of good morals. (946, 947.)

Mr. Naftzger says the initial carriers have control of the routing of the freight to its destination, and give it out to their connections to suit themselves, merely giving the shipper the privilege of determining what terminal he desires and of diverting his shipments in transit; that is, a car shipped to Kansas City may be diverted to Chicago, to Buffalo, and to Boston, the same rate applying to Boston that applied to Kansas City. (961.)

Mr. Naftzger's reasons for believing that there is an understanding between the two railroads are: In entering into contracts with the refrigerator lines the two companies contract for precisely the same amount of equipment. They have repeatedly refused to permit fruit to be loaded on one line and forwarded on the other line, because the second line was already ahead in the shipments. They have repeatedly asked the shippers to even up the shipments between them. They have refused to allow fruit to be hauled from the vicinity of one road and loaded and shipped out on the other line; they have insisted in such cases upon billing the car over the road near whose line the fruit was grown. (963.)

Mr. Naftzger testifies that in a case pending before the Interstate Commerce Commission complaint was made against both the initial carriers in California for discrimination in favor of one shipper over others, this one shipper having under his ownership and control a line of refrigerator cars, not only for his own benefit, but into which the Fruit Exchange was forced to put its shipments, which were thus made under the notice and, to a certain extent, under the surveillance of a competitor in business. Complaint was also made against the refrigerator rates and against the custom of the carriers in taking the routing of the business into their own hands. The whole private-car system was complained against, the contention being that the carriers had no right to farm out the business to other corporations or individuals, and that it was their duty to furnish equipment under their own control. The refrigerator rate is believed to be excessive because of this combination. Formerly some reductions from the published rates could ordinarily be secured, but that can not now be done. Since the agreement was entered into between the initial carriers and the car lines the freight rates and the refrigerator rates have remained firm and arbitrary. Complaint was also made to the commission of the increase of the minimum carload weight, which for citrus fruit was increased from 20,000 to 21,000, then to 24,000, and finally to 26,000 pounds. This has worked a hardship to the shippers, because many of the cars were unsuitable for carrying so heavy a load, causing a great deal of loss by decay, and also because many Western markets that would take a small carload could not take a large one. Thus wholesale markets were converted into retail and jobbing markets, and many small towns were forced to get their supplies through other cities secondhand instead of getting them direct in car lots. Prices were thus raised and the consumption and demand limited. (961.)

D. Discriminations.—1. **Between localities and classes of freight.**—The farmers of New Jersey, Mr. DYE says, complain greatly that relatively lower rates of transportation for longer distances have greatly injured them by enabling fruit, vegetables, milk, etc., to reach New York markets at exceedingly low prices. There are also discriminations in classification, especially on the basis of relative perishability of freight. (96.)

Mr. BRIGHAM says the grain dealers get advantages over the farmers in the matter of rates; the rates from Western farms to Chicago are much higher than those paid by the dealers from Chicago to the East. (23.)

Mr. NORRIS, master of the New York State Grange, says the man who has access to the Chicago market is better off than the man living in western New York. A man who has to depend upon local transportation between noncompetitive points can not get the fair rates that exist between competitive points. (328.)

Mr. CLOHAN says the Baltimore shipper puts his fruit into the Wheeling market at 25 cents, while fruit growers 100 miles nearer have to pay 50 cents. (604.)

Mr. JUMPER, of Aberdeen, S. Dak., says the farmers complain that the freight rates between points in South Dakota and Minneapolis are too high in proportion to the rates for greater distances. The rate from Aberdeen to Minneapolis is 17 cents a hundred, or 10.2 cents a bushel; to Duluth it is 20 cents a hundred, or 12 cents a bushel; to Chicago it is 27 cents a hundred, or 16.2 cents a bushel. The distance from Aberdeen to Minneapolis is 280 miles, and from Aberdeen to Chicago 700 miles. The rate for the first 300 miles is 10.2 cents and for the last 400 miles 6 cents. (739, 740.)

Mr. NALL testifies that complaints of discrimination are numerous in Kentucky. (813.)

2. Special rates and rebates. (See also XIII C 3, p. cccv; XIV A 15, p. cccxxiii.)—Mr. RICHARDS says the stability of a rate is more important than the rate itself. Of two dealers buying wheat at the same time and at the same prices, one can sell more cheaply than the other because of discriminations. Mr. Richards thinks discrimination is practiced more than formerly from the fact that it has driven men out of business. Men who made money on the Chicago Board of Trade a few years ago are practically doing nothing. (206, 210, 211.)

Mr. S. H. GREELEY says the railroad managers are able to dictate the freight rates paid by an individual and by his competitors, and are thus able to make or unmake almost any business man or almost any community. (231.)

Dr. CROWELL has no doubt that discriminating rates exist. Corresponding to the published standard rates, which the small shipper has to pay, are secret special rates known only to a few persons. They are made by contract with the company for a period of months. Dr. Crowell is informed by a railway employee that it is a common thing for an official to have by his side a stack of special rates as high as a table.

The differential between Chicago and New York on the seaboard lines is practically nonoperative at present, because they have more freight than they can well handle; but when they have less freight than they can conveniently handle, the differential will be enforced, and the rate cutting will go on. (345, 346.)

Dr. Crowell considers it impossible to deal with discrimination from the standpoint of the individual Commonwealth. Pennsylvania made a strong effort to prevent discrimination, but it practically amounted to nothing, because the larger part of the commerce was interstate. (337.)

Mr. NORRIS, master of the New York State Grange, thinks there have been large rebates made to large shippers in New York State, and is inclined to think that large shippers are entitled to discounts. (328.)

Mr. GEORGE, of Chicago, says railroad rates are not always reasonable under present laws, and that large shippers are favored while the class which needs favors is discriminated against. The railway companies cater to the elevator men and grain buyers, because it is less trouble to deal with them. The farmer who has a carload of grain to ship may have to wait a month or two before he can get a car, and becomes discouraged and sells out for whatever he can get; but a railroad company will see that a buyer who applies for 10 cars gets them promptly. In many cases if the buyer finds that the farmer wants to ship grain he will order a few more cars than he wants to use, more than the company is willing to furnish at that point, and the farmer, needing money, gets discouraged and sells out for what he can get. (225.)

Mr. WILSON, master of the Illinois State Grange, thinks big shippers have a little advantage, though he has never been able to get absolute proof. (252.)

Mr. WEDDERBURN knows of a man who contracted with a railroad to have 100 barrels of flour delivered at a certain price, but packed about 500 barrels into the car. The railroads make contracts with large shippers for a smaller amount, and allow the shipper to exceed the shipment, without any supervision. (633.)

Mr. MOSSELEY, a cotton dealer of Memphis, says a great many of the cotton people think the railroads grant special favors to some shippers by rebating all the local rate to Memphis when the cotton is reshipped, thus giving an unfair advantage to the exporter. (516.)

E. The interstate-commerce law and proposed reforms.—1. Criticisms of the existing law.—Mr. RICHARDS, a grain merchant of Chicago, understands that the interstate-commerce law was passed for the purpose of preventing discrimination, but in passing it Congress was led to apply certain remedies which the courts have declared unconstitutional. A man can not be compelled to testify against himself. Then they sought to amend the law by relieving the witness of criminality. Discrimination in the long and short haul has been another perplexing question. Mr. Richards says the law has been inoculated with vicious provisions which destroy its efficiency as a protective measure. It neither confers the requisite powers upon the commissioners, nor reaches the foundation of the wrongs it was intended to correct. (207, 208.)

Mr. Richards has never regarded the interstate-commerce law as amounting to anything, except as a kind of club held over the railroad company if it will not give a man a pass. Mr. Richards says the law was hailed with a good deal of pleasure by the railroads because it simplified their business. They thought it would be a great deal better to give a rebate to one man than to 100 or 500. (204, 206.)

Mr. GEORGE says the interstate-commerce law seems to be inoperative in a good many ways; not much progress has been made under it. It is a compromise measure; there were three or four bills in Congress and a compromise was necessary. A good many people have lost confidence and say that it is worse than no measure at all; but Mr. George thinks it a step in the right direction. (226.)

Dr. SCRIBBS says there is considerable complaint in the South that the Interstate Commerce Commission is not doing what it was expected to do. It was thought that it would regulate rates so as to give the farmer an opportunity of putting his products in the markets of the world on an equality with the rest of the world. Complaints arise from time to time in Louisiana that such and such a place is getting rates that Louisiana can not get. (784.)

Mr. HAMILTON thinks the general feeling in Pennsylvania is that the interstate-commerce law has been a very valuable aid in preventing freight discriminations. (373.)

2. Increase of the Interstate Commerce Commission's powers advocated.—Mr. JONES believes that the question of transportation is of the greatest importance to all industrial interests. Railways, like all others who have the power, are likely to be grasping and extortionate. Legislation, therefore, is necessary. The power of the Interstate Commerce Commission should be increased. (31.)

Mr. BRIGHAM would give the Interstate Commerce Commission more power, so that it could remedy the wrongs it finds. (27.)

Mr. MILLER suggests that the Interstate Commerce Commission's powers should be enlarged and that it should have better facilities for enforcing its orders, as already recommended by the Industrial Commission. (See vol. 1, pp. 6, 7.) He thinks this

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view is pretty generally entertained by the farmers. There is a pretty general feeling in Ohio that there should be some State legislation in the matter of passenger travel, but that the National Government should control the transportation of commodities. (618, 619.)

Mr. RICHARDS says the commission should be given judicial or police powers and supervisory power to control every detail connected with transportation, including weighing, storage, inspection, and transfers from one line to another. Mr. Richards thinks the Interstate Commerce Commission could be clothed with power to do anything that would facilitate and promote interstate commerce. He does not believe, however, that the rate-making power should be given the commission. (206, 207, 211.)

Mr. Richards proposes amendments to the interstate-commerce law empowering the commission to supervise the inspection, storage, weighing, and transfer of all interstate shipments of grain and seeds, and to make and enforce rules and regulations to prevent improper inspection, grading, or weighing, mixing of different grades, or separating different qualities of the same grade, and giving the commission the complete jurisdiction of a trial court, appeal to lie to the court of appeals, whose decisions should be final except on constitutional questions; also requiring bills of lading to state the actual net weight of each carload of grain or seeds, claims for shortage to be adjudicated by the commission on that basis, and prohibiting the storage of grain in any elevator or other place of storage the owner, manager, or agent of which deals in grain on his own account without the written permission of the owner of the grain so stored. (218, 219.)

Mr. Richards would have one member of the Interstate Commerce Commission an agriculturist, another representing the manufacturers, another representing the commercial and merchandising interests, and one an attorney. (220.)

Mr. NAFTZGER thinks the Interstate Commerce Commission or some proper tribunal should have power to determine what are reasonable rates and to classify rates. At present, where the carriers are forbidden to increase the rate without the consent of the Interstate Commerce Commission they accomplish the same result by changing the classification. The order of the commission ought to go into effect as soon as made, subject to the right of appeal. Mr. Naftzger thinks it is not extremely difficult to ascertain what is a reasonable rate. (962, 963.)

Mr. WILSON says there is a general demand in Illinois for an increase of the powers of the Interstate Commerce Commission. (254.)

Mr. PORTER, a cotton broker, believes in giving the Interstate Commerce Commission greater powers. (484.)

Mr. GEORGE is in favor of giving the commission more power. (226.)

Mr. WEDDERBURN suggests, as a remedy for railroad discriminations, giving the Interstate Commerce Commission authority to enforce its rules and regulations. (633.)

3. Prevention of special rates and rebates.—Mr. RICHARDS says all rates should be uniform and based upon single carloads as the unit. Discriminations, special rates, and rebates should be absolutely prohibited. The small shipper should be protected as much as the big one. (206, 210.)

Mr. MORAN, president of the National Grain Growers' Cooperative Association, desires a rigid execution of the law preventing railroads from granting rebates to specially favored shippers. (719, 720.)

4. Legalisation of pooling.—Mr. GEORGE advocates the legalization of pooling under the strict surveillance of the Government, so as to give the people the benefit of whatever advantage the railroads may derive from pooling. Competition, he says, is wasteful and leads to discrimination. (224.)

Mr. RICHARDS, a Chicago grain merchant, thinks it would hardly pay to legalize pooling, but it would depend upon how it was legalized. If the laws of trade could be carried out, the question of rates would regulate itself under competition. If a railroad can not get what it considers its share of the business at the legal rates, it will cut rates, no matter how strong the agreements are. (210.)

Mr. GREELEY, a Chicago commission merchant, does not believe the permission of pooling would prevent cut rates and special warehouse facilities. (231, 232.)

Mr. WILSON, master of the Illinois State Grange, does not see that any possible benefit can come to the producer from the permission of pooling, and is opposed to it on principle. He believes in open competition among railroads as in everything else. (254.)

Mr. BARRETT believes that combinations among railways to prevent legitimate competition should be prohibited. He speaks especially of the consolidation of parallel lines, as in the case of the South Carolina and Georgia and the Charlotte and Columbia roads, and in the case of the Central Railroad and the Georgia Railroad.

The constitution of Georgia prohibits such combinations, but the State officers do not enforce it. (55.)

5. Government ownership.—Mr. WILSON, master of the Illinois State Grange, thinks the Government should entirely control the railroads, and if it can not control them he favors Government ownership. (254.)

Mr. S. H. GREELEY, a commission merchant of Chicago, emphasizes the importance of stable and uniform freight rates, and says they will never be secured until the Government owns the railroads, under a satisfactory system of civil service. The idea of attempting such a gigantic undertaking without such a system of civil service seems to him folly. (231, 232.)

F. Wagon roads.—1. **Poor character of American country roads.**—Professor BAILEY, of Cornell University, says that American country roads are very poor, partly because of the great extent of the country and the large holdings, and partly because in many regions the railroads developed before the wagon roads, and the need of road improvement has therefore been less imperative. In many great regions road material is scarce and expensive. Poor roads add to the unattractiveness of farm life, and are therefore socially as well as economically important. They can not, however, be considered as an underlying cause of any agricultural decline. The agitation for good roads might easily be carried too far, for the building of roads might often entail more expense than the adjoining property is worth. (1012.)

2. Cost of transportation.—Mr. DODGE, director of public road inquiries, United States Department of Agriculture, has investigated the cost of transportation on common roads by animal power, and found the average cost per ton per mile to be about 25 cents, as compared with one-half of 1 cent by steam power and 1 mill by steamship on the Great Lakes. In many instances where there were partial loads and very bad roads the cost would be 50 cents a ton-mile. The average cost over the best improved roads is between 10 and 15 cents in this country, though, according to consular reports, it goes as low as 8 cents in European countries.

Mr. Dodge says that General Stone, his predecessor in office, on the basis of inquiries in 1,200 different counties, estimated the cost of transportation at 25 cents a ton-mile, and the Maryland commission has estimated the cost at 26 cents. The cost in Mexico has also been estimated at 26 cents. (690, 691, 700.)

Mr. Dodge considers the cost of moving materials over highways unnecessarily high. He says there has not been much reduction in the cost during a long period of time, but estimates that four-fifths of the present cost can be saved. The cost would then be 10 times the average cost of transportation on steam cars. (693.)

Mr. SPEAR, of Vermont, says the cost of transportation has been reduced in the past 40 years by the railroads and by improved highways. (408.)

3. Importance of road improvement.—Mr. HAMILTON believes the country would be greatly benefited by good roads. The building of a good road out to a farm brings it nearer the place of business and enables the farmer to haul double the load he did before, and saves time to that extent. The labor and time of the farmer are very much more valuable than formerly. (370.)

Mr. DODGE declares that population, like everything else, moves along the line of least resistance, and good roads form lines of less resistance than poor roads; hence, where the better roads are there will be the greater numbers of people and the greater wealth. Better modes of transportation not only increase the power of production and the value of land, but have a more powerful influence on the location of the people than anything else. (703.)

Mr. Dodge has no doubt that great fortunes result largely from taking advantage of cheap transportation. The community which lacks cheap transportation never has any rich people. Those parts of the country which have no means of transportation but animal power are universally poor. The value of land is estimated by the distance from cheap transportation. Mr. Dodge believes it is the duty of government—national, State, and local—to turn its attention to road improvement, not only because of the added value, but because it tends to place people more nearly upon an equality as to the value of their property, the profits of their industry, and the rewards of their labor. (698.)

Mr. Dodge says that when the steam engine was first developed as a locomotive the intention was to move ordinary small vehicles, only about 3 or 4 or perhaps 6 in a train; but the engine was developed so as to draw heavier burdens than was expected, and the size and speed of the vehicles were increased. The running of these large cars so cheaply and so fast diverted attention from the smaller vehicles and from the improvement of the highways; but there is still a necessity for the small vehicle to serve people locally. The large vehicle is not satisfactory for the short haul, and there is to-day no cheap means of transportation for distances of from 5 to 10 or 15 miles. The high rates for short hauls, with the loading, unloading, and hauling at

each end, makes the cost about equal to that of using animal power for the entire distance. The problem is still unsolved, but the prospect of results beneficial to all classes is much greater than ever before. (699.)

Mr. JONES, master of the National Grange, considers the building of good country roads of very great importance. Every dollar wisely invested in this way would return 200 per cent. The chief advantage to the farmer would be the possibility of taking his goods to market at any time, thus preventing the fluctuations in prices due to the stopping of such transportation. Good roads would prevent the necessity of disposing of products immediately and of storing them in great elevators. The knowledge of buyers that so much grain is on store in elevators tends to depress prices, while storage in farmers' granaries would not have so great an effect. Moreover the cost of insuring grain on the farm is less than in the city elevators. (39.)

Mr. KETCHUM, of New Jersey, thinks good roads will be of no great benefit except to the farmers adjacent to the large cities, especially dairymen who go to town every day. (136.)

Professor DAVENPORT says there is a good deal of wrong figuring as to the economy of good roads, and a great danger of magnifying their financial necessity. In any agricultural section that is producing crops extensively the roads are comparatively good a large part of the year. In Illinois it is possible to send heavy loads over the roads a good share of the season, and there is an immense amount of unused horse labor on the farms. Professor Davenport, however, mentions other arguments for good roads which he considers convincing: their convenience, uplifting influence, and advantage in making country life happier. (273.)

4. Road improvement in various States.—*Massachusetts.*—Mr. STOCKWELL says that the roads of Massachusetts are good in comparison with other States. Under the Massachusetts law the Highway Commission builds a mile of road here and there in the towns, free or nearly free, as an incentive to the towns. The plan is eventually to bring these lines into communication, making a continuous road from the eastern to the western boundary of the State. The country towns can hardly imitate such good pieces of road, but they are having a good effect in increasing the number of good roads. Mr. Stockwell regards the roads as an index of the character and civilization of the people. He thinks the Massachusetts roads and roadsides are becoming increasingly comfortable and attractive. There is a forestry association which works in harmony with the Board of Agriculture in this matter. The State appropriations for State roads, including bridges and culverts, have amounted to more than \$3,000,000. (896.)

New Jersey.—Mr. DYE enumerates several systems of road building in operation in New Jersey—the old township system, special county systems in particular counties, and the State-aid system. The latter was established as the result of efforts by the State Board of Agriculture and of State road conventions held during three successive years. The appropriation by the State has increased from \$75,000 per year to \$150,000, and the system has become more popular with the people. Under the law, if two-thirds of the property owners living along any road petition for an improved road it is built under the supervision of the State, one-third of the cost being met by the property owners benefited, one-third by the county, and one-third by the State. The road then becomes a county road maintained at county expense. The original act required that such roads be constructed of macadam or telford, but late amendments allow them to be built of gravel, oyster shells, or bog ore. The cost per square yard varies from 20 cents to 70 cents.

Improved roads are of special advantage to those who can haul their own products, especially vegetables, to the market over them. They are of less advantage to other farmers. (94-97.)

Pennsylvania.—Mr. HAMILTON says the system of road construction in Pennsylvania is very imperfect. "It is the old method in most of the districts of working out or loafing out the tax." It is in the hands of inefficient men, because a business man or a man of any considerable occupation can not afford to be a road supervisor, and a man is selected for that office because he is unable to do anything else. It is often a polite way of keeping him off the township. He gets \$200, \$250, or \$300, and wants to keep the position, so he does not urge those who are called out to work under him to do more than is absolutely necessary. Thus he secures reelection year after year, and after 20 years of such service the roads are no better than when he began. There are about 100,000 miles of roads in Pennsylvania, outside of boroughs and cities, which cost about \$4,000,000 a year, or at the rate of \$40 a mile, and 80 or 90 per cent of them are very little better than they were many years ago. Where gentlemen have put up country residences and taken an interest in road improvement, notably about Philadelphia, good roads have been built. Mr. Hamilton thinks it perfectly practicable, with business energy, to put the roads into good condition with the taxes now levied. In most districts there is an abundance of good material. (369.)

Ohio.—Mr. MILLER testifies that the roads through a very considerable part of Ohio have been improved under the general turnpike and the 1 and 2 mile assessment laws. The matter is taken by petition before the commissioners of the county or counties over which the improvement is to extend, and if the prayer is granted by the commissioners the improvement is made and the benefits are assessed within 1 or 2 miles. In many cases the cities at the termini of the improvement are assessed for a considerable share of the expense. The assessments are finally passed upon by the county commissioners. The counties which originally had the most impassable roads now have the best roads in the State, usually of broken stone or gravel, for in some counties, where the roads are passable in a state of nature, improvements have not been made. The expense of bridges and culverts, when exceeding \$50, is borne by the counties, anything less than \$50 by the townships, unless in case of a road improvement. The bridges are sometimes added to the assessment, but not as a rule. Ordinarily the land benefited pays for the grading and macadam or graveling of the road, while the county or township pays for the bridges and culverts. It is unlawful to haul more than 2,500 pounds on a wagon of narrow tread over an improved road. This law has had the effect of multiplying broad-tread wagons very greatly, and many farmers now have no narrow-tread wagons. (608, 609.)

Michigan.—Mr. SMITH says the roads in Michigan are universally bad in the fall. He has watched loads of sugar beets at the Alma factory which did not average 2 tons. If a man has to haul beets 3 miles and makes only 1 trip a day, it takes nearly 5 days to deliver an acre of beets. On the good stone roads about Bay City Mr. Smith has seen 3-horse teams haul from 3 to 5 tons of beets at a load, and the cost of delivering is thus materially reduced. Good roads are needed and are demanded by the towns and villages where beets are grown. (576, 578.)

Illinois.—Mr. BURKE testifies that a bill was introduced in the Illinois State legislature at the session of 1899 providing for road improvements, 50 per cent of the cost to be paid by the State, 35 per cent by the counties, and 15 per cent by the abutting farms. The farmers defeated the measure on the ground that the 50 per cent and 35 per cent would largely come out of their pockets also, showing that they realize how justly they are treated in the matter of taxation. (197.)

Minnesota.—Mr. M. F. GREELEY testifies that in some parts of Minnesota the roads are so poor as to detract from the value of the adjoining lands. There is a disposition to improve the roads, but every district is left to one man's ideas, which sometimes are very crude. Enough money is spent on the roads, but there should be a more intelligent and general supervision. (938.)

North and South Dakota.—Mr. GREELEY testifies that the roads are excellent in North and South Dakota regardless of the work done on them, because the dry climate and soil make good roadbeds. (938.)

Mr. BRIDGE says the roads in North Dakota are bad only in the spring for about two or three weeks. In the fall they are hard and like paved roads. There is very little material in the State for making macadam roads. Bridges of any considerable size are built by the counties, and the townships put in the culverts. The grading is done by the farmers in payment of the road tax. There is an improvement in the roads from year to year. (853.)

Mr. PROM says the condition of the roads in North Dakota has not been very good, but is improving. The clay of the ground is the only material for road making, but if the roadbed is properly built it makes a very good road, dry in summer and frozen hard in winter. Interest has recently been awakened in the good-roads question, and attention is always called to it in the institute meetings. (794.)

Maryland.—Mr. AGER, master of the Maryland State Grange, says that the county commissioners of Maryland appoint road supervisors, generally appointing men of their own party as compensation for political work. Prince George County is divided into 14 road districts or precincts, with 3 commissioners for each, whose duty it is to go over the roads and report as to the amount of money they need to have expended on them. In Mr. Ager's experience as a road commissioner the reports were pigeon-holed nine times out of ten. Mr. Ager thinks Gen. Roy Stone was about right in saying that \$600,000 a year had been spent in Maryland for the improvement of roads which were never improved. The roads are no better than they were 20 years ago, while if the money were judiciously used there might be good macadamized roads all over the State. Citizens are not required to work the roads. Funds for road building are furnished by the county, with no aid from the State. (112.)

Kentucky.—Mr. NALL, of Kentucky, says that in the blue grass section, which is a hilly or rolling country, there are excellent roads of broken limestone rock, formerly toll roads but now nearly all free. There is not much gravel in the State, but there are fine deposits near Paducah. In the lower part of the State, where the material for pikes is lacking, the roads are bad—just ordinary dirt roads; but some little improvement has begun there. Mr. Nall looks forward to better roads and better bridges.

He brings up the road question in all his institute work, making the farmers think about the question, and they are changing the system of keeping up the roads. Mr. Nall's opinion is that roads kept up by taxation and road supervisors are better than those maintained by the "call out the hands" system. Where a county has a road commissioner they are making better roads, because the commissioner studies the subject and works to improve one bad place permanently, and next year goes to another one. Under the old system the residents, when called out, "would scratch around a little and they would never come back again." The whole system was bad. The funds for improving the roads are raised by a county tax, but Mr. Nall believes that in most of the counties the magisterial district in which the tax is paid controls the fund, so that it can be expended only in that district. The law differs in different counties, however. (813.)

North Carolina.—Mr. WHITE testifies that the best system of roads North Carolina ever had was under a recent law imposing a road tax to be kept separate for each township. Overseers were required to keep up the roads with so much money, hiring labor where they pleased. (431.)

Mr. HUTCHISON, chairman of the board of trustees of Charlotte Township, Mecklenburg County, N. C., says that some 15 or 20 counties in North Carolina, out of a total of about 90, have adopted a system of road building. Mecklenburg County started the system some 12 years ago. For a few years road building was at a standstill, but during the last 8 years it has increased each year. (1047, 1048.)

It has been the policy of Mecklenburg County to build out from Charlotte on the main roads, in rotation, a mile or more of macadam road at a time. This was thought to be the best system, as, through it, everyone coming to town would have the use of a mile or so of good road. This plan has been pursued until there are 90 miles of macadam road divided among 13 roads, and the work of building is going on at the rate of 8 to 10 miles per annum. (1039.)

Mr. HUTCHISON says Charlotte Township recently secured the enactment by the legislature of a law establishing standard widths of tires, and imposing a license charge of from \$1.50 to \$5 on all wagons in the township with tires less than the standard width. (1040.)

Mr. HUTCHISON says that since the county of Mecklenburg has been building macadamized roads, farming lands on macadamized roads within 2 to 10 miles of town have increased from 50 to 100 per cent in value, the value of suburban property having increased much more than has the value of city property. Rural mail delivery has been made possible by the building of good roads. Where 4-horse teams used to be the rule they are now the exception. Formerly half a cord of wood would be hauled with 4 horses. Now a cord and a quarter is hauled with 2 horses. The cost of transportation has been reduced at least one-half. Whereas the supply of wood was formerly drawn from a territory not extending more than 5 miles out, to-day it is brought from as far out as 10 miles, and sold at a lower price. Products such as milk and butter, which formerly were not marketed, are now brought to town. The money for the building of these roads is raised by taxation. The county of Mecklenburg spends between \$40,000 and \$50,000 annually in building roads, and the people think the improvement is worth the money to them. There is no complaint about paying the road tax, though at the beginning there was a great deal of objection. (1039, 1041, 1044, 1045.)

Georgia.—Mr. HALE says there is great need of good roads in Georgia, but not much attention has been paid to the matter on account of the poverty of the country. Fine roads would be costly because of the scarcity of rock and gravel. (399.)

Mr. STEVENS says some of the counties of Georgia, notably the city counties, are giving very much attention to the improvement of roads. The country counties are beginning to take it up, and the cost of local transportation is thus greatly diminished. (916.)

Alabama.—Mr. POOLE says that the public highways of Alabama are miserable in many sections, so that it is hard to get from neighborhood to neighborhood or from town to town; but in some of the counties good macadam roads are being built, and wherever that is the case the disposition is to go back to the farms. The lands have also increased in value along these roads. (922.)

Louisiana.—Dr. STRUBB says the roads are probably worse in Louisiana than in any other State in the Union—first, because of the peculiar constitution of the alluvial soils, which are hard to drain, but easy to wear with the wheel, and, secondly, because of the absence of materials for road making, rocks being very scarce and building materials being made entirely out of clays. The police juries (corresponding to county commissioners) of the different parishes have been authorized recently to tax vehicles, and to levy a per capita tax, or require every man between the ages of 18 and 60 to work 12 days under an overseer on the road. The people are terribly in earnest about the road question. At a large agricultural meeting at Calhoun

in the summer of 1900 representatives of the road machines were present with their machines and rollers. The governor of the State made a speech on the subject, and Mr. Harrison, an expert sent down by Secretary Wilson, showed how to build roads by commencing the construction of a quarter of a mile of road. In the lower portion of the State the gravel system is usually adopted, the gravel being brought from the northern portion of the State or the middle of Mississippi. All wheels over 4 inches in width are exempted from taxation.

Dr. Stubbs says the riparian parishes have but one road each, which is on the bank of the river, the estates running back from the river to the swamps. There is a ditch for every hundred feet, and the ditch has to be bridged and the bridge kept in order. (784.)

6. Engineering problems of road construction.—*Requisites of a good road.*—Mr. HUTCHINSON says that theoretically a level road is the one to be sought after, but experience has shown that a one-half to 1 per cent grade is preferable, as that gives better drainage. The road should have the benefit of the sun and should, if possible, be located on the sunny side of a hill or forest. Distance should always be sacrificed in favor of grade. The grade should never break on a fill, but at either end, so as to keep as much water off the fill as possible. Ditches should be made alongside all embankments to prevent washes. In North Carolina Bermuda grass has been planted on all embankments, and it has been found that after 2 or 3 years water 2 or 3 inches in depth and several feet in width can run down an embankment that has Bermuda grass well set and will not wash out the embankment. (1039, 1044.)

Road building before and after Macadam.—Mr. DODGE says the stone road is the best road that has ever been put into general use. The ancient theory of road building was to prepare a heavy foundation and up to the time of Macadam a great deal of unnecessary expense and labor was put into this substructure. Macadam's plan was to dispense with any foundation of large stones. He found that when angular fragments of rock are reduced to nearly uniform size and spread on the road under pressure and moisture they will consolidate into one sheet of rock impervious to water. (691, 694.)

Equipment necessary for road building.—Mr. HUTCHINSON says that the outfit required for the building of macadamized roads should consist of a portable engine of 15 horsepower, a portable crusher with bins that can be set up, a road machine, a large plow, a harrow, a steam roller of not less than 12½ tons, a sprinkler, and teams. A roller is an absolute necessity. This outfit would cost about \$8,500. It would be possible, however, to start with a much smaller equipment. The road could be built with hand hammers, though not satisfactorily. Road building in Mecklenburg County was started with hand hammers, and there is no doubt that with sufficient care a good road can be built by hand. (1041, 1042.)

Process of construction of a macadamized road.—Mr. HUTCHINSON says that after the earth is removed from the road which is to be macadamized the bed should be thoroughly rolled and all depressions filled in. Then bed rock, broken so that it will go through a 3-inch ring, should be filled in to a depth of 6 inches. The second layer should consist of 3 or 4 inches of stone broken to go through a 2-inch ring. The third and last layer should consist of screenings or stone less than 1 inch in diameter, and should be from 1½ to 2 inches in depth. The whole should then be flooded with water. Each layer is rolled, the roller having a pressure of about 500 to 700 pounds per linear inch. In North Carolina the custom has been to put macadam to the width of 12 feet in the middle of the road, and to put a dirt track on either side. It would be better either to make the macadam from 9 to 10 feet wide, and have a single-track road, or to make it 16 feet wide for a double-track road. Mostly field stone, hauled in by farmers, is used in the construction of the roads. Blue stone is the most desirable stone to use, but a good deal of quartz has been used in North Carolina and has worn well. Some decomposed granite has been used and has been found very satisfactory. (1040, 1042, 1046, 1047.)

Cost of stone roads.—Mr. DODGE says there are many improved methods of handling the stone, which have reduced the cost of producing stone roads somewhat, but the cost is still high. The State highway commission of Massachusetts, after an experience of 4 years or more, reported a cost of upward of \$10,000 a mile for roads in sections where material was very abundant, including, however, the reduction of grades. One of the best roads Mr. Dodge has ever seen was built of trap rock in Baltimore County, Md., under the auspices of the Department of Agriculture, at a cost of \$2,500 a mile, but the material was right at hand in old stone fences along the road, and there were no hills to be reduced. (695.)

Mr. HUTCHINSON says that the cost per mile of building an average macadamized road has been figured out to be \$2,800. This applies to a graded road macadamized to a width of 12 feet and a depth of 9 inches. If the macadam were cut down to 9 feet in width it would cost 25 per cent less. (1044.)

Repairs.—Mr. HUTCHISON says that the repairing of a macadamized road requires more skill and intelligence than does the original construction. In repairing a road all the ruts and depressions are first filled in with broken stone and the surface of the road is broken up with a spiked roller. The surface is then thoroughly rolled and a coating of 3 or 4 inches of 1½-inch stone is put on to replace what has worn or been washed away. The repairing costs about \$400 per mile. In Mecklenburg County there is a road inspector whose business it is to go about from one road to another and report needed repairs. (1040, 1042.)

Destruction of roads by narrow-tired wagons.—Mr. HUTCHISON says that the greatest destroyer of a road, stone or earth, is the narrow-tired wagon with axles of even length. The costs of repairs to streets and roads in a few years could be cut down to 50 and 75 per cent in city, town, and country if the broad-tired wagon with short front axles were substituted for those now in use. On macadamized roads the tests show that frequently there is little difference in draft between the narrow and the broad-tired wagon. On earth roads there is a difference of from 20 to 50 per cent in favor of broad tires. (1040, 1041.)

Oyster-shell roads.—Mr. DODGE says the oyster-shell roads in the vicinity of Baltimore are very nice, but are not sufficiently hard to be durable under heavy traffic, and have to be replaced. (703.)

Steel-plate ways.—Mr. DODGE says that while the macadamized road is the best road developed so far, he believes it can be very much improved upon as to durability, the power required, and the original cost. Mr. Dodge has experimented with steel-plate ways, and thinks it very likely that when steel is sufficiently low in price very durable roads can be constructed requiring a diminished power to move the vehicle, and greatly reducing the cost of transportation. The plate way consists of 2 parallel plates 8 inches in width on a concrete foundation, and a sufficient distance apart to receive the wheels of vehicles of ordinary gauge. It will last indefinitely; in Canada a bridge equipped with plate ways of soft iron has been in use for over 30 years with very little wear. The cost of the steel at the prices prevailing before the late increase would be about \$3,500 a mile, and the road would cost, complete, about \$5,000 a mile, not including cuts and fills. The space between the rails has to be macadamized. Mr. Dodge does not recommend the use of the plate way at the present time; he does not think it would be the most desirable road, except in level countries destitute of other materials for road use. Engineers say it takes only one-fifth the power to move a vehicle over steel that is required on macadam roads.

Mr. Dodge made a test of the steel-plate way on the exposition grounds at Omaha in 1898. The Studebaker Wagon Company had made a test on a common road, showing that it took 20 horses to haul a load of 11 tons. Mr. Dodge put a load of equal weight on a train of 3 wagons and it was started and moved easily by one small horse, showing a ratio of about 20 to 1 in the power required. The horse moved about 22 times his weight, and Mr. Dodge believes that a strong animal could move 50 times its own weight. Ordinarily a vehicle carries a weight only about equal to that of a team; a load double the weight of the animals is an unusually large load. (691-693, 699.)

Mr. Dodge admits that the gain in power is not as great on a grade as on the level. Sliding friction can be eliminated and rolling friction diminished, but the power required to raise a weight vertically can not be diminished. He does not think a team could pull more than 50 per cent more up a steep grade on a steel track than on an ordinary road, but in at least two-thirds of the country the roads can be made nearly level. The reduction of grades to 3 per cent, if possible, is recommended. (694.)

6. Recent road-improvement laws.—Mr. DODGE says that in many of the road-improvement laws passed in late years two methods of initiating improvements are provided for: (1) Resolution of the county commissioners, and (2) application of the abutting property owners. In the latter case the property owners bear the expense, or in some cases 15 per cent of the expense, the rest being paid in other ways. (697.)

Mr. Dodge says the State of Ohio has had the best road law for the construction of roads by localities, but with the new idea based upon changed conditions of population and wealth and the longer distances to be covered the Ohio laws are not as satisfactory as some others. Massachusetts is the only State which has a law requiring the entire State to bear the burden of road improvement, and even there the locality bears the expense of reducing the grades. The New Jersey law, dividing the cost of the improvement between the State and the locality, is producing wonderful results. It was the first of the State-aid laws passed since the revival of road building and has been quite generally imitated. New York has passed a law which, though substantially the same thing, is claimed to be something of an improvement. New York has also passed a constitutional amendment forbidding the use of prison labor for

manufacturing commercial articles, and Mr. Dodge predicts that it may therefore become the first State in road building, as it is in population and wealth. (702, 703.)

The State of Ohio had a temporary highway commission, but it was not authorized to proceed to construction. Massachusetts has a permanent commission which in June, 1900, had been constructing roads for 4 years or more. Maryland has recently appointed a commission which has made a very elaborate report. (700.)

Mr. Dodge submits a copy of the New York road-improvement law of 1898 and recommends it as the most satisfactory State-aid law yet passed. The law provides that one-half the expense of road construction shall be paid by the State and one-half shall be a county charge in the first instance; 35 per cent of the cost of construction shall remain a general county charge and the remaining 15 per cent shall be assessed upon the owners of the abutting lands in proportion to benefits if the road is built on petition of the landowners, otherwise it shall be a charge upon the town. The State engineer and surveyor has general charge of the construction of roads, and is required to collect information on the subject, advise with local officers and other persons interested, cooperate with highway officers, and hold at least one public meeting annually in each county. (704-706.)

Mr. HAMILTON testifies that the Pennsylvania law of 1897 provides for a uniform system of road supervision. It contemplates the election of boards of supervisors composed of 3 persons, 1 to be elected each year and to serve for 3 years. State aid is provided for, and road masters are made responsible for their sections. The law is inoperative (January, 1900), because it requires an appropriation of \$1,000,000 which it has been impossible to make, but a board has been appointed to make a report on the road question to the legislature. (370.)

7. Distribution of cost.—Mr. Dodge says that for the last two generations the cost of road construction has been borne by localities. In nearly all the counties of Ohio where there has been any improvement at all the cost has been borne in the immediate locality. In Preble and Shelby counties, where there are no great cities, many roads have been built. In Shelby County, he believes, more than \$2,000,000 has been expended. On the other hand, Hamilton and Cuyahoga counties, which have the largest population and the greatest wealth of any counties in the State, have in the past built almost no roads. Roads are now being built in these larger counties, but the system of taxing the entire property, including the city, has been adopted.

Mr. Dodge says that a good deal more than a half of the wealth of the country is concentrated in the cities. In New York 90 per cent of the taxable property is in the cities of the State, and only 10 per cent of the taxes are paid by those living in the rural districts. Cleveland, Ohio, pays 80 per cent of the taxes of Cuyahoga County. The necessary amount of money can not be raised by the old method of making the community bear the entire burden. Where land is cheap, as it is now in most places, it can not bear the entire cost of expensive roads, and there must be some additional contribution. Mr. Dodge thinks the locality should contribute one-third, the State one-third, and the United States Government one-third. (697, 698.)

Mr. Dodge feels very certain that the old idea of leaving the matter of road improvement to townships or districts within townships is a thing of the past. It has become a matter of general concern, and the burden is too great for local authorities. When half the wealth and people are concentrated in centers of population, and when city people with automobiles and bicycles want to get out into the country as much as the people outside want to get in, it is just and necessary that they should contribute to the improvement of the highways. Mr. Dodge has never known of a complaint from any of the cities where taxes are levied for the purpose. He is pretty well satisfied that the best way is to proceed by States, and that each State should have a commission. (700, 701.)

Mr. HAMILTON says it is the general feeling in Pennsylvania that it is impossible for the farming people to build the roads themselves. Merchants and manufacturers are interested in roads as distributing agencies, and hence it is proper for State taxes to be distributed in the interest of good roads. Farmers can not be taxed to the necessary extent. (370.)

8. National aid.—Mr. DODGE says road improvement has for two generations been considered a local question, and was properly so considered as long as animal power only could be used, because the length of the haul was necessarily short; but with the introduction of the bicycle, the automobile, and the suburban street car, which cover long distances, it is natural that there should be a change in sentiment. Not only has the League of American Wheelmen made a demand upon the national parties for good-roads planks in their platforms, but the President of the United States, for the first time in two generations, has brought the matter up in his message to Congress, and Senator Penrose has introduced a bill in the Senate authorizing a large appropriation for road improvement. (700.)

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Mr. Dodge says the National Government has for generations contributed millions of dollars to aid water transportation, by canals and by deepening harbors and rivers and the water communication between the Great Lakes, and has given subsidies of land and credit to aid in cheapening transportation on the Western railroads. The Government has been very liberal so far as the long haul is concerned, on land and water, but in the improvement of highways we have fallen behind other countries. (701.)

9. Modes of lessening the cost of roads.—Mr. Dodge estimates that 99 per cent of the entire road mileage of the country is still practically unimproved. To bring all of this mileage up to a high standard would require an army of men and a greater revenue than would be required to pay and supply the armies of the world. In order to make the system complete the cost must be lessened, and the only ways to do so are by diminishing the necessary mileage and diminishing the cost per mile. (695.)

Diminution of mileage.—Mr. Dodge says the necessary mileage can be reduced in two ways: (1) Electric cars or cars propelled by other mechanical power can be so multiplied as to do a great part of the service which has heretofore been done by animal power, and so shorten the haul; (2) roads have been laid out to accommodate a population spread equally over the face of the country, about a mile apart in the West, though not so near together in the Southern States. The consolidation of population makes it necessary to carry products to the great centers of population instead of to villages in rural communities. Mr. Dodge estimates that in time 75 per cent of the people will live in cities and that the 25 per cent remaining in the country will be drawn to the cheaper and better means of transportation. He estimates that 5 miles will be the maximum and 2½ miles probably the average haul for wagons. (695, 699.)

Diminution of cost by utilizing convict labor.—Mr. Dodge believes that prison labor can be utilized on road work. The entire army of prisoners in jails, State prisons, and United States prisons could be utilized either upon the roads themselves or in preparing material to be used on the roads. Probably more than one-half of them could be employed in shops and inclosures manufacturing the materials—whether broken stone, brick, or steel—and the rest, especially those sentenced for short terms, could be utilized in the actual construction. At present convict labor is complained of by manufacturers and laboring men as unjust competition, but applied to road improvement it would be doing a work that can not otherwise be done and would add to the common wealth, besides being beneficial to the prisoners. Close guarding and confinement would probably not be necessary. Mr. Dodge has seen prisoners working in the South without any chains or balls or other visible indications of restraint except one guard in the distance with a rifle, and the foreman of the gang. They worked as well as any free labor he had ever seen, and he thought even better. He found that by giving a reasonable rebate in service for good conduct, little trouble was experienced from attempts to escape. Prison labor is also utilized in California and New York, at least in Oneida County. (696.)

Mr. Dodge says the Roman roads were built by slaves and soldiers. Peoples who have kept up large armies and had large numbers either of prisoners, of slaves, or of State employees have generally put them on the public works. The greatest works of antiquity were produced in that way, and some modern nations have taken the same view of it as the ancients. The Russian railroad to-day is built largely by the Russian army. (697.)

Mr. HAMILTON says a recent Pennsylvania law permits the prisoners in county jails to be taken out and worked upon the roads in the immediate vicinity. In California stone quarries have been secured, temporary prisons and strong inclosures built at the quarries, and the convicts set to work quarrying the stone and running the stone crusher. (369.)

Convict labor.—Mr. HUTCHISON testifies that the labor employed in road construction in North Carolina is, with the exception of the foremen and bosses, convict labor. The repairing of roads, which at the present time is done by the townships, is done almost entirely by free labor. In the opinion of Mr. Hutchison, road building is by far the best use to which convicts can be put. There is a special act in North Carolina, by the terms of which a judge, in passing sentence, can sentence a man to labor on the public roads instead of sending him to the penitentiary. Men sentenced for short terms, from 15 days up, are sent to labor on the roads. Long-term convicts sentenced for grave offenses are usually sent to the penitentiary. Probably the number of convicts sent to the penitentiary in Mecklenburg County would average 4 a year. When the convicts are sentenced to road labor they are put in charge of the county commissioners and the commissioners have absolute control over them. There is a county engineer, who is elected by the county commissioners, in charge of

the work, and there is a superintendent of convicts, who has whatever number of guards are necessary under him. The convicts work on the roads for about 11 months in the year. It would not be possible for them to work for so large a part of the year in a colder climate unless they could be put to work in the quarries. The convicts do not receive any compensation for their labor. It costs from 25 to 31 cents a day per capita to feed and clothe them, to provide medical attention, and to pay the expense of guarding them. It would cost anywhere from 30 to 60 per cent more to build the road if free labor were employed, the average rate in the section for free labor of the same class being about 60 cents per day. The use of convict labor on the highways has not, however, been instrumental in lowering the wages of free labor, has not interfered with any profitable employment for free labor, and has not had the effect of causing indisposition on the part of free labor to engage in the manufacture of roads. There is no reason to believe that convicts are given longer sentences because of the fact that they are sent to work on the roads. The convicts employed in road building live practically in camp. They have portable barracks, built of inch lumber, put up in panels. They work from sunup to sundown, the hours of labor being longer in summer than in winter. A great many of the convicts are made "trusties," and the chains are taken off. There is no system of surveillance used over the men while at work other than that of the guard. The trustees are obliged to stay in quarters at night, but are not chained in any way. The convicts prefer to work on the roads rather than to go to the penitentiary, and there is very little trouble caused by their attempting to escape. (1038, 1039, 1042, 1046.)

Mr. WHITE testifies that wherever there are workhouses in North Carolina the judges sentence culprits to the workhouse instead of to the penitentiary, and they go out and work on the farm. They work on the public roads in Wake County and on the streets in Raleigh, to the exclusion of many free laborers. Mr. White thinks the least possible evil as to competition of convicts with free labor results from work on the public roads. (431, 432.)

Mr. White says that in some of the Southern States the convict system is terrible. The homestead laws have multiplied crimes, and the punishment is severe. The result is that the penitentiaries are filled, a large number of the convicts being colored people. In Georgia most of the convicts are farmed out on turpentine farms, largely to the exclusion of free labor. They are also put in the cotton fields, upon public roads and canals, etc. They are hired out for a little more than the expense of keeping them in the penitentiary. A convict may misappropriate a spoon, knife, or frying pan during his stay with the lessee, and at the expiration of his time the lessee may agree not to have him punished if he will work for him 12 months longer. In South Carolina, and in other States, also, the convicts are farmed out. In North Carolina, on the other hand, several thousand dollars have been spent in the purchase of farms, and all able-bodied convicts not incarcerated for life are sent to a farm to work out their sentences, so that the penitentiary is about self-sustaining. Within the walls of the penitentiary the convicts make bricks, and there is a shoe factory. All the public buildings of Raleigh are made of convict-made bricks. The convict shoes have been confined to the convict farms, but are now getting into the stores. (430-432.)

XIV. GRAIN ELEVATORS.

A. In the Northwest.—1. **Economic function of elevators.**—Mr. BUDGE, of Grand Forks, N. Dak., says that, in order that the farmers may not always be at the mercy of the market some system of storage is necessary. In some cases large farmers or farming corporations have their own warehouses, but the average farmer is not able to build warehouses, and it is therefore necessary that he should ship through some grain dealer. Thus the elevator is an essential factor in the grain industry. Capital would be invested in an elevator and grain shipping business only as a source of profit, and when it is found that operating expenses can be reduced and facilities improved by operating a system of elevators along a certain railroad it is only reasonable to expect consolidation and the formation of systems. There is no monopoly, however, as several companies are generally represented in each town of importance, and they watch each other's doings. The competition has resulted in reducing elevator charges to the reasonable and uniform price of 2 cents a bushel. Mr. Budge believes that the present elevator system is of the greatest value to the agricultural interests. No doubt influential elevator companies can secure better accommodations for quick shipment and better prices at terminal points than individual shippers. In this way the farmer will profit to a greater or less degree. The great storage facilities lately provided by the large elevator companies and the Great Northern Railway will be of much value to the farmers by permitting the rapid shipment of grain, and

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by providing a sufficient terminal storage so that grain can be held for a better market when desirable. (843, 844.)

2. Elevators in South Dakota.—Mr. JUMPER presumes that the number of elevators at the stations in Brown County, S. Dak., which is 36 miles-wide by 48 miles long, is about an average for the 3 States of North and South Dakota and Minnesota. There are in that county 20 railway stations where wheat is bought and shipped. At these stations there are 45 elevators, with a capacity of from 12,000 to 15,000 bushels each; 12 flat houses, with a capacity of 3,000 to 5,000 bushels each, and 3 flouring mills with large elevators attached. Thirty of these houses are owned and operated by the line companies—elevator companies having headquarters outside of the State. There are 12 different elevator companies operating in the county which have headquarters in Minneapolis. Twenty of the houses are owned and operated by independent parties. At two or three of the stations there are special loading platforms erected for the farmers, who drive up just as they do to an elevator and unload into the car. At other stations they must load from the regular depot platform, or if the ground is level they drive up to the side of the grain door. If the crop is large, nearly all of the houses are open; if it is poor, only about half are open. In 1899 nearly all were open; in 1900 only a little over half of them were open. In a good season the elevators handle about 50,000 bushels of wheat during the year. There are only two elevator railway companies in Brown County that have cleaners. They are at Aberdeen. (738.)

Mr. Jumper says that in Brown County, S. Dak., there are 12 operating elevator companies whose terminals and headquarters are in Minneapolis. These companies operate substantially all over the northern part of South Dakota. (734.)

Mr. Jumper says elevator companies always keep on hand wheat to cover storage tickets outstanding; if not at the same elevator where tickets were issued, at some other near-by point on the line. (738.)

3. Elevator combinations.—Mr. M. F. GREELEY, secretary of the Board of Regents of Education of South Dakota, testifies that an elevator "combine" exists throughout Minnesota and the Dakotas. The different elevator companies seem to have an understanding with each other, and frequently one man gives the prices for several lines of elevators. Occasionally two different lines of elevators are represented at the same place. These elevators are detrimental to the producers of grain, principally in that they regulate prices regardless of the demand, and can put them up and down in a way to give themselves an illegitimate margin. When farmers' elevators are erected the power of a line elevator company is used to crush them. They put up the price until the farmers' elevator can not do business, and make it up with interest afterwards. (939.)

Mr. Greeley intimates that the line elevators belonging to different companies work in harmony. It is understood that they pool their receipts, but Mr. Greeley does not know that they do. (940.)

By "line" elevators Mr. Greeley means the kind of which a long line is owned by one company. (939.)

Mr. Greeley says the complaint against the elevator combination is general wherever it has control, including Minnesota except where there are gristmills, local buyers, or other means of handling the business. (943.)

Mr. MORAN affirms the existence of a general elevator combination throughout the wheat-producing belt and declares it a detriment to the producing classes, enabling the elevators to set the prices paid at the local stations. The prices range from 1 to 11 cents a bushel below the price which a farmer could get if he loaded up a carload of grain and shipped it to a terminal market. This combination, Mr. Moran declares, exists in nearly every station throughout the wheat belt where there are no farmers' or independent elevators. Where one of these farmers' elevators is started on the cooperative plan the most intense opposition is often shown by the line elevators, which bid 1, 2, and 3 cents more than they can get for the wheat in the terminal markets, making up the loss by advantageous rates at other points, and by exacting further tribute from their helpless victims after the independent house is obliged to sell out.

The line elevators are further enabled to carry on this warfare through the aid they receive from the railroad companies (1) in the prompt supply of cars in the busy season, (2) in the refusal of many roads to grant sites for farmers' elevators, and (3) in rebates. Mr. Moran says the rebates are often given by the officers of the railroads, who are participants in the division of the profits of the line-elevator companies; but it is most difficult to secure evidence to prove the existence of these conditions, which are commonly known and understood. (717.)

Mr. PROM says the line elevators seemingly do not compete with each other; the price is the same at all, and they dare not go above it. By way of proof that the

elevators pool and are practically one, Mr. Prom says that a few years ago one superintendent was sent out to the different elevators in Milton, but that was such an evidence of the pool that now one is sent to each house. Mr. Prom knows that the same men hold stock in different elevator lines. (796, 798, 800.)

Mr. Prom testifies that there are 10 elevators in Milton, N. Dak., all line elevators. There are no competing elevator companies nor independent elevators. The elevators are seemingly not owned by the same persons, but by different corporations; but Mr. Prom suggests that the stockholders might be the same. (795.)

Mr. JUMPER, of Aberdeen, S. Dak., says he knows there is no elevator "combine" in his section, and no consolidation as to the fixing of prices, except that the elevator people agree to buy on a 3-cent margin. The Empire Elevator Company, the George C. Bagley Elevator Company, the Crown Elevator Company, the J. F. Whalen Elevator Company, and the Victoria Elevator Company all operate on the Chicago, Milwaukee and St. Paul Railroad system. The Bagley and Empire companies also operate on the "Soo." The G. W. Van Duzen Elevator Company, the Marfield Elevator Company, and the Atlas Elevator Company operate entirely on the Northwestern road. At every station on the Milwaukee system there are from 3 to 5 elevators owned by different companies. The farmer is not compelled to patronize any of these companies; he can have a car and ship independently, and receives the same consideration from the railroad companies that the elevator companies receive. (735.)

Mr. BUDGE says there are not as many elevator companies in North Dakota as there were. The Peavey Elevator Company is buying up a good many of them. There are still a few independent elevators, but very few of these are owned by farmers. "The farmers have built some elevators in partnership among themselves, but they always let them go." (853, 854.)

Mr. Budge says that 2 elevators in Grand Forks are owned by different companies, and compete with each other in buying grain, but the price is fixed in Duluth. Mr. Budge does not think the line elevator men ever get together and fix the price themselves. The price can generally be figured out from the Duluth market report by allowing for freight rates and 2 cents for the elevator. (855.)

Mr. PRATT, of Aberdeen, S. Dak., formerly general agent of the Empire Elevator Company of Minneapolis, says he has never seen anything of a combination between the elevator companies of the Northwest to fix prices, and does not think there is any elevator trust. Although a certain price is fixed upon, it is occasionally broken. (724, 725.)

4. Storage charges.—Mr. Prom, of Milton, N. Dak., says the storage charges at the elevators are the same as in Minnesota—15 days free, 2 cents a bushel for the first 30 days, and half a cent a bushel for each additional 30 days. (796.)

Mr. JUMPER, of Aberdeen, S. Dak., says the storage charges are a considerable source of profit to the elevators. Storage for the first 15 days is free; the rate for 3 months and 15 days is 3 cents; after that the rate is one-half a cent a month for the next 3 months, making the rate for 6 months and 15 days 4½ cents. For 9 months and 15 days it is 6 cents. The elevators store wheat all the year round and sometimes for 2 or 3 years. When the owner calls for his wheat after storing it the elevator company charges 2½ cents. That is called delivery. (739.)

Mr. PRATT, of Aberdeen, S. Dak., says there is no storage charge for the first 15 days in the elevator. Some buyers sometimes forget the time the wheat is put in and let it run a little longer—perhaps 30 days—for nothing. (728.)

Mr. BUDGE, of North Dakota, says the elevator companies charge more for storage at some seasons than at others. It depends on the shipments to Europe and to Duluth. In 1898 or 1899 the wheat was carried until the first of January without any storage charge. The storage fee is usually one-half a cent a month, plus insurance. (855.)

Mr. HANLEY testifies that Mr. Hill, of the Great Northern, reduced the minimum storage charge to half a cent, a reduction of \$1,560,000 upon the 208,000,000 bushels of grain that went through the elevators in the course of a year. (280.)

5. Cost of operation.—Mr. JUMPER, of South Dakota, says that when an elevator handles 50,000 bushels of wheat yearly, the expenses, including the pay of the man who operates the elevator and buys the wheat and of his helper in the busy season, amount to 1½ cents a bushel. If an elevator company has a line of houses there would be the expense of maintaining an office at the terminal point, traveling expenses, insurance and taxes on the elevator, and interest on the money needed to operate it, which will add three-fourths of a cent a bushel, making the total cost 2½ cents. If the elevator handles 65,000 bushels the expense should be calculated at a quarter of a cent less, or 2 cents a bushel; if it handles 80,000 bushels, the expense would be about 1½ cents; if 100,000 bushels, about 1¼ cents. If a house handles only

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35,000 bushels, as in a poor year, the expense will be increased a quarter of a cent. When a crop is light and the amount to be handled small, the expense can not be reduced in proportion. Very few houses handle 100,000 bushels. (738.)

6. *Card prices.*—Mr. MORAN complains of the inability of the farmers to set a price upon the wheat they raise. They are obliged to go to the elevators and ask what they are paying for wheat, and to whatever elevator they go the price is the same. (718.)

While Mr. GREENEY believes that as a rule prices are governed by supply and demand, he says the elevators have arranged it so that they receive the prices every morning from headquarters, and those are the prices that govern. The price of grain comes to the railroad agent, who hands a copy to each of the line-elevator representatives from the same telegram. (939, 940.)

Mr. BUDGE, of Grand Forks, N. Dak., says that the price of wheat at that point is generally fixed by the Duluth Board of Trade. The prices are telegraphed every morning. (855.)

Mr. FROM, of Milton, N. Dak., says all the line-elevator companies in Minneapolis have given it into the hands of one man to fix prices; that man determines what the prices are to be from the market of the day. He has to consider reports from the Argentine Republic, and the condition of the weather and rains in the Northwest, and be the sole judge whether the price ought to go up or down. If the price is raised he generally writes to the country representatives; if the price goes down he wires at once. The price of grain is telephoned daily from Fargo to the agent at one of the elevators in Milton, and he is supposed to go at once to all the other agents and give it to them. Fargo receives the price from Minneapolis; the price is not received from Duluth or from any other point. (795.)

Mr. PRATT, of Aberdeen, S. Dak., formerly general agent for the Empire Elevator Company, of Minneapolis, testifies that the price of wheat is made up in Minneapolis by a board of three or four men; the elevator men, the commission men, and the Chamber of Commerce being represented. A telegram is sent to the representative at Aberdeen, Mr. Jumper, and he sends out prices on cards for the different grades of wheat. If he can not get the card to its destination in time he sends a telegram. (724.)

Mr. JUMPER understands that there is a committee of three at the Chamber of Commerce in Minneapolis, one a speculator in "wind" wheat, representing the Chamber of Commerce, one appointed from the elevator men, and the third appointed from the commission men, who are rivals of the elevator men. When the trading is over for the day these three men meet and agree whether the price of wheat shall be advanced or reduced throughout Minnesota and the Dakotas. If the price has advanced on the market that day their clerk immediately wires this advance into the country. It is wired, for instance, to Aberdeen, and is sent out by the Aberdeen representative to a territory 200 miles east and west by 125 miles north and south. An advance or reduction is never less than 1 cent, although the markets at the terminal points may change one-half a cent. Mr. Jumper does not think this committee has very much power, because the elevator men endeavor to keep the price about 3 cents (plus the freight) less than the cash price of wheat on track in Minneapolis. When there is an advance of a cent, and sometimes when there is an advance of half a cent, if the margin is a little too large, the country market will be advanced a full cent; or if there is a reduction of a half cent and the margin was a little too narrow, there will be a reduction of a cent. The margin varies from year to year with the grade of the wheat; it was larger than usual in 1900-1901, because the wheat was very poor as a result of getting wet after being harvested. When the crop is first class the margin is sometimes a good deal less. (730.)

Mr. Jumper receives the card price at Aberdeen and furnishes it alike to the line companies, independent elevators, and mills. If his instruction from Minneapolis is to distribute the price by wire, he immediately sends it by telegraph and telephone to the different stations. These messages are then followed by cards in the evening mails. The telegram either reduces or advances the price 1 cent or more, as the case may be. It is arranged that it shall be sent to one buyer at each station to save expense, and he immediately notifies all the others. Individual shippers of grain can get the card price by paying their share of the expense, just as the elevators do. (736.)

Mr. Jumper explains that no elevator company and no buyer is bound by the card price. They invariably pay a cent and sometimes a cent and a half more for a good quality of wheat than for a poorer quality. At 5 important stations, one of which was Aberdeen, they paid 2 cents above the card price for the *ganfre* crop in 1900, because the wheat was very much better there than at the other stations. (735, 736.)

Mr. PRATT says that very often instructions are sent out to the buyers to get their share of the wheat, and they will pay from 1 to 3 cents more than the card price. Sometimes the market is disturbed in this way for a month or so. (725.)

7. Manipulation of prices.—Mr. PROM is quite sure that the elevator companies have a good deal to do with bearing the market, though he has no evidence to that effect. (800.)

Mr. JUMPER has seen no evidence of any disposition on the part of the elevator companies to "bear" the price at certain seasons of the year. He thinks the understanding of the committee at Minneapolis is that the margin shall be just about the same the year round. (736.)

8. Profits of elevators.—Mr. JUMPER states the margin taken by elevators buying wheat in South Dakota, with Minneapolis as the market (the freight being deducted), as follows: 1893, 3.2 cents; 1894, 3.4 cents; 1895, 3 cents; 1896, 3.3 cents; 1897, 3 cents; 1898, 3.1 cents; 1899, 3 cents; 1900, 3.4 cents. (732.)

Mr. PROM testifies that the elevator company's profit on one car of flax (1,000 bushels) recently shipped from Milton, N. Dak., was \$450. This exceptional profit was due to the way the flax was bought. There were only two grades, No. 1 flax and "rejected" flax. (799, 800.)

9. Elevator discrimination.—Mr. PROM testifies that in the winter of 1898 and 1899 the elevator companies bought wheat 6 miles below Milton at 2 cents above the price at Milton, and also paid higher prices 6 miles west of Milton. In consequence all the trade went away from Milton, and the town was as dead in the middle of the busy season as on a summer's day. The merchants and business men combined and employed a private buyer, hired men, and arranged a place for loading wheat. The superintendent came up to see about it, and a better grade was promised. This action, therefore, raised the prices to an equality with the other towns; but the threat was made that if opposition were continued hardware stores and general stores, as well as wheat houses, would be established. (798.)

10. Mixing of grain.—Mr. MORAN says the terminal elevator facilities of the line elevators also give them a great advantage, enabling them to take a customer's grain for storage and charge him for it, while at the same time mixing it with an inferior grade and delivering the degraded grain to the customer. The rules of the board of trade will allow the elevator to deliver such grain as long as it passes the contract grade, commonly known as "skin grade," although there is often a difference of 1 to 2 cents a bushel between the value of the best and poorest wheat of the same grade. The profit to the mixer is often greater per bushel for mixing than the profit of the farmer who produces the grain. (717, 718.)

Mr. MORAN testifies that the mixing of grain is done at the terminal elevators. The foreign buyer does not receive No. 1 hard as it comes from the virgin soil, because the elevator men mix it at their terminal points; and there is quite a difference between the best grain and that which barely touches No. 1. The elevator men reduce the grain to the lower level so that it will simply pass the grade. (719.)

Mr. JUMPER says that, knowing the expense of operating an elevator, he does not see how the elevators can make very much money in the actual buying of wheat at the initial point. He thinks that one way the elevator men have of making money is by mixing the grain at the terminal points, in order to raise the grade of the poorest quality. There is not very much mixing by the buyers at the initial points; there is no chance for mixing there. (735.)

Mr. PRATT, of Aberdeen, S. Dak., says the elevator companies mix grain to some extent, but not a great deal. It has to be cleaned and the shrunken wheat taken out. It is mainly export wheat that is mixed. (726.)

Mr. BUDGE, of North Dakota, says the mixing of high with low grades of wheat to bring up the grade is done after the wheat is sold at St. Paul and Duluth, not in the country. (855.)

Mr. HANLEY says Minnesota grain is so degraded by the time it reaches the selling point that its value is gone. If it were removed from the control of the many hands through which it passes, Minnesota grain would have a premium of 3 or 4 cents a bushel in the markets of the world. (282.)

11. Drying of wheat.—Mr. BUDGE, of North Dakota, says that when farmers ship wheat that is shrunken, or a little damp, it is taken into the mixing and drying houses and worked up a grade. That is where the elevators make their money. The farmer does not get the benefit of the improvement, and sometimes finds fault with his own carelessness. (855.)

Mr. PRATT says there is some wheat going to Minneapolis that has to be handled a good many times to keep it from heating in the bin. Some of the elevator systems are equipped for drying damp wheat. There are elevators in Minneapolis that do

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nothing else but buy low-grade wheat and handle it with driers. The regular elevator companies turn damp wheat over to them rather than put it in their own houses. (725, 726.)

12. *Switching charges.*—Mr. BUDGE testifies that at Minneapolis there is a charge of one-half a cent for transferring wheat to another elevator or mill; at Duluth there is no charge for switching. (856.)

13. *Sale of futures by elevators.*—Mr. MORAN complains that the elevators, becoming traffickers in the products of their customers, are enabled to sell futures to such an enormous extent that they can sell millions of bushels of "wind" and charge the regular fixed charges of storage and commission on grain that never existed. This is done in such vast volumes that the sales of "wind" in one day will amount to fully 600,000,000 bushels, or as much as the entire crop of the nation. This amount is sold for 300 days in the year, and is one of the greatest influences in destroying the value of farm products. (718.)

Mr. PRATT, of Aberdeen, S. Dak., says the money in the elevator business is not all made in buying wheat in the country. When the elevators get wheat on hand, if future wheat is high, not wanting to carry the wheat themselves, they sell it for delivery in January, February, March, or as far ahead as May, and that gives them a little profit. Then when the time comes they sell the actual cash wheat to other parties. The future sales are simply to protect them on their purchases. As a rule, the elevators do not carry any wheat for speculation. (726, 728.)

14. *Relations of railroads to elevators.*—Mr. PROM has no doubt that there is a community of interest in the management of the Great Northern Railroad and the elevators. He knows of one man who has stock in the Great Northern road who is heavily interested in the elevator companies, but the operation is entirely separate. Mr. Prom says it is not the general belief among the farmers that the railroad companies control the elevators, though he believes that was formerly the case. None of the elevators are owned by the Great Northern Railroad, but Mr. Hill may have an interest in them. (796, 800.)

Mr. M. F. GREELEY, of South Dakota, complains that, while the railroads have used the farmers very fairly in most ways, when the elevators undertake to "hold up" a community the railroads sometimes lend a hand. "If the railroads would keep their hands off, if they would not hold us while these elevators rob us, we would be all right." Mr. Greeley goes on to explain that the farmers would in that case put up their own elevators, at which the only profit demanded would be the buyer's salary; but when the railroads will not permit the building of these elevators the farmers are handicapped. In Gary, S. Dak., there are 2 line elevators. There was recently a movement for putting in a people's elevator, and one man wished to put in an independent elevator. A meeting was held and the railroad commissioners and railroad people came with attorneys and heard witnesses, and finally decided that the site for the elevator would not be granted. They said the amount of grain was not sufficient for 3 elevators. Mr. Greeley admits that the 2 existing elevators were sufficient to handle all the grain they received, but says there would have been a great many more bushels if there had been a farmers' or an independent elevator, and there would have been better prices. Farmers frequently hauled wheat away from that territory. Mr. Greeley says that if the people are foolish enough to build too many elevators, he can not see why the railroads and railroad commissioners should insist upon enlightening them. (939, 940.)

Mr. MORAN thinks the railroads and their officers are not, as a general rule, interested in the elevators; but some of them are. (721.)

Mr. JUMPER, of Aberdeen, S. Dak., knows of no combination between the railway and elevator companies. Fifteen or 20 years ago the elevator companies were owned by some of the officials of the Milwaukee road; but he does not think that they have had any interest in them during the past 10 or 12 years, or that the owners of the elevator companies own any stock in the railroad. (737.)

Mr. Jumper thinks there was no way to get the elevators and Fairbanks scales built in the early days in South Dakota except by the railroads building them. President S. S. Merrill, of the Milwaukee road, encouraged parties to put up elevators in advance of the production of wheat, and the railways assisted in putting them up. Some of the officials of the road invested in them, but the investment lasted only a few years. The elevators and scales were really projected and built by the railroads and by parties interested as big shippers. (737.)

Mr. BUDGE testifies that the railroads have not built elevators at Grand Forks or controlled the weighing. The managers of the two elevators at Grand Forks have been citizens of the place for several years. No pressure was brought to bear to cause the decrease in the number of elevators or force the elevators out of business, except that when the other roads came in there was no business for the elevators. The

farmers loaded their wheat on the side tracks and saved 2 cents a bushel. The two existing elevators are sufficient; the others were torn down and moved away. Mr. Budge thinks that if he desired to go into the elevator business he could procure an elevator site and switching facilities. (856.)

15. Railroad rebates.—Mr. PROM says the elevators formerly got a rebate from the railroad at the end of the season. One line of elevators got a rebate of 2 cents per hundred pounds in cash. Mr. Prom believes the system of rebates has been discontinued on the Great Northern at noncompetitive points, but he believes, from inside information, that it still exists where there are competing lines. (800, 801.)

Mr. JUMPER, of Aberdeen, S. Dak., says he has never been able to find out whether the line elevator companies get railroad rebates, though he has tried every possible way to ascertain. (737.)

Mr. MORAN testifies that he knows of one instance in Browns Valley where an elevator man having an independent elevator of his own received a rebate from the railroad, given him as a check for labor rendered, though he had performed no labor for it. (722.)

16. Country buyers.—Mr. PROM says the managers of the country elevators are not permanent citizens of the towns in which the elevators are situated, but go from point to point. When a man is disliked he is sent to another place. (802.)

Mr. GREELEY says the elevator companies frequently hire a man from the particular community to run the elevator, but generally the managers are men who have been in their business. (940.)

17. Grading of grain by country buyers.—Mr. BUDGE, of North Dakota, says that when grain is sold to the elevator the grade is fixed by the elevator buyers, generally young men, hired by the company for that purpose, who are under bond to keep up the grades and weights. The grade depends on the color of the wheat as well as the weight. The inspectors at Minneapolis and Duluth are State officers, and appeal lies from the chief inspector to a grain commission. (854.)

Mr. JUMPER, of South Dakota, says the buyers try to please the farmers, because they want to get the wheat. He has known of buyers being discharged by the elevator company because they favored the farmer too much. (735.)

Mr. PROM says the wheat is usually graded as it comes in loads from the thrashing machine. The agent of the elevator company jumps upon a load of wheat, takes a handful and looks at it, and says what it ought to grade; and to verify the grade he weighs it on a little scale called a tester to see if it comes up to the weight of No. 1 hard. If the farmer is not satisfied he goes to another elevator, and the agent will ask him what the other offered him, and will not give him any better grade. Sometimes the farmer succeeds in getting a better grade; but the man who buys at a better grade is reported at once, and the superintendent comes up and overhauls him. Mr. Prom thinks the greatest difficulty of the farmer in the grading of the wheat is that it is left in the hands of incompetent men. (796, 797.)

Mr. Prom testifies that the elevators never buy a bushel of No. 1 hard wheat in Milton. The wheat has to be of excellent quality in order to grade No. 1 Northern, and No. 2 is the best grade the farmers can usually get in that section. Wheat good enough by weight to be No. 1 hard is lowered in grade if the kernels are a little wrinkled, irregular in shape, or a little dirty in the end. There is a difference of 1 cent in price between No. 1 hard and No. 1 Northern, 4 cents between No. 1 Northern and No. 2, and 5 cents between No. 2 and No. 3, so the farmers lose from 4 to 9 cents a bushel. (797, 799.)

Mr. Prom testifies that if one elevator company's agent buys wheat for a better grade than that at which the other elevator agent would have graded it, the fact is reported to Minneapolis, and he is complained of; then the superintendent of his elevator line writes and reprimands him. (796.)

Mr. PRATT, of Aberdeen, S. Dak., says wheat is bought in the country by sample. The man who is handling wheat can tell the grade without any test. He will test the grain for any farmer who wants it tested, but farmers very seldom ask to have it tested. (726.)

Mr. Pratt says there is sometimes a great deal of wheat the character of which it is hard to decide. The elevators sometimes take No. 2 as No. 1, or No. 3 as No. 2, and at Minneapolis they will not get the grade it was bought for. There is a dockage for dirt, of whatever the buyers deem proper; but some buyers, for the sake of getting the wheat, will charge less dockage than they should. (725.)

18. Grain inspection in Minnesota.—Mr. JUMPER says South Dakota has no inspection laws. The grain is inspected according to the laws of Minnesota, which has an inspection board, the chief inspector being appointed by the governor. The grading of No. 1 wheat is according to its weight and the amount of hard wheat. No. 1 must weigh 57 pounds to the bushel and contain a good proportion of hard wheat;

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No. 2 must weigh 56 pounds; No. 3, 54 pounds. The other grades are determined according to the condition. (734.)

Mr. Jumper says that when the farmer ships his own grain it is graded by the State inspector at Minneapolis. On the arrival of the wheat the agents of the inspector break the seals and open the doors of the cars. A long stick with 6 or 8 little tin boxes, or little holes in the stick with tin covers, is run down into the grain to the bottom; then a knob is turned and the little boxes fill. The stick is then drawn up and the little boxes opened. In this way a lot of bad wheat at the bottom or in the middle would be detected. If the wheat looks all alike it is thrown into a box or bag. It is then weighed, and if it is very dirty a pound is deducted for dirt; if it is not very dirty half a pound is taken off. If the farmer is not satisfied with the grade his commission man can call for a reinspection. Inspectors perhaps take a little more pains a second time and the second inspection is final. (734, 735.)

Mr. Prox complains that the farmers of North Dakota are absolutely under the thumb of the governor of Minnesota, who has the appointment of the grain inspectors at the terminal points. He considers the inspection of grain in Minnesota the greatest evil from which the farmers of North Dakota suffer. The North Dakota wheat does not always get the grade the Minnesota wheat gets, though it should be a better grade, being used for mixing to raise the Minnesota grades. The elevator men influence the inspectors by giving their own judgment as to the grade of carloads of grain. (799, 801.)

Mr. Prom states that Duluth accepts the grading of the Minneapolis market as a rule, but not always. The line elevator men, who have the faculty of "standing in" with the inspectors, can make an immense amount of money, and did so in the flax shipment in 1900. The only grades were No. 1 and "rejected," and all the flax bought in Mr. Prom's vicinity was bought as "rejected" at a low price, although it was a good grade of flax. At Minneapolis it was graded No. 1 and shipped to Duluth at a clean profit of 55 cents a bushel. Mr. Prom says he has evidence from confidential sources of collusion between the inspectors and elevator men. (801.)

19. Storage tickets as security for loans.—Mr. JUMPER, of Aberdeen, S. Dak., says the local banks will accept storage tickets and loan within 5 or 10 cents of the price of wheat. If wheat is 50 cents they will loan 40 cents if the market is steady. (739.)

Mr. PRATT, of Aberdeen, S. Dak., says the elevator men have to borrow some money to move the wheat crop. Wheat receipts are the best security, and they get money very reasonably. There is some Montreal money in Minneapolis for the wheat business. When the Canadian banks helped move the Western grain, it was an advantage to the farmers, because it enabled the elevators to act and helped to continue business. (729.)

Mr. PROM testifies that in the most active time of buying wheat the elevator directors borrow money at the banks on their storage tickets, or their agents draw on the houses for any amount they want. Sometimes, when a heavy movement of wheat is expected, the elevator company ships \$2,000 in money to the agent, but that is undesirable, and they allow him to draw through the bank. (802.)

20. Independent elevators.—Mr. HANLEY says the farmers are building elevators all over the Northwest. They form stock companies and run the elevators separately, and the National Farmers' Alliance and Industrial Union stands back of them and gives them its support. In 1898 there were about 143 farmers' elevators building and in operation. In 1899 Mr. Hanley had promoted about 92 at the time of his testimony (August 12). It was a bitter fight to get the railroads to the point of giving any facilities, but they are now giving the farmers all the encouragement possible. Mr. Hill, of the Great Northern, gave them right of way on all his lines, and the other companies were obliged to do the same, though some of them were very reluctant to allow the elevators to be built. At noncompetitive points the farmers sometimes have difficulty in getting sites. The farmers' elevators pay the highest prices, less 2 cents for operating charges. (279, 280.)

Mr. MORAN testifies that the National Grain Growers' Cooperative Association is erecting farmers' elevators on several railroads, including the Milwaukee, the Great Northern, and the Northern Pacific. There are probably not over 150 of these elevators. They are in Minnesota and the Dakotas. There is 1 in Browns Valley, 1 in Beardsley, 1 in Chokio, 1 in Graceville, 1 in Ortonville, and a few others near there. They are usually built on ground belonging to the railroad, although in some places the railroads refuse the site. After the elevators are in operation the railroads are generous in giving shipping facilities, though sometimes there is a car famine, when all are unable to get cars. The grain from these farmers' elevators is shipped to the commission men in St. Paul and Minneapolis. Mr. Moran thinks that in some instances they do not get the same freight rates their competitors get. The rules in

regard to the time allowed for loading cars, grading of grain, etc., are generally about the same as at other elevators. The buyers at these elevators determine the grades and the price to be paid. They receive the card price of wheat, usually 3 or 4 times a day, by wire from the commission men and dealers, and they ship principally to Minneapolis and Duluth. There is no trouble about the handling of the grain at the terminal point. The greatest advantage possessed by the competitors of these farmers' elevators, however, consists in having terminal elevators. (722, 723.)

Mr. JUMPER, of Aberdeen, S. Dak., states that if a number of farmers wish to erect an elevator they apply to the railroad company, pay \$5 ground rent, just as the line elevators do, put up their elevator, and operate it to all appearances just the same as the line companies. Mr. Jumper knows of no obstruction placed in the way of these independent companies by the railroads. South Dakota has a law compelling the railroads to give these facilities to independent elevators. This law was the result of an indisposition on the part of the railroads to give such facilities, and Mr. Jumper thinks the inclination to favor the line elevators still exists, though the opportunity does not. (736.)

Mr. Jumper testifies that at nearly every station in Brown County there is an independent elevator or flat house, owned and operated by independent buyers. He thinks there is no obstruction placed in the way of the successful operation of these independent elevators. (736.)

Mr. PROM, of Milton, N. Dak., testifies that persons desiring to build an independent elevator must apply to the railroad company for a site, and they are very slow in getting it. It is almost impossible to get any facilities for shipping or handling grain independently. In order to ship grain it is necessary to have a loading platform to bring the wagons to the level of the car floor. The railroad company compelled the elevators to build one, but without designating the place; so it was put out where it was so steep the farmers could not drive up, and in such a form that it was impossible to use it; so residents in the locality had to build another and make the company a present of it. The farmers also combined to build a farmers' elevator and applied for a site, but did not get it; "the railroad people will not give you reasons; they simply stand you off. * * * Then you go to the railroad commissioners, and if you have nobody that stands in with them you do not hear anything from them." The railroad commission's investigation is described as consisting of a flying trip on a private car, with a 2-minute stop. (797.)

Mr. Prom testifies that an independent elevator was built at Lakota, but the line elevators decided that it should be killed. The merchants of Lakota stood behind it to help the farmers, and the old line elevators started general stores in Lakota, handling all the goods the local merchants handled and selling them at cost, for revenge. The result was that the merchants were obliged to cease their support of the independent elevator, and the elevator gave up the business. (798.)

Mr. Prom says the line elevators always put up the price of grain to freeze out an independent elevator. He thinks this was done at Lakota in the beginning. After an independent elevator fails the price is immediately lowered. (798, 799.)

Mr. Prom says better prices would be obtained from an independent elevator; the farmers would not have to take card prices; they would not have to pay the margin that the elevator companies get, which is sometimes too large, especially on the lower grades. They are supposed to do business on a margin of $3\frac{1}{2}$ cents for No. 1 hard, and on the lower grades the margin is 2 and $2\frac{1}{2}$ cents. (797.)

Mr. Prom says the independent elevator would create competition; an honest man would give a better grade for wheat, which means 2 or 3 cents a bushel for the farmer, and he would not buy on such a wide margin, and would give the farmer what he should have in weight. When it is possible for the farmer to get a car he makes from 5 to 10 cents a bushel on his wheat. A private elevator would help him to do that without waiting for the car; now the farmers have to hold the wheat in granaries until spring, when cars are plentiful. (798.)

Mr. GREELEY, of South Dakota, says the line elevators do not compete with the other elevators in prices. There will be lax seasons when they will pay the same, but when the wheat is really coming in they do not, and thousands of bushels are diverted to those places where they have the other elevators. The difference in price has been found to be from half a cent to a cent and a half a bushel, and sometimes much more; in some cases enough to rob the farmer of all his margin of profit. (939.)

21. Independent shipments.—Mr. PROM, of Milton, N. Dak., says that if the farmer does not feel like accepting the price offered for wheat, he can keep his wheat, or try to get a car and ship it to a commission firm in Minneapolis or Duluth. The railroad officials will furnish a car if they can not help it, but are not very eager to furnish cars to private shippers; the line elevators get the preference. When there

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was very little wheat, during the dry season of 1900, there was an abundance of cars and the company was anxious to do more business, but during a busy season the farmers can not get cars. The rule of the company is that farmers and elevator agents wanting cars must order at 6 o'clock Saturday afternoon. The elevator agents are there beforehand, and put in their orders for so many cars. The first man who orders is first served, and all the elevator companies order first. Only a limited number of cars are sent up, and if there are not enough to go around, the farmer gets none. (795, 796.)

Mr. Prom says that when farmers ship their grain independently they simply dump it into a car, seal the car, consign it to a house in Minneapolis or Duluth, and leave it absolutely in the hands of the commission merchants to get what they can for it. The commission men superintend the inspection of the grain by the State inspectors and appeal if it is too low. When a car is shipped to a private commission man he takes a sample to the chamber of commerce at Minneapolis and offers it for sale. The wheat that is graded No. 1 hard in the country never sells below that grade. The men who need the wheat are willing to pay for No. 1 hard, though the inspector may say it is all No. 2, so the farmers prefer to take their chances on the merit of the grain. Wheat graded No. 2 at Milton will often sell in the Minneapolis market as No. 1 hard. (799, 800.)

Mr. Prom says the private commission merchants in Minneapolis or Duluth have all the facilities that the elevator men have. The farmer generally gets a better price by shipping to them than by letting the line elevator have the grain and also saves the margin that the elevator companies reserve. Mr. Prom has tried independent shipping, both to Minneapolis and Duluth, and it resulted profitably every time. (796.)

Mr. BUDGE testifies that the commission men in Minneapolis get 1 cent a bushel and at Duluth one-half cent on wheat. (855.)

Mr. JUMPER, of South Dakota, says the principal complaint among the farmers there is that the elevators do not pay what they should for good wheat. If a farmer has a good grade of wheat he will make money by shipping it. In many cases farmers have made from \$40 to \$50 or even \$60 a car by shipping their own wheat to Minneapolis. Some of these shipments have been made on rising markets, the market advanced 2 or 3 cents while the car was in transit, and including the margins which the elevators take, the shippers got 5 or 6 cents more than the card price; or, if he had a very good grade of wheat, all of one kind, a cent or possibly a cent and a half more. These instances are always reported in the papers, but if a shipper happened to strike a falling market the incident would not go into the papers. (737, 738.)

Mr. Jumper does not know of any instances where farmers have attempted to ship their low-grade wheat. They put it right on the market as soon as possible. Ordinarily the prices of Nos. 1, 2, and 3 are not far apart. At the date of Mr. Jumper's testimony, January, 1901, the card price of No. 3 was 10 cents below No. 2, but some farmers would get 5 or 6 cents higher than the card price, because the wheat, while grading No. 3, was fairly good quality. (739.)

Mr. Jumper says there have sometimes been car famines, but he never knew a time when an independent shipper or farmer could not get a car just as easily as an elevator. (737.)

Mr. PRATT, of Aberdeen, S. Dak., thinks there are no obstacles placed in the way of the farmer who wishes to ship his grain individually. He can load it into the car, but he has to handle it by hand; he can not load by machinery as an elevator can. The railroad companies are anxious to keep their rolling stock out of the way and not have a blockade, and sometimes the elevator that can load the cars quickly may be favored with cars as against individual shippers, but not as a rule. (725, 728.)

Mr. BUDGE, of Grand Forks, N. Dak., says the millers determine the difference in price between No. 1 and No. 2 wheat. The difference is $1\frac{1}{2}$ or 2 cents; in the case of No. 3 the difference is probably 4 or 5 cents. A farmer who has a superior quality of wheat gets the price for No. 1 hard. If a farmer has the best wheat in the market there is some advantage of his shipping to Minneapolis on his own account; he gets fairer treatment at the terminal point. If the miller thinks the wheat is above grade and wants it badly he will pay a little above the grade price for it. (854, 855.)

Mr. Budge says the farmers have equal privileges with the elevators in getting cars. He thinks there is no disposition on the part of the railroads to favor the elevator companies if they can help it. The farmer who loads his own grain saves the 2 cents that would otherwise go to the local elevator. Mr. Budge says that wherever 2 railroads come together, while the rates are no better, shippers are more apt to get cars. (853, 854.)

Mr. Budge testifies that a good many of the farmers store at the local elevators. Some of the elevators will occasionally give a farmer a special bin for use in loading in and shipping out, but sometimes they have not the bin to spare. (855.)

Mr. HANLEY says grain from the home of No. 1 Northern, which can be preserved intact and removed in bulk to Buffalo and New York, commands a premium of from 3 to 7 cents on account of its superiority. The bonanza farmers avoid the combinations of local elevators, and escape much of the loss sustained by other farmers because they can ship direct. (279.)

22. State regulation.—Mr. MORAN says the Minnesota law regulating warehouses, like many other laws, is a dead letter. The law permits the keeper of a public warehouse to buy grain. (719.)

Mr. PROM says the North Dakota railroad commission has no power over the appointment of inspectors, or the making of rules and regulations concerning storage. (799.)

23. Proposed legislation.—Mr. M. F. GREELEY, Secretary of the Board of Regents of Education of South Dakota, would make it a crime to do the kind of business the elevators do, and make the punishment so quick and so severe that it would not be done a second time. He would have the matter regulated by Congress. He adds that the farmers could regulate the "combine" if they could build and operate their own elevators and have equal shipping facilities. (943.)

Mr. Greeley wishes that the farmers might be at perfect liberty to build elevators, and buy and ship grain as they wish to. The intelligent Western landowner only asks that he be not handicapped in the race with capital. (940.)

Mr. MORAN, president of the National Grain Growers' Cooperative Association, advocates legislation placing terminal elevators under the control of the Government, through the appointment of an inspector to have charge of public warehouses and prevent public warehousemen from trafficking in or mixing grain, or from keeping the better qualities of their customers' grain and delivering the poorest grades. Mr. Moran thinks that the manager of a terminal elevator should not be permitted to buy grain, and he says his organization will ask for legislation to that effect. Mr. Moran declares that legislation that would prevent combination in restraint of commerce and trade would be a great boon to the farming community. (718, 719.)

Interstate grain inspection.—Mr. PROM believes that the office of inspector should be taken out of the hands of the governor of Minnesota, and that the inspector should be appointed for fitness and allowed to appoint his own deputies. As a more thoroughgoing remedy he proposes a system of interstate inspection established by the 4 States of North and South Dakota, Minnesota, and Wisconsin. (801.)

National grade for grain.—Mr. HANLEY says the manipulation of grain is the source of the greatest profit to those engaged in the business. He believes that if a national grade could be established and the grain bought and sold at a premium or discount with that grade as a basis, the farmer would have a chance to get some of the profit which he should have. (280.)

B. The Chicago elevator system.—1. History.—Mr. HILL, a commission merchant of Chicago, says Chicago is the greatest grain market of the world, the receipts of grain in 1898 being 320,000,000 bushels. As the Western roads brought grain to Chicago, and as their grain business increased, they all, or nearly all, built elevators in Chicago. The first elevators were built in the fifties, or possibly there was one as early as 1848. In 1870 the State of Illinois found it necessary to control the elevators to protect the grain interests of the State, and the constitutional convention of that year devoted an article of the constitution to instructions to the legislature in regard to making laws regulating the inspection and storage of grain, to be liberally construed in the interest of producers and shippers. Following the instructions of the constitution the legislature of 1871 enacted the railroad and warehouse law. From 1871 to 1887 there was very little difficulty in the handling of grain in these elevators, which were managed by disinterested parties engaged solely in the warehouse business. The rate of storage was fixed at the beginning of each year, and was the same to all persons. Thousands of buyers and sellers were brought together daily, the competition of buyers sustained prices, and that influence was felt the world over. For years Chicago was the best market for the West to send grain to.

During the few years following the enactment of the interstate commerce law, between 1887 and 1892, the method of handling grain in the elevators changed. The elevators passed out of the hands of those who devoted their entire time to the warehouse business and into the hands of persons who immediately embarked in the grain business. By the end of 1890 nearly every railroad terminating in Chicago had a favored elevator system under its protection to which were given concessions enabling it to control the grain business on that road.

Mr. Hill submits lists of stockholders of various elevator companies, showing that the officers and directors of the railroads are among the original stockholders in the elevator companies. He says the Armour Elevator Company now controls all the

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public storage on the St. Paul and the Chicago, Burlington and Quincy railroads, those on the latter road having been leased by the elevator company from the railroad and reduced from public to private warehouses for the use of Armour & Co., with the exception of one house of 800,000 bushels' capacity. The Illinois Central Railroad leases its terminal elevators to Carrington, Hannah & Co., a grain-shipping firm which owns stock in the Central Elevator Company and controls all the grain coming into these public elevators. Recently the firm has made one of the Illinois Central elevators a private house, barring out the public. The Santa Fe elevator is no longer a public house, being leased to the Richardson Company. The Rock Island elevators have passed into the hands of Charles Counselman, and one of them is being used as a private house. The proprietors of these public warehouses are the most extensive dealers in grain on the various roads, and own a very large part or all of the grain stored in their elevators. (295-297, 313.)

Mr. Hill adds that this state of affairs has gradually driven the public out of the public warehouses, as the public can not successfully compete with the elevator people, who, if they pay storage at all, pay it to themselves. The effect has been that grain of a grade that would of necessity go to an elevator, coming to Chicago on any road where these conditions exist, finds but one buyer, the elevator proprietor. (295, 297.)

2. Elevator capacity of Chicago.—Mr. S. H. GREELEY, a commission merchant of Chicago, testifies that the public and private elevator capacity of Chicago is probably over 60,000,000 bushels. He estimates that the capacity of elevators which are advertised as public is in the neighborhood of 20,000,000 bushels. The public elevators are decreasing in number; some of the railroads are assuming the position that they will furnish no facilities for the public. (229, 233.)

Mr. HILL quotes the Chicago Chronicle of August 12, 1895, as saying that over 20 per cent of the whole storage capacity of the United States and Canada is located at Chicago, Duluth having a capacity of 27,200,000 bushels; Minneapolis, 26,000,000 bushels; St. Louis, 13,350,000 bushels; Milwaukee, 5,430,000 bushels, and Toledo, 7,200,000 bushels; a total of 125,830,000, or about five-eighths of the whole. (314.)

3. Combined action of warehousemen.—Mr. BRIGHAM believes that there are combinations among the elevator and warehouse owners. Elevators along the same lines of railway are believed to have an agreement as to prices. Practically all grain must pass through Chicago, and the warehousemen there have an opportunity to demand whatever charges they will. (24.)

Mr. HILL says it was discovered in 1894 that there was an association composed of all the elevator people in Chicago. When the Board of Trade found it necessary to treat with the elevator people it was all done through this association; it was not possible to treat with one of the elevator proprietors separately. It was found that the elevators always had the same rates of storage and that they were represented at all times by the same attorneys. (309, 310.)

4. Storage charges.—Mr. RICHARDS and Mr. S. H. GREELEY agree that the charge for storing grain has been reduced to three-fourths of a cent a bushel for the first 10 days, and one-fourth of a cent for each 10 days thereafter, and that there is money in the storage business at these rates. (216, 234.)

Mr. HILL, in a statement before the Illinois legislature in 1897, said that the charge of three-fourths of a cent a bushel for the first term of storage was retained only as a protection to the elevator managers against the competition of legitimate dealers. The public could not avoid it, but it was ignored by the elevator managers in their own transactions, thus forcing everyone to sell to or buy from them. The charge, not being bona fide but only a foil to competition, should be abolished. (314.)

Mr. Hill quotes with approval an article in the Chicago Chronicle of September 6, 1895, to the effect that the Chicago storage rate of one-fourth of a cent a bushel for each ten days means for all the empty bins \$450,000 a month, or \$5,300,000 a year. These figures were said to explain the anxiety of the Chicago elevator trust in combination with the Northwestern elevator interests to depress wheat prices in order to earn money with their idle warehouse room, and profit by buying wheat for future delivery. (316.)

5. Short weights.—Mr. RICHARDS says there are about 28 or 30 terminal elevators in Chicago, supposed to be public warehouses, but not one is run in the interests of the people. They are all run by about 7 or 8 firms. Mr. Richards thinks there is no pooling among these firms, but that there is an understanding as to what the rates of storage shall be and as to other details of the business. The elevator people have their buyers out in the country, and send out quotations every day. Whenever a firm sells to one of these country shippers, he sells subject to Chicago weights and inspection. If he falls short 2, 3, 5, or 10 cents a bushel in Chicago, he has no remedy. His bill of lading over the railroad will not protect him because it says "sub-

ject to loss in weight." If the weight overruns, that is one of the perquisites of the shipper's business. There has been very serious complaint about the weights falling short, and in regard to the inspection. (202, 203.)

6. Mixing of grain.—Mr. HILL testifies that the mixing of grain is so important a matter that every terminal elevator in Chicago, with possibly one or two exceptions, has a mixing house connected with it. The Armour mixing houses are larger than their public houses. Grain of high quality is then run through the cleaning house and a lower grade of grain is mixed with it to bring it down to the lowest point at which it will go in the same grade as before. This fixes the price of wheat injuriously to the farmer, and affects the price at terminal points, because grain sold by sample for export is sold at a premium over the speculative grade held in store at Chicago. No farmer gets the benefit of the premium; the only one who does is the man who mixes the grain and sells it. The premium varies from 1 to 3 or 4 cents a bushel. (319.)

7. Manipulation of grades.—Mr. RICHARDS says the public suffers great injustice from the elevator system of Chicago. Chicago has an elevator capacity of about 40,000,000 bushels, but there is not a public warehouse or an elevator run in the interests of the people. The warehousemen deal in grain, and the grades are so manipulated that it is hard to tell what one is getting in buying wheat. If one wants to get a special quality of grain, he has to pay a premium on it; he can not get it in the open market. If wheat weighs 56 pounds to the bushel and is reasonably clean, it will grade No. 2; if it weighs 63 pounds it will also grade No. 2, though there is a difference in its value to the miller of 5 to 10 cents a bushel. A warehouseman can take 2 cars of No. 2 wheat and 3 cars of No. 3 wheat, the difference in value ranging as high as 15 cents a bushel, and make 5 cars of No. 2 wheat. The dealer does not always get back the same kind of grain he puts into the elevator. As a remedy for this evil Mr. Richards suggests the sif of grain by sample. (202, 205.)

Mr. GREELEY says the temptation put into the hands of men conducting public warehouses has led to some of the most gigantic robberies known in commercial life, at the expense of general trade. He believes there is a continual underhanded business on the part of at least some of the warehousemen, that they manipulate the grades and weights and attempt to manipulate the inspection. He does not believe it possible for a man to be custodian of the people's property and of his own without great temptations of this kind. (232, 233.)

Mr. HILL introduces in his testimony a letter from the Nash-Wright Company, of Chicago, to illustrate the methods employed toward country elevators by public warehousemen of Chicago when dealing in grain. The letter states that a warehouseman operating both public warehouses and cleaning houses received 50 cars of No. 2 corn. He called for reinspection and asked that the shipment be changed to Nos. 3 and 4, which would have lessened the market value from 2 to 5 cents a bushel. The supervising inspector said that the corn was of the best quality coming into Chicago. The writer of the letter infers that the corn had been bought from shippers in the country, and that the aim of the dealer was to secure it at heavy discount, then run it into the cleaning house and have it inspected out as No. 2 corn. (318.)

8. Elevator premiums.—Mr. HILL quotes and indorses an article in the Chicago Chronicle of August 22, 1895, declaring that one of the great weakening factors at that time was the attitude of the warehouse interest in insisting on premiums on every bushel of wheat sold. Within the year premiums of from 2 to 3 cents for winter wheat and 6 to 7 cents for spring wheat have been asked and received by the elevator men, and at no time within the year had it been possible to buy wheat in the Chicago market except at a premium. If the market were allowed to resume a normal condition and prices were permitted to remain on a par with futures, much more wheat could be sold to foreigners, who "will not submit to be bled by a grinding monopoly." The premium charges not only curtail exports, but also depress prices by keeping grain at accumulative centers. In the presence of plenty, buyers look at the premium as an extortion, and naturally refrain as far as possible from paying it. By curtailing exports, the premiums charged were responsible in large measure for the exportation of gold and its deleterious effects. (316.)

9. Fraudulent warehouse receipts.—Mr. HILL states that on May 1, 1896, Armour & Co. delivered to members of the Board of Trade fraudulent warehouse receipts for 1,200,000 bushels of wheat. The magnitude of the swindle attracted attention, and the directory investigated the matter and voted the entire Armour system of elevators irregular. The directory also caused a committee to investigate the members of the board responsible for the fraud, and the committee, after investigation, filed charges against 4 members, 3 of whom denied knowledge of issuing the receipts, while the fourth, who assumed the responsibility, was convicted and suspended from the board for 20 years. It was shown during the trial and investigation that warehouse receipts to the amount of about 12,000,000 bushels had been manipulated in

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this way, beginning with the Cudahy wheat deal in 1893. Thus for 3 years the public and members of the Board of Trade had been systematically plundered, and the market depressed by the delivery of undesirable warehouse receipts which expired the day they were delivered and were dated months after the grain was received in the elevator. Dates were so manipulated as to induce shippers to take the grain out of store. (317, 318.)

10. Relations of railroads to elevators.—Mr. S. H. GREELEY, a commission merchant of Chicago, thinks the railroads formerly extended rebates to individual shippers to bring grain to the Chicago market; but the interstate-commerce law made it necessary, in their opinion, to put the rebate in the hands of favored individuals whom they could trust. They chose for that purpose the public warehouseman as the party with whom the lowest rebate would serve their purpose. They gave him an elevator on the right of way, and favored him with facilities to compete with the public in drawing the grain from the West to Chicago. These advantages he still receives. The public warehouseman was appointed a secret rate getter or secret facility man. His advantages in competition with the public are (1) that he pays no storage on grain, or if he pays storage he pays it to himself, so that possession of the elevator operates as a rebate to that extent, and (2) that he is able to select the best grain of a certain grade and keep it for himself as merchandiser, giving the public a line grade, or a grade just good enough to pass inspection, and thus keeping the public at a disadvantage. These two points are of such importance that the shipping interest from Chicago to the East on the part of the public is dead. They have also reflected upon the receiving interest from the West. To-day there is practically one set of buyers on the Chicago market, each railroad having a man with these facilities. This not only kills the competition for grain in the West, but also kills the competition in the sale of grain to Eastern markets and for export, and has a very important effect on the values of grain. (227, 228.)

Mr. Greeley is of the opinion that these facilities are given to public warehousemen by the railroad companies to protect the latter from grain being attracted from what they consider their legitimate territory to other points. The system of through billing and other matters have combined to make it necessary from their standpoint to protect themselves. It is almost impossible to conduct the grain business on the Western railroads properly without special rates to give the railroads their proper haul. (229.)

Mr. Greeley says he has an indefinite amount of evidence leading him to believe that the railroad-officials and warehousemen of Chicago are very close together. The more the railroads drive out competition, the better they seem to like it, and the public is treated with the utmost indifference. Mr. Greeley does not believe it will be possible to have general competition in any commodity as long as it is possible for the railroad official to divide the rebate with the man to whom he gives warehouse facilities. (231.)

Mr. Greeley believes that the railroads want the business on their lines done by favored parties; that the stockholders suffer and the officials divide the "swag." (233.)

Mr. RICHARDS says the elevators of Chicago, with a few exceptions, are owned by the railroads. He is informed that they are leased under an arrangement that the lessees shall pay so much a car for all grain going through the elevators. He thinks it is generally believed that the lessees get special favors in the way of rebates or concessions that do not belong to them. When a railroad company ships a carload of grain, it makes out besides the waybill an expense bill showing the freight charge to Chicago, which is paid by the Chicago consignee. The rebates are managed by means of these expense bills. An elevator man first pays the regular tariff; at the end of the month he makes up a statement of the amount of grain he has received and sends it to the railroad company. The rebate is figured out, and is not paid out of the freight department, but is charged up to some other fund; it may be the bridge fund, the repair fund, the passenger fund, or some other. (203, 204.)

11. Evils of speculation by warehousemen.—Mr. HILL, in a statement before the Illinois legislature in 1897, defined the natural function of warehousing to be accepting for storage the overflow of the season of freest movement, that the channels of commerce may not be clogged, and caring for it while awaiting demand. The alliance between the railroads and the elevators, he said, had resulted in reaching out after millions of bushels of grain not naturally tributary to the Chicago market, and then preventing it from getting away as long as storage could be collected on it. The accumulation and storage of grain had come to be the chief aim of dominating forces in Chicago, resulting in such a congestion of grain as to depress prices to the lowest point in history. The volume of the Chicago stocks invited dealers in every market in the world to make sales there against holdings elsewhere, which they

would not dare to do but for the abnormal accumulations held there. Cargoes of wheat bought on European account in Australia, India, Russia, and Argentina, and stocks at all other points of accumulation were sold against in Chicago, so that the Chicago market felt the weight of the entire world's surplus. This condition was made possible by the enormous hoard retained in Chicago to satisfy the avarice of half a dozen corporations, the largest of which was owned in London, and which, "by the rankest and most brazen manipulation," sought to control the price and movement of commodities. Mr. Hill charges that the elevator men were able to set aside and sell at a premium every year millions of bushels not owned by them, but in their custody as warehousemen. In the spring of 1895, when the quality of millions of bushels of grain stored in public warehouses was asspersed by interested speculators, the Board of Trade sought to have an investigation made, but every elevator proprietor in Chicago joined in refusing to let the committee of experts make this examination. They knew the grain was above the average in quality and condition, but were willing to have it suspected in order to increase carrying charges.

Mr. Hill declared a system permitting the proprietors of public elevators to deal directly or indirectly in the property of which they are custodians to be essentially immoral, and said that the principal motive of the warehouse law was to prevent their ownership or control of grain therein, yet they had within a few years sold millions of bushels from public elevators by sample at a large premium, not a cent of which in equity belonged to them. The grain bought by the elevator proprietors is promptly sold for future delivery, so they become custodians of other people's property, which, however, the public can get only on the payment of a premium.

Each railroad terminating in Chicago was declared to be controlled practically by a single buyer—favored individuals having the advantage of special rates and of elevator control—so that the rates charged to the public were rebated to themselves, enabling them to outbid or undersell all competitors. The elevator monopoly was characterized as a "blight on legitimate business," threatening the existence of all competition. In reply to the claim of the elevators that their bringing grain in large amounts to Chicago furnished employment to banking capital and kept up the rate of interest and gave business to railroads and insurance companies, Mr. Hill replied that half a dozen firms and corporations had a monopoly of the business and that they could not force to Chicago grain not naturally tributary thereto except by cut freight rates forbidden by law, while if they were prevented from dealing in grain each railroad would have a host of competing patrons instead of one; bankers would have thousands of active accounts instead of a small group of large borrowers able to combine and dictate rates, and the short-rate card of insurance offices would again come into use. (312-314.)

Mr. S. H. GREELEY testifies that the Chicago warehousemen are not custodians appointed by the State, which was the original intention of the State law and constitution, but override the law and become merchandisers. As soon as warehousemen get possession of grain, they jump into a pit and sell it ahead for future delivery and make a hedge; then some one else is carrying the grain and paying storage charges. (233, 234.)

Mr. Greeley says that the public warehouseman carries grain in his warehouse to accumulate storage charges. His object is to get possession of it and sell it ahead for future delivery, which he can do at a lower price than another man, who would have to pay the regular storage rates. The warehouseman waits for the buyer to sell out, and stands ready to take the grain from him and sell it ahead for another deferred delivery, and thus accumulate another storage charge. This has produced an endless chain of forced liquidation on the part of buyers in the Chicago market. The warehousemen not only carry the grain for storage, but so manipulate the grades by reducing the quality to the line grade that the man who buys it for future delivery does not want it as a merchantable commodity, and sells it back to the warehouseman, thus continuing its life in storage and the tax on the public. Chicago probably has in public and private warehouses a capacity of more than 60,000,000 bushels, the larger proportion of which Mr. Greeley believes is operated so as to make the storage charges out of the speculative public. In 1898 Chicago handled 300,000,000 bushels and more, or nearly 300,000 carloads of grain, a large proportion of which passed through the public warehouses. (227-229.)

Mr. Greeley says a public warehouseman has no more right to deal in grain in competition with the public, with the privilege of mixing his grain and paying no storage, than the collector of the port of New York has to deal in tea, coffee, or silk in competition with merchants and pay no import duty. (231.)

Effect on prices.—Mr. GREELEY says this system puts the control of the market into the hands of those who hoard this vast amount of grain, and the lower they can get the prices the more money they can make, because insurance and interest are

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reduced. There is not enough trade in the speculative grain market to carry the market against the current produced. Mr. Greeley believes that this was one of the important conditions which led up to the panic of 1893, by reducing the value of grain so that people repudiated their debts. He admits that the public warehousemen are able to pay more than the others to the farmers to get possession of the grain, but says they hoard it, and take from 5 to 10 or 20 cents a bushel off the entire crop. They pay a cent a bushel more in Nebraska than in Iowa, to get possession of the far Western grain which is likely to go somewhere else. Mr. Greeley believes that there is collusion between the different elevator companies. Five of the warehousemen come together every day and make a price that is sent out to the grain trade. (229, 231, 233.)

Mr. Greeley believes that the prices of the grain crops of the world are largely made on the Chicago Board of Trade, and largely controlled through the influence of one man. The foreign demand is a factor, but the Chicago market may be depressed in the face of an encouraging demand. The Liverpool market has little to do with the price of December corn in August. A rise in the price of wheat on the Chicago Board of Trade generally calls out a new army of short sellers who weigh the prices down again. (234, 235.)

Mr. Greeley says the man who is injured most by this elevator system is the one who raises the grain. In a free, open market without these hoards of grain, values would be 15 to 25 per cent higher. In proof of this he adduces the low prices of grain as compared with former years. (234.)

Mr. RICHARDS says there is a little coterie in Chicago that fixes the prices of grain, arbitrarily manipulating the market to suit its own purposes. He thinks the price in Liverpool or New York no longer cuts any figure. The Chicago elevators have 40,000,000 bushels capacity, and sometimes are pretty full. When there is a large accumulation of stock of any commodity the tendency is to depreciate the price. These elevator men can create a glut at any time, and the more grain they have the more they can make out of the storage charges. Formerly country shippers would send their grain to the commission merchant, and the price would be determined after the grain arrived, being governed largely by the receipts and shipments, but these legitimate influences appear to have become obsolete. Mr. Richards thinks the producer would be benefited if he could send his grain to an open market, where it could be sold subject to the laws of trade. (215, 216.)

12. Monopoly in grain.—Mr. HILL quotes and indorses an article from the Chicago Chronicle of September 7, 1895, declaring that the wheat trade was practically in the hands of a grain monopoly—the elevator interest—which was manipulating the market, seriously crippling the trade, holding down prices, absolutely preventing shippers from filling legitimate orders, and driving trade away from Chicago. A shipper had been compelled to pay the December price, or a premium of over $1\frac{1}{2}$ cents a bushel, for a small lot of wheat. There was practically no wheat for sale in Chicago, though there were some 14,000,000 bushels in store there, all owned by the elevator trust. (316, 317.)

Mr. Hill quotes with approval an article published in the Chicago Chronicle in August, 1895, to the following effect: The elevator proprietors are large speculators and own about 80 per cent of all grain stored at Chicago. In 1894 they sent buyers into the country and brought large amounts to Chicago solely for the purpose of making it earn them storage. This move was very injurious to the country, because it swelled the visible supplies, especially of wheat, to such an extent "that the world, being unacquainted with the real cause thereof, stood aghast and insisted on lower prices, arguing, quite naturally, that America had an enormous plethora."

It also took from the regular receivers at that point a large share of the business which would have come to them under ordinary conditions, and practically threw the grain trade under the control of the elevator interests, who become arbiters of prices and could widen out or contract the "spreads" between one month and another for their own ends. The July-September spread (the difference in price between July and September wheat) was run up to $2\frac{1}{2}$ cents early in July, 1895, when the real carrying charges were only $1\frac{1}{2}$ cents. On July 1 some 5,000,000 bushels of wheat were delivered on July contracts, mainly by the elevator proprietors. The article implies that this was done for the purpose of breaking the market, so that wheat could be bought more cheaply, and that elevator men sell long options freely to break the price, and then buy near options at a relative decline, replacing that sold at a profit. Under the methods in vogue the opportunities of elevator men for making money are declared to be enormous, and the result is said to be practically killing off business in Chicago, as the outside world prefers to go to some market not at the mercy of such a combination. (315.)

Mr. RICHARDS says that Chicago, by reason of its commanding geographical position, would naturally be a very strong point under favorable conditions, but the elevator system "got tangled up," the Chicago grain dealers have lost their grip, and the grain is going around them. Boston dealers get their grain in Iowa instead of in Chicago. Mr. Richards is inclined to think that the amount of grain shipped from Chicago is lessening every year. (202, 211.)

Mr. S. H. GREELEY predicts that the time is not very far distant when there will be no general competition in grain, when prices will be fixed by railroads or favored men, when speculation will be killed as speculation in oil was, and the Chicago Board of Trade destroyed and the building sold to protect the bondholders. (235.)

13. Espionage over the business of other dealers.—Mr. HILL submits copies of letters addressed by a number of Chicago receivers and shippers of grain and flaxseed to the Illinois Central, Chicago, Rock Island and Pacific, and Chicago, Burlington and Quincy railroads, demanding that the roads furnish terminal facilities for the handling of grain and flaxseed at Chicago that would not subject their business to the scrutiny of their competitors. It was stated that grain and flaxseed unloaded in the terminal elevators of these 3 railroads passed into the possession, respectively, of the Central Elevator Company, a corporation owned entirely by Carrington, Hannah & Co., Charles Counselman & Co., or A. C. Davis & Co., and the Armour Elevator Company, or virtually Armour & Co.; that Carrington, Hannah & Co., Charles Counselman & Co., A. C. Davis & Co., and Armour & Co. were active competitors of the petitioners; that they were enabled to exercise a complete espionage over the latter's business, had the opportunity of selecting the best grain of the various grades to fill their own orders, and that the railroads, by leasing their terminal elevators to these firms, created for them a margin, practically giving them a monopoly of the grain and flaxseed trade on their lines, the storage rate in itself being so great an advantage that the lessees frequently sacrificed a portion of it in order to force grain and flaxseed into the elevators so that it would earn storage. They would buy at what would be a loss to other dealers, and yet make money, because of the superior advantages provided for them.

To these letters the Central Elevator Company replied that it was required by the directors of the Board of Trade to furnish a bond of \$500,000 to protect the members who handled the company's receipts, and that the insinuation that the elevator company, or Carrington, Hannah & Co. took advantage of the situation to spy out the customers of competitors was "unworthy of the notice of honorable men;" that the identity of the grain and flax going into the elevators was not preserved, and hence that the elevator company could not know the ownership of any particular lot. The reply of the Chicago, Rock Island and Pacific Railway stated that no specific case of manipulation of grades had ever been brought to the attention of the officials, and that specific complaints of that character would be investigated at any time. The reply of the Chicago, Burlington and Quincy Railroad stated that the road stood ready to deliver grain to any elevators in the city, subject only to such extra charge as might be exacted by the lines on which the elevators were located. (304-308.)

Mr. RICHARDS says the business of the Illinois Grain Dealers' Association is also subjected to the inspection of their competitors of the Class A elevators. (204.)

14. Other abuses in the Chicago grain market.—Mr. S. H. GREELEY, a commission merchant of Chicago, says that the natural supply and demand no longer control prices in the Chicago grain market, but that values are controlled by an artificial organization, including 4 or 5 distinct systems: (1) The railroads, (2) public warehouses, (3) speculation, (4) bucket shops, and perhaps (5) the ownership of private cars by individual firms operating through railroad companies. (227.)

Bucket shops.—Mr. GREELEY defines a bucket shop as a place where people can go for the supposed purpose of buying and selling grain, but which in reality is a place in which a bet is made with the proprietor as to whether the price will go up or down. Mr. Greeley estimates that from 75 to 90 per cent of the outside trade in the bucket shops is buying on the part of the customers, but this fictitious buying does not influence values. He believes the bucket shops are successful as profit-making institutions, and that their success means depression of the price. The storage privilege granted by the railroad companies to public warehousemen operates to the detriment of purchasers both in the bucket shop and on the Board of Trade, and thus indirectly the railroad companies are largely responsible for the success and existence of bucket shops. If this large stock of grain did not exist, the bucket-shop proprietor would be subject to natural market conditions and take as many chances as the buyer, there would be more frequent rallies, the short side would be unsatisfactory, and the bucket shop would be pushed out of business. (230.)

Bear speculators.—Another very serious menace to the producer born of the public warehouse system, according to Mr. GREELEY, is the professional bear speculator,

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who is encouraged in the same way as the bucket-shop proprietor. The system operates in favor of the short seller, making a bad condition in the market, notwithstanding the general business prosperity that would naturally put the price of grain from 10 to 20 cents a bushel higher. On the Board of Trade the professional raider and the warehouseman are against the outside buyers. (230, 231.)

As showing the influence that can be brought to bear by the speculators on futures, regardless of supply and demand, Mr. Greeley testifies (August, 1899) that September corn commands a heavy premium over far-away futures, and cash grain a premium over September; and that very poor grades sell on a par with the best grades on account of the demand. (235.)

Illegal bills of lading.—Mr. RICHARDS says the bills of lading issued by the transportation lines for grain do not comply with the statute of Illinois requiring that grain received for transportation shall be carefully and correctly weighed and a bill of lading issued stating the true weight, and requiring the company to deliver to the consignee the full amount of the grain without deduction for leakage, shrinkage, or other loss in quantity. The weight is put in a column headed "Weight subject to correction," or some bills of lading read, "Said to contain" so many pounds. In many cases facilities do not exist for weighing grain properly at the initial points. There are some country stations at which the farmers have to weigh the grain on the wagon scale of the shipper and then shovel it from the wagon into the car; the sum of these weights is inserted in the bill of lading as an approximation, but the bill of lading is merely a memorandum; the railroad does not assume to know what the weight is until the grain reaches a point of transfer. In a majority of cases the weights are determined in Chicago, and the shipper must accept the railroad's statement as final. Mr. Richards's experience has been that there has been a shortage on an average of 3 or 4 bushels to the car. The shortage has gone as high as 100 bushels; it is not uncommon to have it 20 or 25 bushels. The average shortage when grain is honestly weighed out and weighed in is only about 30 pounds to the car. Mr. Richards says the shippers never institute legal proceedings to protect their rights, because it costs money and time and aggravates the railroads. A man who is shipping grain is very careful not to provoke the railroads; he has to keep good-humored or he will get into trouble. (212-214.)

Mr. Richards says these bills of lading are illegal, and in many cases are used to conceal fraud. Millions of dollars are lost annually to owners and shippers by reason of defective bills of lading and other illegal methods employed by agencies between the producer and consumer. This can be stopped only by national legislation. (207.)

Ownership of private cars.—Mr. S. H. GREELEY condemns the growing system of the ownership of private cars by individuals and corporations. He believes there is one man in Chicago who owns between 10,000 and 20,000 private cars, so that he can lose money in merchandising and still get enormous profits from the railroad companies on account of this special facility granted him. The public is out of business in anything this man attempts to deal in. (231.)

15. Report of the Board of Trade committee.—Mr. HILL introduces in his testimony a report made April 30, 1894, by a committee of the Chicago Board of Trade appointed to investigate warehousing methods, which spent several weeks in the investigation and took testimony from probably 75 witnesses. The committee said:

"We find that the regular elevators of Chicago are owned and operated in a variety of ways. One system is owned by an individual, who does all the business—buying, selling, and storage—in his own name. Another is partly leased by an individual and partly owned by a corporation, all of whose stock is owned by this same person. Here all the business is done in the firm name, and the accounts are simply kept separate on the books. Another system is leased by a corporation whose stock is all owned by the firm who operates it and which does its own grain business largely through them. Several systems are owned or leased by corporations which do all their business in their own name. A large system is owned by a foreign corporation, which employs commission houses to do its buying and selling. The largest system in the city is leased by a corporation of \$100,000 capital whose ownership is not given. The private elevator or cleaning house connected with this system is owned by another corporation. Here the grain business is all done in the name of the firm who are generally supposed to control both corporations.

"Five systems, with about 19,000,000 bushels of storage capacity, have private elevators or cleaning houses connected with them, while 6 systems, with 13,000,000 bushels storage, have no cleaning houses connected. All of them buy grain, directly or indirectly, both here on our own board and also in the country. Some of them sell their grain exclusively on the open market or to our own shippers, while several sell in the East or ship on their own account as well.

"The necessity for grain buying by these elevator proprietors is hardly well established by their own testimony. All but one claim that they pay only the market price, giving no part of their storage to the seller, while the proprietor of one system claims that possibly 40 per cent of his grain would not come to Chicago unless he bought it. It is but fair to say that this scale of prices claimed to be paid by the elevator system is contradicted by at least one firm, who are large receivers and shippers. They testify that they find it at times to their advantage to sell their own grain to the elevators and buy their cargoes back from them. In addition, the receivers generally testify that they can get more for grain to go to store than they can get for the same grain if already in store."

The committee declared that the fact that public custodians handling the property of hundreds of individuals and mixing it regardless of ownership should themselves be

the principal dealers in the same property was, "to say the least, anomalous." It was not found that the railroad and warehouse law prohibited this directly, but the committee thought the spirit of the law was fairly against the practice. The combination of the 2 occupations of dealer and custodian, with the unfair advantages accruing from the latter position, were believed to be against public policy. The following advantages were specified: (1) The opportunity to contaminate the inspection department and improperly influence the railroads; (2) the opportunity to tamper with grain, selecting the better qualities of a grade for themselves to sell by sample in other markets, thus reducing the average quality of the public grain, and the danger of surreptitiously working off their own inferior grades; (3) the use of the public storage rate in their own interest in the buying and selling of grain to the injury of the general trade.

The committee doubted the propriety of making "regular" any elevators having private elevators or cleaning houses connected with them or under the same ownership or management, arguing that the paramount interest of the owner of a public elevator should be to maintain the integrity of the standard grades of grain, and that when running a cleaning house his constant endeavor was to pass his own grain on the lowest line of the grade.

The committee found that it was the practice of the inspection department, when the quality of grain was objected to by the shipper and the objection sustained, to permit the grain to be taken back at the same grade at which it was wrongfully inspected; also that the inspection department exercised no supervision over grain while in the elevators, but simply inspected grain in and out. While the inspection was under the supervision of the Board of Trade and in the earlier days of State grain inspection, there was in every elevator a distributing inspector, who directed into which bin every car of grain was to be run, and when grain was to be shipped from which bin it should be drawn, and who saw that the oldest grain in the house was shipped first.

The committee found that some elevator proprietors who were in the habit of putting the more desirable qualities of their own grain in bins marked "special" were not equally careful to mark the receipts for these special bins as required by law. The committee did not find that the grain registrar took any special cognizance of this special bin grain or the receipts issued therefor.

The committee found that grain was being held in Chicago too long for its own good or for the good of the trade, as a result of the holding of grain for storage purposes and the concentration of speculative trading into 4 months of the year. The amount of wheat in store at the date of the report was nearly 20,000,000 bushels, a large proportion of which had been in the elevators more than 12 months. Shippers could get grain to fill their orders only by paying a premium. (310-312.)

The committee made the following specific recommendations: (1) An amendment to the law strictly prohibiting the proprietors of warehouses of Class A from being directly or indirectly engaged in the grain business; (2) that the attention of the Railroad and Warehouse Commissioners be called to the practice of the inspection department in permitting degraded grain to go back into the same bins, and an attempt made to have it stopped; (3) that the Railroad and Warehouse Commissioners be asked to have a distributing inspector placed in every warehouse; (4) that the board be asked to direct the grain registrar to attend to the grain in special bins and the corresponding receipts; (5) that the Board of Trade make receipts for grain in special bins irregular for delivery on contracts, as elevator proprietors keeping their property in shape to sell by sample at a premium should not have the protection of the public elevator and the open market to protect them against unprofitable hedging sales; (6) that a committee be appointed to examine every bin of wheat in the regular elevators and report the bins found out of condition or tending to become so, and that the elevator proprietors be instructed to move such grain out at once. The committee also suggested a rule limiting the age at which receipts should be regular for delivery on contract. (311, 312.)

16. *The Chicago elevator cases.*—Mr. HILL submits extracts from the decisions of Judge Tuley in the elevator cases, and from the opinion of the Supreme Court of Illinois affirming that decision. These were 9 cases brought by the Attorney-General of Illinois against the public warehousemen of Chicago. The allegations made in these cases were that the defendants had stored in their warehouses grain owned by themselves; that not less than three-fourths of all the grain received in the public warehouses of Chicago was owned by the warehousemen; that the grain of each grade was not of the same quality, but that separate carloads of different quality were included in the same grade; that by reason of the defendants' advantages as warehousemen in mixing and manipulating grain, rebating storage charges, and otherwise, they had been able to drive out competition, and that their practices were unlawful and injurious.

The relief asked for was a perpetual injunction restraining the defendants, as warehousemen, from storing grain in their own warehouses. The answers set up a general custom of 30 years' standing under which public warehousemen were accustomed to store their own grain and mix it with that of their customers, and stated that the Warehouse Commissioners had construed the act of 1871 as permitting that custom. It was also maintained that the custom had a beneficial effect upon the producer and shipper of grain. (301, 302.)

The defendants in these nine suits were all licensed as public warehousemen, and although some of the licenses included the privilege of dealing in grain, the issue was practically the same in all the cases, as licenses could not grant the privilege unless the law under which they were issued justified such dealing. The litigation involved the construction of the statute of 1871 concerning warehouses.

The great weight of the evidence was to the effect that the warehousemen of Chicago did not commence to deal in grain to any general extent until about the year 1885. Before that time the railroad regulations were such that nearly all grain received was forced to go to public warehouses, the warehouse receipts being bought and sold in the Chicago market. About that time the railroads made regulations by which grain could easily be sold on the track, a certain time being given for inspection, and 72 hours for removal, without charge for demurrage by reason of detention. By reason of the facilities offered there soon arose at Chicago and other grain-buying centers, the practice of buying grain on the track, and partly as a result of this practice, selling by sample became quite general in Chicago. There also arose during the eighties a system of through billing of grain from the initial point to points east of Chicago. The consignee, however, had the right to sell the grain on the track in Chicago, and to change the destination of the grain and the name of the ultimate consignee; or he could stop the grain in Chicago by paying the local rate to that place. The difference between the through rate and the sum of the two local rates was about 2 cents per 100 pounds, which operated to discriminate against Chicago. It also appeared that the railroads made a discrimination in freights against Chicago by which grain was diverted to St. Louis and other points. The consequence of this changed method was that much of the grain failed to go to the elevators in Chicago, and the best grain being sold by sample, only the "line grade" grain went into the warehouses. The difference in price between "line grade" and grain of the same grade sold by sample varied from 2 to 15 cents a bushel. In the meantime the storage capacity of the Chicago elevators was continually increasing. The capacity was about 26,000,000 bushels in 1885, and over 41,000,000 bushels in 1895.

There also arose in the eighties cleaning houses, where grain was taken in at one grade and came out a better grade after being cleaned and, if necessary, mixed with better grain. This profitable business came into competition with the public warehouses, and many of the owners of the latter also established and operated cleaning houses. Private warehouses also arose, and together with the cleaning houses diverted much grain from the public warehouses.

The warehousemen soon perceived that if they did not buy grain their warehouses would cease to be profitable. Their dealings in grain grew so rapidly that they became the principal buyers and sellers on the Chicago market, and practically drove out of business those who had formerly been engaged in buying and shipping grain. It was admitted that they owned at least three-quarters of all the grain in storage in the public elevators of Chicago, and it appeared that they were fast monopolizing the business. The warehouses on the different railroads were the principal, and in some cases almost the only buyers of grain on those roads. Nearly all of them dealt in futures. The warehouse proprietors would often overbid private bidders for grain on the track, offering as much as a quarter of a cent a bushel more, and then immediately resell the grain at a quarter of a cent less than they paid, requiring the buyer to take it from the warehouse within a limited number of days, and thus making the storage charge more than compensate for the loss on the sales. In other words, they used their capital in trading in grain in competition with the public.

Judge Tuley decided that the warehouse law of 1871 should not be so construed as to give the warehousemen the right to use their privileges to crush out competition in the grain business, and that their dealing in grain was ultra vires and against public policy. (298-301.)

The Supreme Court, in affirming this decision, declared that the public warehouses were public agencies and that the licensees pursued a public employment, clothed with a duty toward the public. Their practice in giving receipts to themselves as individuals, to be used in trade to build up a monopoly was declared inconsistent with the full and impartial performance of their duty to the public. The court declared that there was an entire failure to show that in general there was any result-

ing public good to producers or shippers, and decided that a public warehouseman could not be permitted to use the advantage of his position to crush out competition and establish a monopoly by which a great accumulation of grain was liable to be suddenly thrown upon the market. It was shown that the defendants were large dealers in futures on the Chicago Board of Trade, and held an enormous supply of grain ready to aid their opportunities as speculators. (302.)

17. *State legislation of 1897.*—Mr. HILL submits a letter from Mr. B. S. Tyler, secretary of the Illinois Grain Dealers' Association, and a statement made by himself as president of the Grain Receivers and Shippers' Association of Chicago before the State legislature in 1897, in opposition to a bill introduced into both houses of the legislature and said to be pushed by the grain elevator trust. The letter of Mr. Tyler stated that Judge Tuley had, on December 22, 1896, decided that public warehouses had no right to deal in grain, and that the case had been appealed to the State Supreme Court; that the elevator men, knowing that Judge Tuley's decision would be sustained, were attempting to secure the passage of the bill in question, which would give them the right to deal in grain and monopolize trade at the expense of the producers, buyers, and millers. The letter, apparently a circular, urged the recipient to join in a protest against the passage of this "nefarious bill." (317.)

Mr. Hill, in his statement before the legislature, characterized the bill as entirely in keeping with the methods of the elevator monopoly, its sole purpose being to get into the statute something that could be construed so as to permit the continuance of their evil practices. He declared that it would give no relief to producers or shippers, and would only lead to further litigation. The elevator monopoly, he said, asked to be relieved of all responsibility as warehousemen, and asked that their elevators be put under the supervision of the State grain inspection department, at a cost of about \$60,000 a year. (314.)

Mr. S. H. GREELEY believes that the legislation secured by the warehousemen at Springfield was secured by the use of money, and that this opinion is quite generally accepted by the men who were present. (233.)

18. *Transfer of grain at Chicago.*—Mr. RICHARDS, a grain merchant of Chicago, says that previous to 1884 grain was shoveled by hand from the Western cars into the Eastern cars at Chicago, the Western railroads not allowing their cars to go east of Chicago. A carload of grain was first weighed on the track scale, and the weight of the empty car afterwards deducted. There was a great deal of trouble about the weights, and claims for shortage were continually made by Eastern and Southern correspondents. The railroads remitted the freight on the difference, but refused to pay any claims for shortage. About 1884 Mr. Richards built a transfer house for the Lake Shore and Michigan Southern Railroad, by means of which the grain was taken out of the cars and weighed by the hopper system. The car was run up an incline and the grain taken out by steam shovels into the hopper scale and the net weight taken. That weight was always correct, and was accepted by the trade everywhere as satisfactory. This system is still in use in a modified form. To obviate the expense of pushing the car up the incline, Mr. Richards devised a plan for elevating the grain from the grade level; practically an elevator apparatus without storage. (201, 202.)

Mr. Richards says the law of Illinois requires grain to be weighed in hopper scales, to eliminate the inaccuracies of weighing it on track scales. This law is only partly complied with; four or five roads use the hopper system, but some do not. Five cars can be unloaded in 8 minutes by the hopper system. (214, 215.)

Mr. GREELEY has noticed that some of the Eastern roads have followed the example of the Western roads and placed their transfer houses in the possession of grain dealers. The Lake Shore road, instead of operating its transfer houses in the interest of the public, has the grain transferred by a grain dealer. If the owner of oats wishes them clipped, his competitor clips them, and if he wishes, knows the destination of every car that leaves the clipping house. The same condition exists on the Wabash and Pennsylvania lines. (231, 232.)

Mr. Greeley estimates that the warehouseman can transfer grain from the car into his elevator and into another car at an expense not to exceed \$2 for a car of 1,500 bushels, while the public pays three-fourths of a cent a bushel, or \$12, to their competitors in the grain business for this service. The elevator man holds the grain and makes the storage charge year in and year out, "and lets these bear speculators hammer the values, and thus assist him to freeze the buyers out and continue the grain in storage." (234.)

Mr. HILL, in his statement before the Illinois legislature in 1897, said the charge of three-fourths of a cent a bushel for transferring grain from cars to vessels, a distance of perhaps 100 feet, was greater than the average freight rate by water during

1895 from Chicago to Buffalo, and that the same grain was transferred on the track from Western to Eastern cars for nothing. (314.)

19. Country buyers.—Mr. RICHARDS says the original shippers of grain in the country have been supplanted by the representatives of the elevators, and selling by sample discontinued. The Chicago elevator men at first tried to do business with the local grain dealers, but it was not satisfactory to the latter, and the elevator men would then put in a dealer, who would begin by paying the farmers a little more than the local dealer, until the old citizen had to go. Then the new dealer ran things to suit himself. No one knows how far he went in the other direction, because there was no one there to watch him; but the farmers felt that they were not getting what they were entitled to. (205, 211.)

Mr. Richards says when a country buyer buys any wheat he reports to his principal in Chicago, who may, if he wishes, sell against it to protect himself from loss. (217.)

Mr. S. H. GREELY believes that the small elevators throughout the West and Northwest are becoming branches of the great central elevators. Chicago men are gradually securing possession of private warehouses in the country, where they purpose buying direct from the farmer. He predicts that this will eventually lead to the larger owning of line houses on the different railroad systems, where one price will be made to the farmers. (233.)

In Mr. HILL'S opinion the present system of handling grain in Chicago, which consolidates the business on a given railroad in the hands of one buyer, is a great detriment not only to the market, but also to the country through which the road runs. Formerly there would be two or more buyers in a town, permanent residents with families, who would buy their goods at home to a certain extent and make business for the town. Now the tendency is to have one grain buyer, a cheap man on \$40 or \$60 a month, who will do the business formerly done by permanent business men of the town. The system destroys competition, and one man dictates the price of grain. (318.)

Mr. Hill testifies that the people who went into the grain business as a result of the change of policy of the railroads were not experienced grain men. For instance, Charles Counselman went into the grain business and tried to run 200 or 300 stations. He was glad to sell out a good many of them, and then began gradually to establish them again. A concern which apparently represents Armour & Co. is gradually taking up elevators, buying out the grain dealers, and going into business under the name of the Neola Elevator Company. (319.)

Mr. WILSON says the present system of selling grain is not very satisfactory to the farmers of Illinois. He thinks there are combinations to control the prices of farm products. The two grain elevators in Magnolia pay absolutely the same price as if there were but one grain dealer in the town. There is no open market. They do not want to work against one another, and they sometimes confer. They get an agreed price by card or telegram. Mr. Wilson thinks these two elevators are not company warehouses. The local grain dealers sell largely on the track, though at times they ship to a terminal point. The country market is governed entirely by the Chicago market, where the grain is sold. (251-253.)

Mr. Wilson says that when a company is formed to own the warehouses along a certain line of railroad the name is not generally made public. The farmers know only the man who is running the elevator. Mr. Wilson has been told that the Illinois Central Railroad is trying to buy the elevators along its line. (252.)

Mr. Wilson testifies that the new line of road being extended through the central part of Illinois (1899) refuses to allow any privileges for individual elevators, and is evidently working with the elevator men. (253.)

C. The Western Elevating Association of Buffalo.—1. **Organization and workings.**—Mr. Cook, secretary of the Western Elevating Association, says that association is an association of 21 or 22 elevators formed for the purpose of centralizing the elevator business, preventing the cutting of elevator charges, maintaining a uniform rate, and giving value to warehouse receipts. The banks will take the receipts of the association without question. The association is formed from year to year. It is simply an agreement between the different elevator owners; there is no stock. The association provides for the collection and distribution of the earnings on the basis of shares or percentage. It did about 95 per cent of the elevator business of Buffalo during the year from April, 1900, to April, 1901. Its charges are one-half cent a bushel for elevating grain and storing it for 10 days; for storage after the first 10 days a quarter of a cent for each 10 days or any part thereof. There is no charge for loading in addition to the elevation rate on through-rail grain, but on local grain there is a charge of one-eighth of a cent for loading. The extra storage during the winter does not run a quarter of a cent for every 10 days all winter long, but

only until the accumulation after the 1st of December amounts to 2 cents. There are no complaints against the charges made.

The independent elevator operators have simply to go into the market and take business on their own hook. The Kellogg elevator is the only one outside the association which is operating at present. It is the only elevator outside the association which has any track connection. Some of the elevators in the association are owned or controlled in some way by railroads, and they have an agreement to handle railroad grain at half a cent a bushel. Their connection with the railroads might have the effect of giving them a better rating in the association. There is no stipulation preventing the railroads from giving a monopoly of the grain business on their respective roads to any particular elevator, though the division of receipts may have the effect of preventing it.

Mr. Cook says the Elevating Association is a great advantage to the trade because it establishes a uniform rate. Each man knows that he is getting as good a rate as his neighbor. (1017-1019.)

2. Effect on independent elevators.—Mr. KELLOGG, proprietor of the Kellogg elevator of Buffalo, N. Y., says the Western Elevating Association has made an agreement with the trunk lines running east to New York to elevate their grain, and the railroads in turn have agreed to pay the association half a cent a bushel on all grain that passes through Buffalo and is shipped by rail. If any grain man wants a rate through the Kellogg elevator, the railroads charge him a half cent higher rate for freight, claiming that, inasmuch as they have made this contract to pay a half cent to the Western Elevating Association, they would be paying double elevation if they paid the Kellogg a half cent. This agreement has been in effect since the 1st of June, 1900, and as a result of it the Kellogg elevator elevates practically no grain at all. The only grain it has any chance of getting is canal grain, and Mr. Kellogg finds reason to believe that since June, 1900, the Western Elevating Association has elevated canal grain free; hence the Kellogg elevator can get neither rail grain nor canal grain. The competition of the Erie canal is not effective in the grain business. Only about 15,000,000 bushels out of a total of 150,000,000 bushels were carried by it in 1900.

Elevator rates are lower now than they were 3 or 4 years ago, but are not so low, Mr. Kellogg thinks, as they would be under competition. The higher rates, while very slight in themselves, aggregate a large amount.

There has been a pool among the elevators for a good many years, but there has been no boycott upon the outsiders until the past year, because the elevator association never before succeeded in getting the railroads to pool with it. (1015, 1016.)

3. Effect on canal forwarders.—Mr. KNAPP, of the firm of Jacus & Co., canal forwarders of Buffalo, N. Y., says that the elevator pool is of benefit to his business, because, on all the grain that comes through the elevator pool, his firm gets free elevation, while the charge to the railroads is half a cent. It is necessary, in order to do any business, to bid half a cent under the railroad in rates, and if his firm had to pay half a cent elevation, it could not compete with the railroads.

The rates to New York by canal are the same on export grain as on grain for home consumption.

There are no elevator companies which do business over the canals only. The all-canal elevators have been driven out of business because the railroads own the majority of the elevators. All of the elevators doing business do both a rail and canal business. About half the storage capacity of Buffalo is controlled by the railroads. (1016, 1017.)

XV. FOREIGN MARKETS FOR AGRICULTURAL PRODUCTS.

A. Present condition of the foreign trade.—**1. Statistics of exports.**—Mr. WEDDERBURN testifies that in 1893 the exports from the United States amounted to \$831,030,785, of which agricultural products amounted to \$615,382,986, or about 74 per cent. Of late years more merchandise has been exported, and the prices of agricultural products have not kept up so well, except during the war; but agricultural products still amount to more than 60 per cent of the total exports. Cotton exports alone are about 40 or 50 per cent of the total. (829.)

Mr. POWERS testifies that the primary and secondary products of agriculture, including meat products, flour, etc., make up 80 or 90 per cent of all exports from this country. (175.)

Mr. HIRCHCOCK, chief of the Section of Foreign Markets in the Department of Agriculture, estimates that about 25 per cent of the total production of American agriculture is exported. With this enormous surplus, the acquisition and maintenance of a

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ready foreign market is of the greatest importance, to prevent the glutting of the home market.

"During the last 40 or 50 years our agricultural exports have increased with great rapidity. In 1860 their value was about \$258,000,000; in 1870 it amounted to \$363,000,000; in 1880 to \$693,000,000; in 1890 to \$635,000,000; and in 1899 to \$793,000,000. Comparing 1860 with 1899, the last year for which we have figures, a period of about 40 years, we find an increase of over 200 per cent.

"Every indication points to the probability of a still further increase in our agricultural export trade, provided proper measures are taken to foster it. Modern transportation facilities are revolutionizing the character of the trade. The introduction of cold storage and of refrigeration service on railway cars and steamships is making it possible to market in foreign countries across the sea products that we were formerly unable to export; and it is along this line of development that the increase of our export trade in agricultural products in the future may be chiefly expected—in the exportation of perishable products, such as meats, butter and cheese, perishable vegetables, and fruits.

"Thus far the chief example of trade development along this line is found in the case of fresh beef. In 1880 our exports of fresh beef were valued at about \$7,000,000. Last year (1899) they were valued at \$24,000,000."

The following articles are mentioned as having contributed most to the general increase of the agricultural export trade between 1870 and 1899:

Indian corn: The development of the dairy industry in foreign countries and the discovery that American corn is a cheap and desirable food for live stock have led to an increase in the amount exported from a little over \$1,000,000 to nearly \$70,000,000.

Wheat flour, from \$20,000,000 to \$73,000,000; the remarkable development of the milling industry in this country, resulting in a large production of high-grade flour at low cost, has made it possible to export flour in competition with other countries, and gradually get the trade.

Cattle, from less than \$500,000 to over \$30,000,000, this trade being greatly aided by improvement of transportation facilities, and by the official inspection of export cattle.

Bacon and hams, from \$6,000,000 to over \$60,000,000.

Lard, from \$6,000,000 to \$42,000,000.

Oil cake and oil-cake meal, which are beginning to be fed very largely to live stock in dairying countries, from \$3,500,000 to \$14,500,000.

Cotton-seed oil, from \$15,000 to \$12,000,000, the increase being especially marked in 1898 and 1899; the exports increasing from 27,000,000 gallons in 1897 to 51,000,000 gallons in 1899.

Oleo oil, sent abroad in the crude form to countries which manufacture oleomargarine, from nothing to over \$9,000,000.

Fruits, from \$500,000 to nearly \$8,000,000. (666, 667, 671.)

Oleo oil and butter.—Mr. HITCHCOCK adds that our exports of oleo oil for the 5 years 1894–1898 averaged about 110,000,000 pounds, valued at \$8,357,000, while the average exportation of butter was only 18,764,000 pounds, and the value about \$2,858,000. The oleo oil is used chiefly for manufacturing imitation butter in the Netherlands and in other countries. The manufacture of oleomargarine is carried on most extensively in the Netherlands, the exports from that country exceeding 100,000,000 pounds a year, of which by far the largest part goes to the United Kingdom, while the remainder is distributed quite generally over Europe and to some extent through tropical countries. While artificial butter is now used quite extensively in Europe, the consumption of real butter has also increased; the poorer classes are beginning to use it much more than formerly. In the United Kingdom, the most important butter market of the world, imports of butter from all sources amounted in 1886 to about 173,000,000 pounds; in 1899, to about 380,000,000 pounds. The increasing exports from the principal export countries which show a rapid development are chiefly due to this growing demand of the British market. (672, 678.)

Horse meat.—Dr. SALMON says Congress provided two or three years ago that horses should be entitled to the same inspection as other animals. On account of the low price of horses in the range country, it was believed that horses could be slaughtered to advantage for export; but Dr. Salmon does not believe that it has been very successful. The first year about 3,200 were slaughtered, and in 1899–1900 5,559. Federal inspection has been established at only one place, which is in Oregon; but horses have been slaughtered at other points without Federal inspection, e. g. in Chicago and in Brooklyn. The horse meat goes partly to Norway and partly to Holland, but it is hard to say where it is consumed. There have been rumors that it has been made up into bolognas and sent back to America. (750.)

Fruit.—Mr. NARTZGER testifies that only a small quantity of the green and citrus fruits of California goes abroad, though the shipments of oranges to Liverpool and London are being increased. A good deal of canned and dried fruit is exported. (965.)

2. Distribution of exports.—Mr. HITCHCOCK testifies that more than half of all our agricultural exports are sent to the United Kingdom. During the 5 years 1894–1898 about 55 per cent of the products exported, measured in value, went to the United Kingdom, 13 per cent to Germany, 6.8 per cent to France, 4.3 per cent to the Netherlands, and 3.6 per cent to Belgium, these 5 countries being the destinations of a very large proportion of our agricultural exports. Of our agricultural exports for the 5 years named, about 88 per cent went to European countries. (667.)

Mr. Hitchcock says France is an agricultural nation, producing an abundant food supply, and hence the United States has always found it difficult to market agricul-

tural products there. The difficulty is increased by rather stringent tariff legislation enacted in the interest of French agriculture, and by a certain prejudice against some American products, especially meat. (670.)

Mr. Hitchcock states the quantity and value of each of the principal agricultural exports shipped to each of the most important foreign markets, showing the percentages in each case, as follows:

Indian corn.—United Kingdom, 43 per cent; Germany, 17 per cent; Canada, 9 per cent; Netherlands, nearly 9 per cent; Denmark, nearly 8 per cent; France and Belgium being the next most important markets.

Wheat flour.—United Kingdom, 58 per cent; Netherlands, 6 per cent; Hongkong, 5 per cent; Brazil, Canada, the British West Indies, Cuba, and Germany coming next in order of importance.

Live cattle.—United Kingdom, 96 per cent, being the only market of importance, though we have recently been shipping a number of cattle to Cuba (about 40,000 head in 1898).

Lard.—United Kingdom, 36 per cent; Germany, 27 per cent; Netherlands, 8 per cent; Belgium, 6 per cent; France, 5 per cent.

Live hogs are not exported to any considerable extent, the annual exports averaging only about 14,500 during the 5 years, of which Mexico received 67 per cent, Canada 15 per cent, and the Hawaiian Islands 13 per cent.

Fresh pork went chiefly to the United Kingdom, shipments to other countries being inconsiderable.

Salted or pickled pork.—United Kingdom, 22 per cent, the remainder going chiefly to Haiti, Canada, the British West Indies, Porto Rico, British Guiana, and Germany, Germany's share being less than 5 per cent of the total.

Bacon.—United Kingdom, 77 per cent; Belgium, 6 per cent; Germany, 5 per cent; Brazil, 3 per cent; Netherlands, 2 per cent.

Hams.—United Kingdom, 81 per cent; Belgium, 6 per cent; Cuba, 3 per cent; Germany, 3 per cent; Canada, 2 per cent; Netherlands, slightly more than 1 per cent.

Cotton-seed oil cake and oil-cake meal.—Germany, 47 per cent; United Kingdom, 27 per cent; Denmark, 11 per cent; Netherlands, 9 per cent; Belgium, 3 per cent; France, 2 per cent.

Flaxseed oil cake and oil-cake meal.—United Kingdom, 48 per cent; Belgium, 26 per cent; Netherlands, 14 per cent; France, 5 per cent; Germany, 3 per cent; British West Indies, 3 per cent.

Cotton-seed oil.—France, 27 per cent; Netherlands, 23 per cent; United Kingdom, 9 per cent; Germany, 8 per cent; Austria-Hungary, 8 per cent; Mexico, 6 per cent; Italy, 5 per cent.

Oleo oil.—Netherlands, 60 per cent; Germany, 23 per cent; United Kingdom, 7 per cent; Sweden and Norway, 4 per cent; Denmark, 3 per cent; Belgium, slightly more than 1 per cent. (668-672.)

3. Recent development of the Pacific trade.—Mr. HANLEY says it is only recently that the United States began to trade with Japan and China. The first shipments of flour were taken at \$2.50 a ton, but as the demand for shipping facilities increased the rate was raised to \$3 and \$4 and as high as \$6 a ton. He understands that even at these high rates half the flour offered for shipment has to be refused for lack of vessels; also that 100,000 bales of cotton and 50,000 tons of steel rails were refused for the same reason, and that all the available shipping capacity up to the middle of August, 1899, was contracted for in the early spring. (294.)

Mr. NARTZGER testifies that the total Pacific exports of all classes of merchandise to Asiatic countries for the fiscal year ending June 30, 1898, was nearly \$17,000,000, a gain of over 400 per cent in 5 years. The exports of fruits, including canned fruits, from Pacific coast ports to foreign countries for that year amounted to \$1,721,000. (949.)

Mr. HITCHCOCK testifies that the total value of our agricultural exports to Asia increased from less than \$4,000,000 in 1894 to nearly \$15,000,000 in 1898, while those to Oceania increased from less than \$2,000,000 to \$3,500,000, the increase to Asia and Oceania being proportionately very much greater than in any other direction. The chief agricultural exports from the Pacific coast are cotton and wheat flour.

The total exports of raw cotton to Japan, China, and Hongkong increased from 23,500 pounds in 1889 to about 32,000,000 pounds in 1897, and nearly 119,000,000 in 1898. The raw cotton goes chiefly to Japan, where the manufacture of cotton is rapidly coming into prominence. Our exports of cotton manufactures to the Orient also show a considerable increase—from \$1,600,000 worth to \$5,300,000 worth during the same decade. The natural inference is that the use of cotton cloths is increasing in that part of the world. Mr. Hitchcock understands that the South is beginning to export cotton goods quite largely to the Orient.

The exports of wheat flour to Japan, China, and Hongkong increased from 408,000 barrels in 1889 to 676,000 barrels in 1894, and to 1,120,000 barrels in 1898. (667, 668.)

Mr. TURNBULL presents tables showing the imports of foreign merchandise and the exports of domestic merchandise at the Pacific ports for the fiscal years 1888-1898. The imports have remained nearly stationary during that time, though with considerable variations from year to year. The exports have also varied greatly from year to year, but have, on the whole, considerably increased. For the whole period the imports exceeded the exports by less than 2½ per cent. A detailed table of trade between the Pacific ports and the various countries of Oceania and Asia is also given. The trade with Japan is on the whole the most important in amount, and that with the Hawaiian Islands comes next, with China in third place. The imports considerably exceed the exports, though the difference has greatly decreased. A table showing the relative importance of the foreign trade of the several Pacific ports is also

given. In the fiscal year 1898 San Francisco received imports of \$43,000,000 out of the total Pacific coast imports of \$52,000,000. Of the aggregate exports of nearly \$75,000,000, nearly \$41,000,000 went through San Francisco, nearly \$18,000,000 from Puget Sound, and nearly \$14,000,000 from Willamette, Oreg. The exports from Puget Sound are stated to consist largely of lumber. Other tables show the apportionment of the commerce of the Pacific coast among the grand divisions of the world, and give the values of different classes of articles imported and exported through the Pacific ports. (982, 989-993.)

California grain.—Mr. TURNBULL states that California grain is shipped to Europe, to China, and to the East generally. He thinks that about three-fourths of it goes around the Horn to the Atlantic coast or to Europe. (983, 985.)

California fruits.—Mr. NAFTZGER testifies that the Southern California Fruit Exchange markets a quantity of citrus fruit in Europe, as well as at all points in the United States. There are some efforts to make a market in Asia, but the California fruits do not stand the long voyage as well as the Mediterranean fruits. Vast quantities of canned fruits go to Asiatic countries. The South Sea countries can not be reached because the freight rate is higher than from England. Canned fruit constitutes about 10 per cent of the shipments of fruit out of California. A considerable quantity of California canned fruit, especially citrus fruit, is shipped to Alaska, and there is quite a large business in canned and dried fruit with Alaska. (949.)

4. *South American trade.*—While in South America Professor DAVENPORT found that nearly all the trade of that country was with Europe, apparently for two reasons: (1) European nations had the shipping facilities, and (2) they had made a study of the export trade, and had learned that the tastes and prejudices of the buyers must be consulted as well as their real needs. The South American countries import certain food products extensively from Europe; for example, butter. They import hams from America and codfish from Newfoundland. Though the Amazon River is the richest river for fish in the world, Professor Davenport saw in cities along the Amazon 10 times as many codfish as he ever saw in this country. (269, 270.)

B. Complaints against American products.—Mr. SNOW testifies that there is in a number of European countries a prejudice against American food products, which he believes to be due to the fact that Americans have not been careful to export the best goods, the export trade having been considered largely as a means of working off the surplus not desired at home. Some of the other export countries, such as Denmark, Australia, and New Zealand, have followed the opposite course, and exported the very best grades of their dairy products. (239.)

1. *Grain.*—Mr. HITCHCOCK says that within the last few years many complaints have been made with regard to the condition in which some American grain arrives at foreign ports. It has been claimed that much moldy grain has been received at European ports, and also to some extent that grain of a grade inferior to that of the certificate upon which it was purchased has been received. (679.)

Mr. Hitchcock thinks he is safe in saying that the greatest obstacle to the maintenance and extension of the American grain export trade lies in the fact that the exporters do not always exercise proper care in cleaning the grain before shipment. In view of the increasing competition of other countries it is highly important that this ground for complaint should be remedied. There has been quite a general complaint that American corn is too dirty, and does not compare favorably in this regard with that shipped from other countries. The corn frequently contains broken grains and pieces of cob, which fill in the interstices between the grains and increase the danger of sweating, and sometimes foreign substances, including even metallic articles which damage the milling machinery. If the corn were cleaned more carefully a great deal of loss would be avoided. Corn shellers are sometimes stationed in the open field, and the corn is dumped on the ground in piles and shoveled from the ground into the shellers. Foreign objects of a less size than the cobs readily pass through the shellers, and remain in the corn unless it is screened. The railway cars are not always properly cleaned before the grain is loaded, and the terminal warehouse may also be at fault. Complaint has been made abroad against American wheat that it sometimes contains many unsound and burnt grains, more than would be warranted by the certificate of inspection, and that it is sometimes deficient in weight. Mr. Hitchcock mentions one case of complaint against wheat which contained so much garlic that it was necessary to reclean it. One of the complaints against rye from the United States is that it too frequently contains oats, making it necessary to reclean it before it can be made into flour. American barley has also been complained of because of its dirty condition. Some years ago American barley was held in high favor abroad, and it obtained a market in Europe that was formerly controlled by Russia; but within the last few years complaints against its condition have become numerous, greatly endangering the market. Unless measures are taken

to secure more care in cleaning export barley much trade will probably be lost. (682, 683.)

Mr. Hitchcock believes, however, that most of the damage to grain occurs on the voyage. Corn gets out of condition more readily than the other grains, because its content of moisture is greater, and most of the complaints have been made about corn. Sometimes when corn in otherwise perfect condition is loaded here in hot weather, the heat causes it to sweat and become moldy before it reaches the other side. Much of the damage occurs in the case of bulk cargoes carried by tramp steamers, the regular liners giving greater attention to ventilation and to care of the cargo generally. (1) Ventilation is a very important factor. When corn is loaded into a steamer at a southern port in hot weather and carried across the ocean without ventilation, the chances are very strong that sweating will occur. The corn is apt to become heated at the top from the heat of the sun on the deck. The tramp steamers frequently do not have a sufficient force of men to attend to the ventilation properly. Mr. Hitchcock understands that steamers carrying corn from Argentina to Europe are now very generally equipped with ventilation facilities. (2) Corn is sometimes loaded into iron steamers without any protection against the iron sides, which are heated by the sun. There should be either a board sheathing or a protection of bagging. (3) Corn is sometimes loaded into the coal bunkers or holds adjacent to the boiler or engine space, and becomes heated from the furnaces and boilers. (4) Grain is sometimes stowed with other merchandise in the same hold. A case has come to Mr. Hitchcock's attention in which corn was covered with bales of cotton, resulting in sweating. (681, 682, 684.)

Inspection of export grain.—Mr. HITCHCOCK says that as a rule our grain is sold on the certificates of inspection furnished by the boards of trade and chambers of commerce at the ports of shipment, and under the rules of these bodies the certificate is conclusive, the importer having no redress if he considers that the grain does not correspond to the grade certified to. Mr. Hitchcock thinks there may be some carelessness in the inspection of export grain, but is inclined to think that the complaints based upon the ground of fraud are mostly unfounded. Unfortunately the methods of inspection lack uniformity. Each board of trade or chamber of commerce adopts its own rules of inspection and regulations for grading. In most cases the grades are changed somewhat from year to year, following the average condition of the crop, but changes in the crops are not followed as carefully in some ports as in others, and in some the grades remain practically the same from year to year. The representatives in this country of foreign importers of grain are supposed to notify their firms of any changes in grading, but it often happens that this is not properly done. A great deal of grain is now shipped from Southern ports, where the rules of grading sometimes differ slightly from those in force in New York and Chicago. The importer who has received one certified grade and then receives an inferior quality under the same certificate, not understanding the conditions, would naturally feel that the second consignment fell short of the standard called for. The changes in grading are most noticeable in corn, and it has been chiefly against corn that these complaints have been made. The certificates issued by the commercial bodies usually bear the inscription "Official inspection certificate," and foreign importers and buyers quite generally understand that to mean a Government certificate. Mr. Hitchcock suggests that commercial bodies be prohibited from using the misleading word "official" on their certificates. He believes that a uniform system of grading at all ports of shipment would be a great advantage to the export trade. He thinks, however, that considering the wide distances between the various ports and the different conditions that prevail, the present system of inspection is a remarkably good one. (679, 680, 681, 683.)

2. *Cotton.*—Mr. HITCHCOCK says that while cotton is our most important agricultural export, there are many cases where failure to give proper attention to packing is working to the detriment of the export trade, and it is very important that greater care should be taken in that respect. The principal ground of criticism against American cotton in foreign markets is the poor packing. A great deal of cotton is still baled in the old way, in large bales of about 500 pounds, and much of it is put up in inferior baling materials. The packing is generally sufficiently strong to carry the cotton to seaboard, but when it comes to be unloaded, under the rough handling to which it is subjected, the flimsy baling material becomes badly torn, and usually a large amount of cotton is shredded off and strewn along the wharves. Before the cotton can be reshipped much patching and often entire rebaling has to be done, subjecting the importers to much additional expense. Most cotton sent to Russia is transhipped at such ports as Liverpool, Bremen, and Copenhagen (though the United Steamship Company of Copenhagen has recently been carrying cotton direct from New York to St. Petersburg), and by the time it has been discharged at the Russian ports

the baling is apt to be in very poor condition. From the Baltic ports it must be sent overland by rail to Moscow, where the Russian manufacture of cotton goods is chiefly carried on. Owing to the enormous rents in the bale coverings a great deal of the cotton is lost. It generally goes by slow freight, with many stops; and Mr. Hitchcock was informed when in Russia that the peasants along the route sometimes stole great quantities of the cotton from the trains at night, pulling it from the damaged bales in large shreds. In this manner the Moscow importers have lost so much of their consignments from America that they are striving to replace American cotton with that produced in southern Russia, where American cotton is beginning to be grown quite extensively. The Russians have secured American seed and have had considerable success in the production of upland cotton. They use a smaller bale than the American, packing the cotton so tightly that none can be lost or stolen, and by these methods are establishing quite a trade at Moscow. (684, 685.)

Mr. Hitchcock characterizes the use of the cheapest possible baling materials in order to save a few cents on a bale a shortsighted practice which is certain to do great damage to the trade. He expresses the hope that the more general adoption of the round or cylindrical bale will remedy the difficulty. (685.)

3. Exclusion of American cattle from European countries.—Dr. SALMON says that in 1899 American cattle were prohibited from going inland in Great Britain for sale, and were confined to a few "foreign-animal wharves," to be killed within 10 days, on account of the existence of contagious pleuro-pneumonia in this country at that time. This is thought to have reduced the value of every American steer exported at least \$5; an enormous loss in the aggregate. In 1881, or soon after, nearly every country on the continent of Europe excluded American pork for the alleged reason that it contained trichinae. This regulation was kept in force 10 years, ruining a growing trade which we have been only partially able to regain. Still later, American sheep have been required to be sold at the foreign-animal wharves of Great Britain on account of the scab. Our live cattle and fresh beef have been excluded from Germany, Denmark, and Belgium, and our cattle from France, because of Texas fever. Our entire live-animal trade with Great Britain was menaced because of the sufferings of animals in transit, which shocked the people of that country; but the legislation antagonistic to this trade appears to have been abandoned because of the establishment of regulations for the humane treatment of animals during the voyage. Our live swine are excluded from most European countries on account of cholera, and our canned beef has been excluded from Germany. (747, 748.)

Dr. Salmon says we should not have an export trade in live stock had it not been for our inspection regulations; because after the first step in confining American animals to foreign-animal wharves on the other side the agitation was very strong for the entire prohibition of trade in live animals. There was a bill in Parliament, which appeared likely to pass, prohibiting the carrying of live animals, on the grounds of cruelty to animals in transit and their arrival in bad shape for slaughter; but when the regulations were made specifying how the ships should be fitted up, the legislation was dropped. (751.)

Mr. HITCHCOCK says the importation of American live cattle into Germany, France, Belgium, and the Netherlands was prohibited some years ago, though Belgium has since removed the prohibition. The prohibition was enacted on the supposition that there was danger of introducing infectious diseases. There were some alleged cases of Texas fever in American cattle shipped to Hamburg, on the strength of which Germany prohibited the importation of live cattle from the United States, and the other countries named afterwards took similar action. It is generally believed that the Agrarian party in Germany is back of this movement, and that the chief object is really to protect German products against competition. Mr. Hitchcock believes that under the inspection system of the Department of Agriculture there is little danger of sending diseased cattle out of this country. (669, 670.)

4. Dairy products.—Mr. SNOW testifies that at one time this country enjoyed a very large export trade in dairy products, especially cheese, which has been almost entirely destroyed by the shipment of filled cheese, in which the natural fats were replaced by cheap greases. (236.)

Mr. HITCHCOCK calls attention to a striking decline in the export of butter and cheese. The exports of butter have fallen from 39,237,000 pounds in 1880, which represented about the height of the export trade in butter, to 5,599,000 pounds in 1895. During the last few years the trade has been improving a little, about 20,248,000 pounds being exported in 1899, only about one-half, however, of what was exported 20 years ago. Mr. Hitchcock says the increase in the production and consumption of imitation butter has never affected the consumption of butter, but that most butter companies have increased their exports of butter. The chief cause of the decline in the American exports he finds in the unfortunate management of

the export trade, and the inferior grades of butter American exporters sent to foreign markets, especially to the United Kingdom, the chief butter market. After a trade of considerable importance and a fair reputation for our butter had been established, unscrupulous exporters took advantage of the situation to dispose of inferior butter. The lack of any Government inspection of export butter enabled them to export process butter, labeled as they pleased. Large quantities were sent to the English market and brought American butter as a whole into disrepute. Even in the first place we did not, as a rule, send our best butters abroad, but exported in large quantities inferior grades that could not be sold readily at home. (672.)

Our experience in the exportation of cheese has been practically the same as with butter. The exports reached the highest point in 1881, 147,996,000 pounds, with a value of \$16,380,000. In 1899 they amounted to only 38,199,000 pounds, valued at \$3,316,000, a loss of over 100,000,000 pounds in 20 years. The reason for this, Mr. Hitchcock says, was essentially the same as the reason for the decline in the exportation of butter, namely, the shipment of an inferior product, especially the shipment of large quantities of filled cheese. (676.)

C. Foreign competition.—Mr. Hitchcock says that when an inferior quality of one of our products causes it to find a less ready sale in the foreign market, our competitors are quick to take advantage of the opening thus offered. It is only of late that this foreign competition has been assuming such great importance. It has become a more vital question within the last few years because of the measures taken by competing countries to control the foreign markets upon which we have hitherto depended. Foreign countries have done more within the last decade than ever before in the way of pushing agricultural exports by governmental assistance. Mr. Hitchcock therefore considers it important for the United States to take more active measures in regard to exports. (689.)

1. Danish butter and bacon.—Mr. Hitchcock says the Danes have been preeminently successful in meeting the requirements of foreign markets, and especially of the British market. In 1880 Denmark exported about 27,498,000 pounds of butter, having a value of about \$4,305,000. In 1898 the exports had increased to 160,143,000 pounds, worth \$34,576,000. This butter is sent almost exclusively to the British market, and is made with special reference to its requirements. It has been the policy of the Danish Government first to establish a reputation for its products in foreign markets, and then to compel producers to maintain the high standard. The butter export trade is practically under Government supervision. Butter for export is carefully inspected under direction of the Royal Agricultural Society, acting for the Government, and no butter is allowed to go out of the country that does not come up to the required standard. Danish export butter is all of one grade. The English importers simply order so much Danish butter, and pay for it at the market quotation; they practically have a Government guaranty that the butter will come up to a certain standard. There is a difference of 3 or 4 cents a pound between high-grade Danish butter and the ordinary American or Canadian butter. The average import price in the United Kingdom of Danish butter in 1899 was 22.95 cents a pound. During the same year the butter imported from the United States averaged 19.2 cents a pound and that from Canada 19.4 cents a pound. Danish butter always brings the highest price of any butter imported into the United Kingdom, except the fresh unsalted butter from Normandy, which is within 24 hours from the churn.

The Danes are regarded to a certain extent as the pioneers in butter production by modern methods; they have been the models both in production and in export methods for the various countries which are rapidly developing an export trade in butter. Mr. Hitchcock understands that the Danish butter is made almost altogether of pasteurized cream, and its remarkable uniformity is attributed to that fact. Several years ago, under Secretary Rusk's administration, the Department of Agriculture sent a special agent to Denmark to investigate the dairy industry, and he made a very thorough and comprehensive report. The Department considers it possible for the United States to send to the British market a butter equal in quality to the Danish.

Soon after they had placed their export trade in butter on a sure footing the Danes began to reach out after the market for bacon in Great Britain. They studied the wants of the British market and produced a bacon that met those wants. In 1880 they exported about 13,000,000 pounds of pork, chiefly bacon. In 1898 they exported 135,000,000 pounds, sending most of it to Great Britain. Canada took the same measures that Denmark had taken to get at the requirements of Great Britain. In 1890 Canada shipped about 7,000,000 pounds of bacon, chiefly to Great Britain. In 1899 the Canadian exports amounted to nearly 112,000,000 pounds. Our own exports of bacon, though enormous, do not show any such growth, and there seems to be danger of a decline; they amounted in 1881 to 673,000,000 pounds; in 1890 to 532,000,000 pounds;

in 1895 to 453,000,000 pounds, and in 1899 to 563,000,000 pounds, more than in 1890 or 1895 but considerably less than in 1881, which was about the time the bacon shipments from Denmark and Canada were beginning to become prominent. Mr. Hitchcock suggests that we may feel still more seriously the competition of those countries and of the Australasian colonies unless measures are taken to adapt the American product more closely to the requirements of the British market. The bacon preferred in that market is the Wiltshire bacon, which is much leaner and firmer than ours. Our bacon is considered too fat, being corn-fed, and it does not bring as high a price. In 1899 the average price of bacon imported into the United Kingdom from the United States was 6.96 cents a pound; from Canada, 7.3 cents a pound; and from Denmark, 10.6 cents a pound. As most of the 563,000,000 pounds of bacon exported from the United States went to Great Britain, even a slight enhancement in price would have meant an enormous gain to the American farmer. The Tamworth and Yorkshire swine seem to be the preferred breeds for producing bacon for the British market. (673, 675, 676, 687.)

2. Butter from other European countries.—Mr. HITCHCOCK testifies that the Swedes and Finns have developed an important export trade in butter in the last decade. They produce a butter practically the same as Danish butter, and ship it to the British market in increasing quantities each year. Hitherto a large quantity of this butter has gone to Denmark, and a considerable portion has undoubtedly been re-exported as Danish butter.

"Even Russia is also beginning to develop an export trade in butter. The Baltic provinces, especially, are giving their attention to this industry, and are taking active measures to develop it—measures similar to those taken by Denmark. The Russians are engaging Danish experts to install their creameries and to instruct their butter makers. Already they are beginning to ship a high grade of butter, some of which is sent to the British market, and finds there a ready sale.

"These various countries, none of which has greater dairying possibilities than the United States, are thus developing and widening their export trade in this commodity, while we, because of our unbusinesslike methods, have been losing the little export business that we formerly possessed." (674.)

3. Canadian cheese, butter, etc.—Mr. SNOW testifies that Canada has a very large export trade in cheese, which has continued to grow, while the United States, whose trade in cheese was formerly larger than Canada's, now exports practically none. (237.)

Dr. SALMON testifies that our export trade in butter and cheese with England has been greatly injured by the shipment of adulterated and renovated butter and filled cheese as first-class products. Canada, by supervising the manufacture and indorsing the goods, has won the market away from our own exporters, and some of our best dairy products now find their way to Great Britain by way of Canada, branded as Canadian goods. (748.)

Mr. HITCHCOCK also testifies that our export trade in cheese has been lost to Canada. The Canadian government not only prevents the manufacture of filled cheese, but took measures to improve the quality of the Canadian product and to secure a ready sale in the British market. Canada saw an opportunity to establish a trade when that of the United States began to fall off, and made the most of it. The exports from Canada increased from 40,369,000 pounds in 1880 to 94,260,000 pounds in 1890, and reached the enormous total of 189,828,000 pounds in 1899, an increase due very largely to the measures taken by the Canadian government. The government began by helping manufacturers. It gives liberal bonuses for building factories, and under the supervision of the Ministry of Agriculture established a system of instruction and inspection that resulted in a rapid improvement in the methods of cheese production. As the surplus increased the government secured for exporters favorable transportation facilities. (676.)

The Danes have developed the butter export business much more extensively than Canada, although of late the Canadians have taken steps to push the export of butter as they have the exports of cheese, and a policy similar to that of Denmark has been adopted. The Canadian trade fell off at about the same time as that of the United States. In 1880 Canada exported 18,535,000 pounds of butter. In 1890 very little export business was done, less than 2,000,000 pounds going abroad. In 1899, under the measures taken to reestablish the business, the amount came up to about 20,000,000 pounds, or about as much as in 1880. (673, 674.)

The Canadian government has assisted in the manufacture of cheese and butter by giving liberal bonuses to factories and creameries and establishing a system of cold-storage transportation. The government offered a bonus of \$100 to creameries that would install and maintain cold-storage facilities, \$50 to be paid the first year, \$25 the second, and \$25 the third. The government also secured cold-storage facilities upon railroads, so that after being cooled at the creamery the butter would go directly into a refrigerator car, and established a cold-storage warehouse at the ter-

minal of the railroad so that the butter could be kept safely before loading upon the ship. The government also secured refrigeration service on steamship lines to the British ports.

"This cold-storage system was installed according to instructions prepared by the department of agriculture, and, in some cases at least, Parliament defrayed the expense of installation. To give the trade a start, the government contracted with the steamship companies for cold-storage space, put in the necessary refrigerator chambers, and then guaranteed to the steamship company the full freight charges for the service. Under these conditions very favorable transportation rates were procured, and as the initial expense was borne partly by the government, it was possible for the Canadian producers to send their dairy products to the British market at very low rates. In this manner a great inducement to exportation was offered.

"The government also watched very carefully the quality of the product shipped, issued instructions as to methods of packing, branding, labeling, etc., and in fact practically supervised the entire exportation. Numerous trial shipments were also made by the government, the government purchasing the produce and sending it over and disposing of it through its own agents abroad."

These trial shipments were not confined to dairy products. Fruits, for instance, were exported in the same way. (676, 677.)

4. Development of the Australasian export trade.—Mr. HITCHCOCK says the measures adopted in Australasia for the development of the export trade correspond rather closely to what has been done in Denmark and Canada, but if anything the Australasian colonies have gone even further than the other countries. In 1895 the government of New South Wales appointed a Board for Exports to consider plans for the development of a larger export trade. The leading producers and shippers of the various export commodities were called into consultation by the board and their opinions asked as to the best measures to be taken to assist their particular branches of trade. As a result of these conferences a great deal of valuable information was elicited, and on the strength of what it thus learned the board made recommendations to the government which were carried out.

One of the first things done by the Australasian colonies to facilitate their export trade was the securing of better transportation facilities by rail to the ports of shipment. Cold storage on trains was procured as it had been in Canada. Cold-storage warehouses were established at the ports of shipment, and arrangements were made with the steamship companies to provide regular sailings to the British market and to furnish refrigeration facilities on board. Several of the colonies also established cold-storage depots and warehouses at London and other British ports under the management of agents who received the produce, kept it in cold storage when necessary, and took measures for its proper disposal in the market. The establishment of these terminal depots has rendered great assistance to the Australasian export trade. The colonies have also adopted the policy of sending agents to study the methods of other export countries. Their agents have come to the United States and Canada and have visited Denmark and other countries, reporting to their own governments the results of their investigations. (688.)

The Australasian colonies have also adopted one of the most important plans inaugurated by Denmark, namely, that of offering prizes for products put up in the best shape for export. The government furnishes the producers with careful instructions as to the kind of product, style of packing, labeling, etc., desired by the export trade, and contests are held, at which liberal prizes are offered for the products best filling the requirements. This plan has been an important factor in the Australasian colonies, as it was in Denmark. (688, 689.)

The butter exports from the Australasian colonies to the United Kingdom increased from less than 4,000,000 pounds in 1889 to over 40,000,000 pounds in 1899. (674.)

D. Possible extension of foreign trade.—1. **Need of public and private effort.**—Mr. BRIGHAM, Assistant Secretary of Agriculture, and Mr. JONES, master of the National Grange, both emphasize the desirability of extending foreign markets for American agricultural products. Our consuls should be familiar with the conditions of agriculture and the needs of foreign countries for our farm products. At present the Government does much more to push American manufactured products in foreign countries than it does agricultural products.

Mr. Brigham urges that foreign buyers should be protected against frauds in American goods, especially in butter and cheese, which would also prove to the advantage of the American farmer. Mr. Jones adds that farmers have no desire to curtail the exportation of manufactured products or the assistance given to them by our consular service. The farmer profits by the prosperity of the manufacturer. Nevertheless his profit is not so direct as that of the manufacturer, and he should receive attention on his own behalf. Increased prosperity of the farmer would increase his demand for manufactured goods. (Brigham 22, Jones 31, 32.)

Mr. NORRIS, master of the New York State Grange, says the United States, being a country that produces more than it consumes, should plan to market its products

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in the Old World. The export of grain to China will be a great benefit to this country in time. Canada and the United States are the fruit-producing countries of the world, and foreign countries are depending upon our fruit more than ever before. Our trade is being sought in Germany, France, and England, and our exports are increasing from year to year. The problem to be solved is to give them honest products of as good quality as they can produce for less money than they can produce them for. (331.)

Mr. DYE says that the Department of Agriculture and the consular service could do much to extend foreign markets for agricultural products by showing foreigners the value of American cereals, especially wheat, and teaching them to use these articles. This is especially desirable in Asiatic countries. (96.)

Mr. HANLEY says cotton is even more subject to long-continued depression than the wheat crop, because we consume only about one-third of the cotton crop and must rely on export trade to take the other two-thirds. He calls attention to the necessity of extending and establishing foreign markets and securing new customers for this article. (289.)

Mr. HITCHCOCK says that comparatively little effort has been made in the interests of the farmers of the United States as regards export markets. The manufacturer seems able to accomplish more in that direction; he sends his representatives abroad, establishes agencies, and keeps in closer touch with the foreign market than the farmer does. It is not so easy for the farmer to do this, because the agricultural interests are not concentrated in the hands of a few men.

Mr. Hitchcock believes that the Department of Agriculture should be provided with more liberal means to develop the agricultural export trade. Not nearly as much has been done as in other agricultural countries. The fund placed at the disposal of the Agricultural Department for making experimental shipments of dairy and other produce was only \$25,000, while the corresponding appropriation in the Dominion of Canada was \$100,000, and the Australian colonies also have been liberal in appropriating funds to assist the farmers in finding foreign markets. It is of the highest importance to study the peculiar tastes and requirements of the various foreign countries, and to put up products that will be acceptable in the market to which they are sent. (685, 687.)

Professor DAVENPORT says the way to increase our foreign trade is to learn what certain countries want, make a close study of the consuming habits of the people, learn in what shape our products can go most successfully to their markets, and meet their habits as nearly as possible. Agriculturists should produce definite things for export and see to it that they are always of one grade. The consumer of imported goods wants them uniform. The dealers will have to help in this matter. Professor Davenport commends Secretary Wilson's test exportations of butter for London markets as the right way of beginning. (270.)

Mr. STOCKWELL says the farmers of Massachusetts are not working for a foreign market; their productions are largely for the home market. A good foreign market raises the price in the home market, however. (895.)

2. Desirability of further developing Oriental markets.—Mr. HANLEY says the only thing that will make farming profitable for every part of the country is the development of Oriental markets. England is now practically our only customer. Any agency that will create a competing market will stimulate prices. Any advance in price would go to the producer, as the freight rates and handling charges are in operation whether prices are high or low. Estimating the increase in the price of wheat at 15 to 20 cents a bushel, Mr. Hanley says the annual gain to the American farmer would be from \$75,000,000 to \$100,000,000 on wheat alone. The wheat belt, being about midway between the Atlantic and Pacific oceans, is so situated as to enjoy the competition that Asiatic trade would establish, and the advantages that could be obtained by transportation lines going both west and east and establishing competitive rates to attract the crop in their respective directions. He believes that wheat could be moved from the wheat belt to the Pacific coast for what it costs to take it to the Atlantic seaboard, as high rates are often maintained in order to provide for the cost of hauling back empty cars. This new route would become the great equalizer of rates, and would build up new industries and commerce. (287, 288.)

Mr. Hanley adds that the population of China, to which we have direct and easy access from the sea, is about 400,000,000. If we could get them to take the 40,000,000 bushels of wheat produced on our western slope, it would be less than half a peck for each inhabitant, or not as much as would furnish pie crust for the wealthy inhabitants of that country. A large percentage of these people are wealthy or in moderate circumstances. It would not be an insurmountable task to cater to the tastes of this large, intelligent, and wealthy middle class and introduce a palatable and nutritious

article of food that would be moderately cheap as compared with rice food. History has shown that wheat flour has displaced rice flour wherever they have come into competition. (289.)

Mr. MORAN also advocates extending our markets into the Oriental countries, where two-thirds of the inhabitants of the globe dwell. (719.)

Dr. CROWELL says that if the price can be put low enough we can sell a very large proportion of the Western wheat to Japan and China. If the Trans-Siberian Railroad can handle wheat more cheaply than our railroads are willing to handle it, it may be possible for the Siberian farmer to put grain in South America or on the Pacific coast at a lower price than that at which it can be bought from American producers. The future conflict for the ascendancy of American agriculture is to be on the Pacific. (343.)

Mr. POWERS predicts that there will ultimately be an immense market in Asia for some American agricultural products, and that a wise policy with reference to the Orient will give American farmers entrance to a market equal to that of Europe. (191.)

3. Increased exportation of corn impracticable and undesirable.—Professor DAVENPORT doubts the practicability of introducing American corn into Europe as a food product. The cheap grain of European nations is rye, and they can not produce corn. Corn is exported to western Europe for food for cattle and pigs, and it is not customary in any country to use for human consumption the same grain that is fed to animals, unless it is raised in that country. Professor Davenport thinks it much better to export corn in the condensed form of meat, and believes that we should at some time retire from the export of grain, though the Mississippi Valley can doubtless stand a heavy exportation of grain for a number of years. (269.)

4. Commercial effects of political expansion.—Mr. SNOW says that if Porto Rico, the Philippines, and possibly Cuba are to become integral parts of this country a new competition with American farmers will arise, as these islands produce to some extent products grown in this country, on which there has heretofore been a tariff. This would mean an unequal contest in tobacco and sugar. Mr. SNOW does not believe that the war in the Philippines was prosecuted for the benefit of capitalists, but, assuming that the new acquisitions are to become States, he predicts that their agricultural capabilities will be exploited by capital, which will bring the labor of the Orient into competition with labor at home. They will not be exploited by the immigration of our own people, because they are already thickly populated, and this country does not need islands upon which to colonize its surplus population, and if it did could not successfully populate tropical lands. To this belief Mr. SNOW attributes the sentiment against expansion in the agricultural districts of the West.

Mr. SNOW suggests that in framing a government for Porto Rico and the Philippines they should be left on the same basis as before as concerns their trade with the United States. He believes that if the interests of the American agriculturists were to be taken care of in framing a government for those islands, it would remove nearly all the opposition among the farmers of the country to the policy of expansion. (241-243.)

Mr. FLANDERS, Assistant Commissioner of Agriculture of New York, says that the annexation of territory may have some minor adverse influence on agricultural interests, but the result will not be injurious upon the whole. Annexation will open a large market for American goods and give work for a number of people, and agriculturists will profit with the rest of the community. (995.)

Mr. STEVENS, Commissioner of Agriculture of Georgia, believes Georgia would receive large benefits from the opening up of markets in the insular possessions and in the Orient. The United States will eventually produce 20,000,000 bales of cotton, and the more markets the better off the people will be. (916.)

E. Proposed agencies for developing foreign trade.—**1. Government inspection of exports.**—Mr. HAMILTON believes that the introduction of our products into foreign countries must be accomplished by having a rigid inspection of the articles exported, so that inferior goods can not be sent abroad. We need to protect our best exporters by requiring that goods going abroad shall be of a certain quality, or at least that the quality shall be marked upon them. Canada is sending guaranteed goods to England and Europe, taking away the dairy market the United States should have. (367.)

Dr. SALMON, Chief of the Bureau of Animal Industry, considers it desirable that the Secretary of Agriculture should be authorized to inspect and certify pure, high-grade dairy products for export. The American butter and cheese trade has been greatly damaged by the shipment of adulterated low-grade butter and filled cheese for high-grade products. (746.)

Mr. Snow believes that Secretary Wilson has done a magnificent work in promoting the exportation of butter, and that he should be authorized to have such goods inspected and branded before they are shipped. Mr. Snow considers the results to the export trade of the inspection and branding of meat products intended for export so entirely satisfactory, in removing the former prejudice against American meat and in increasing the American export trade, that it would be wise to increase the field of inspection. The Bureau of Animal Industry might well be authorized to inspect all dairy products offered for export, and to brand them for what they are. The inspection might be extended to a number of other products. The German Government has raised objections to the importation of American apples on the ground of the danger of importing the San Jose scale. If this prohibition were carried out, as part of the agrarian movement, it would amount to cutting off a very considerable part of the foreign market for American fruit, but if the exports were honestly inspected by Government inspectors the ground for the prejudice would be removed. (236.)

Mr. Hitchcock believes that there should be a system of Government inspection for dairy products similar to that applied to meat exports. Secretary Wilson, in a recent report, has recommended that such a system be established, requiring export butter, cheese, and milk to be subjected to official inspection, and that coming up to a certain standard grade certified to by the inspector as a guaranty of its quality to the foreign importer. Mr. Hitchcock thinks this would meet with the approval of the dairying industry. The general feeling, so far as tested, seems to be in favor of Government inspection for these products.

Mr. Hitchcock is strongly in favor of official inspection of export butter as the most feasible plan for preventing the shipment of an inferior product and developing an export trade in butter. The foreign importer would naturally demand butter bearing the Government certificate, and inferior butter would be at a great disadvantage. Government inspection would be particularly valuable, also, in the case of cheese. Filled cheese would probably be at such a great disadvantage without a certificate that it could not maintain its market. The inspection would probably be in part at the factory, as the meat inspection is in part at the packing house. (673-676.)

Optional Government inspection of grain.—Mr. HITCHCOCK is not prepared to say that it is at present necessary for the Government to take the matter of grain inspection entirely into its own hands, but thinks it might be well to place the inspection under the general supervision of the Government, so that uniform rules could be enforced, or for the Government to begin by establishing an official inspection optional with the exporter, as has been recently done in Argentina. He believes that the advantages of the Government certificate would soon lead to its being demanded by foreign buyers, while there would be considerable opposition to compulsory official inspection. There is not as much need for Government inspection as there was in the case of meat, because there are not the same sanitary reasons for it, and the present grain inspection system is fairly good. Mr. Hitchcock thinks that cereals with a Government certificate would command a better price in Europe, however. (680, 681.)

2. Experimental shipments of butter.—Mr. HITCHCOCK does not think it will be necessary for the United States to do all that the Canadian government has done. He believes that if the trade can once be given a fair start and the American producer convinced that there is a profit in it, the producers themselves will take the necessary action to get the required transportation facilities. But it is necessary to show that there is a possibility of establishing such a trade on a profitable basis.

"The initial experiments can very properly be made by the Government, and in fact they are in a small way now being inaugurated. The United States Department of Agriculture, by direction of Secretary Wilson, has been making experimental shipments of butter during the last 2 or 3 years, and with considerable success. We began in 1897 to send high-grade American butter in small lots to the British market."

The butter was put up in the form thought to be best suited to the requirements of the British market, the butter preferred in that market being a mild butter, lighter in color than ours, and with less salt. It was packed in a variety of packages experimentally, and as a result of the experiments of the first year the Department adopted a box similar to the cubical Australian box, but tapering slightly from top to base, in order to facilitate the unpacking. The trial exports have been continued, some shipments going to new destinations. The shipments were sent first to London, then to other English cities and to Paris, and more recently to some extent to the Orient. The result has been highly satisfactory. British butter merchants have been convinced that a high grade of butter can be made in the United States, equal to the best butter imported from other countries. That was the chief object of the experiment, which will probably be extended. (677, 678.)

3. Consular service.—Mr. SNOW says the enormous increase in our manufacturing ability within the last few years has made it necessary to look more and more to foreign markets for manufactured as well as for agricultural products, and makes it important that the consular service should be improved. When we had little or nothing to export it made little difference what kind of a consular service we had, but now that the markets of the world are being sought the consuls must be in effect commercial travelers or commercial agents for the United States. There have been a number of consular agents who have done a great work in exploiting American products abroad, but as a whole the consular service has never been as successful as it would be if men familiar with trade conditions were substituted for the consuls appointed for political reasons. The examination system has been instrumental in bringing about an improvement of the service and the consuls are showing decidedly more interest in introducing agricultural products abroad than heretofore. Mr. SNOW believes the consular reports show that there is an opportunity for a large increase in American exports. (240.)

4. Traveling agents.—Mr. HITCHCOCK does not think it possible for consular officers to render the same kind of service that could be had from traveling agents. The course of trade can not be satisfactorily investigated by a man confined to a single place, as a consul is. The consular officers are necessarily engrossed much of the time with routine business, and can not always take the time necessary to make a thorough investigation of all special inquiries sent them. Moreover, the consul represents the United States trade interests as a whole. His attention is necessarily divided, and the Department of Agriculture's requests may have to wait until those from other sources are attended to. Mr. Hitchcock feels that we can never expect from the consular service, however much it may be improved, such results as other countries are getting from the employment of agricultural experts in foreign countries. He says the consular service is supplying a great deal of valuable information to American exporters, but he has been impressed with the importance of adopting some additional measures, such as are taken by the countries with which we compete. Sending abroad special agents to study foreign markets he believes to be the most feasible way of getting the information wanted, and he considers it very important to have such men abroad, working under the supervision of the Department of Agriculture. Canada and the Australasian colonies sent agents to Denmark to gather information as to the best methods of shipping dairy and other produce, and now that Canada is beginning to compete with Denmark the Danes are sending agents to Canada to see if there is anything in the Canadian methods of production and exportation that would be an improvement upon their own. In order to get a fair idea of a country's export trade it is necessary to travel over the country. (686, 689.)

5. Agricultural attachés.—Mr. HITCHCOCK is also in favor of appointing agricultural attachés to the American embassies in some of the most important countries. The experience of the Government in one such case was eminently successful. Dr. Stiles was stationed at Berlin as an agricultural attaché, and although nominally a diplomatic official, he was paid by the Department of Agriculture and was under the direction of that Department. He traveled about over Europe as occasion seemed to demand, investigating matters affecting our agricultural export trade. His work was of great advantage to the Department. Mr. Hitchcock believes that a few such attachés could be of great service to our agricultural interests, their diplomatic status giving them certain advantages over other agents.

There are several cases where agricultural attachés have been appointed by other nations. Baron Herman was appointed by the German Government as agricultural attaché to its embassy in the United States, and with his expert knowledge of agricultural matters he renders most valuable services to the German Government. A similar attaché has recently been appointed by the Austro-Hungarian Government as an agricultural expert at Washington. (686, 687, 689.)

6. Exhibits.—In order to break down the barrier of national prejudice and ignorance, Mr. HANLEY advocates the establishment of permanent exhibits of all the natural and manufactured products of this nation in every large city in countries from which concessions can be obtained, and the publication of advertisements and descriptive articles in the native newspapers and magazines. He says that the various European nations are most liberal in their expenditures for this kind of advertising, and have, as a result, secured a strong foothold in China and adjoining countries. Mr. Hanley also believes that the United States should say "hands off" to the powers which are seeking the partition of China, and thus earn the gratitude of the Chinese nation and secure the commercial advantages of a favored nation. (292.)

It also occurs to Mr. HITCHCOCK that a great deal can be done for our export trade through the various expositions which are held all over the world. He believes it would be profitable for the Government to take even greater measures than in the

Mr. Snow believes that Secretary Wilson has done a magnificent work in promoting the exportation of butter, and that he should be authorized to have such goods inspected and branded before they are shipped. Mr. Snow considers the results to the export trade of the inspection and branding of meat products intended for export so entirely satisfactory, in removing the former prejudice against American meat and in increasing the American export trade, that it would be wise to increase the field of inspection. The Bureau of Animal Industry might well be authorized to inspect all dairy products offered for export, and to brand them for what they are. The inspection might be extended to a number of other products. The German Government has raised objections to the importation of American apples on the ground of the danger of importing the San Jose scale. If this prohibition were carried out, as part of the agrarian movement, it would amount to cutting off a very considerable part of the foreign market for American fruit, but if the exports were honestly inspected by Government inspectors the ground for the prejudice would be removed. (236.)

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10. Development of American shipping.—Mr. BRIGHAM says the building up of an American merchant marine would be of great advantage in exporting agricultural products. There are countries which know nothing of our products, but which would be glad to purchase them if they could be shipped directly from this country. (22.)

Mr. AGER, master of the Maryland State Grange, would like to see the products of this country carried in American ships. He thinks it would be better for the farmers to have the ships built in this country instead of sending the timber to Europe and having the ships built there. (115.)

Mr. HITCHCOCK has no doubt that it would be far easier to control the methods of transportation of grain if the ships were owned in America. (684.)

Mr. HANLEY says there are not sufficient ships to carry our products abroad. The National Farmers' Alliance, the National Farmers' Congress, and the National Farmers' Alliance and Industrial Union have taken action in favor of subsidizing the merchant marine. Mr. Hanley considers American ships a necessary factor in the establishment and maintenance of foreign markets, as far as the trade of the Pacific Ocean is concerned. He says the building of merchant ships is the most profitable and important industry left undeveloped in this country, and would furnish a resource for the nation in time of war. This enterprise would take from the ranks of idle labor 500,000 men, who would earn on an average \$60 a month, making a total increase in wages of \$360,000,000 annually. It would also furnish a permanent investment for about \$100,000,000, and enable American ships to earn a portion of the \$200,000,000 now paid annually to the owners of foreign vessels for carrying American people and products. Owing to the generous treatment foreign nations give their shipping, Mr. Hanley says the United States should give Government aid in starting this enterprise. Subsidizing the merchant marine would be virtually granting an export bounty on agricultural and mineral products. The competition of foreign ships would diminish the freight rates, which have been practically prohibitory, and so benefit the producer. (276, 293, 294.)

Mr. MORAN favors the reconstruction of the merchant marine, because he thinks it wrong to depend upon foreign bottoms to transport the product of American labor. He declares that the majority of farmers in the Northwest are in favor of subsidizing certain American ships according to the actual amount of the freight they carry, but opposed to the subsidy bill pending in the Senate (January, 1901). The farmers would limit the subsidy to 10 years. If it should prove a failure and of no benefit to the farmers 10 years is too long; if it should prove a benefit to the farmers, who produce 75 per cent of the freights that will be carried, there would be nothing to prevent Congress extending the subsidy. The Government should retain some control over the subsidized ships by which it could regulate freight charges, so that the ship companies could not combine to raise freights. Mr. Moran says he is in favor of any bill that will open the Oriental market and build up American shipping by giving a subsidy for the actual freight carried. He criticises certain clauses in the particular subsidy bill referred to, however, which give the benefit to fast boats which would not be able to carry much bulky freight. He says that the farmers are generally in favor of any benefit given to the Pacific steamships which carry freight. Subsidizing ships on the Atlantic would be of very little benefit to the wheat growers because they already have the European market, but if the farmers could get ships on the Pacific coast, going to the Oriental markets, they would get the benefit.

Mr. Moran says that it appeared some time ago that President Hill, of the Great Northern Railroad, was in favor of the subsidy bill, but he has been before many of the large State conventions and heard the discussions and taken part in them, and it appears that he agrees to some extent with the farmers that the bill, in its present form (January, 1901), is not beneficial to the farmers. (716, 717.)

Mr. Moran proposes two classes of compensation—one for fast ships and one for slow or freight ships—and suggests paying slow ships for the actual freight carried to foreign markets; double rates for the outward trip, but nothing for the return trip. (719.)

Mr. PROM says the farmers of North Dakota are very desirous of having an extension of their markets, and are looking to the West. Those who know of the ship subsidy bill hope it will pass, looking upon it as an instrument in the development of foreign trade. (793, 794.)

Dr. STUBBS says that the Southern Industrial Convention, after thorough discussion in which some opposition was shown, passed a resolution indorsing the ship subsidy bill. There was nothing like a fair representation of the agricultural leaders of the South at the convention, however. Most of those present were representatives of manufacturing, mercantile, and commercial interests. (783.)

Mr. TURNBULL asserts that all the raw materials for shipbuilding are found on the Pacific coast, and he expects a great development of the industry there. Iron ships built in this climate of little temperature variation need no readjustment. (881.)

11. **Export bounties.**—Mr. WEDDERBURN advocated an export bounty on staple agricultural products on the floor of the National Grange in 1896, stating that making it profitable to raise and export the staple products—cotton and tobacco for the South, and corn and wheat for the West—would stop the Southern and Western competition with the Eastern truck farmer, but that as long as a governmental system existed which aided in depressing the price of staple agricultural products it would drive the Virginia, Georgia, and Iowa farmers from their legitimate work of raising tobacco, cotton, and corn and into raising watermelons and making butter, compelling them to compete in the home market; and therefore an increase in the price of staple agricultural products would be to the advantage of the New England farmer and the truck farmer. Mr. Wedderburn still believes, as firmly as he did in 1896, that a bounty on these products would inure to the best interest of the country. (626.)

Mr. Wedderburn believes that the best system the Government could adopt would be to pay a bounty upon everything that we ship out of the country, because by shipping a surplus of products away from the United States we bring back money instead of goods. Unlike Mr. Lubin, Mr. Wedderburn has always advocated that the bounty be extended to manufactures, so as to build up American shipping. The bounty would be paid to the shipper, but the farmer would be bound to get his portion of it. The competition is so strong among the purchasers on 'Change, and transactions are made on such a close margin, that the producer would get a large proportion of the proposed bounty on anything sold on the exchanges. (627.)

Mr. Wedderburn pleads for the protection of agriculture, the greatest industry in this country, on a plane with other industries. He contends for the same opportunity for the wheat raiser that the manufacturer of steel has. If there is to be a protective tariff for the benefit of manufacturers, he favors the protection of agriculture, which can only be given by a bounty on exports. Such a bounty would not only put up the price on the product actually exported, but would raise the price in the home market. The raising of prices in the New York market 5 cents a bushel on wheat means 25 cents for every barrel of flour consumed in the United States, and the farmers are bound to get a large proportion of it. England would not put a countervailing duty on cereals, as we do on German sugar, because while we are trying to protect our sugar industry from German sugar England is striving for our wheat; she can not live without bread. (628, 630, 631.)

Mr. Wedderburn admits that the export bounty might give an impetus to the raising of more wheat in America, so that the increase in price would be lost in large part through the increased production; but he thinks it is true, as stated by Mr. Wood Davis, that the area for the production of wheat in the United States is about covered, and that we can not expect to raise very much larger crops than we have now. The Northwest is developed, and every year those lands are farmed without fertilization their productive power diminishes. Mr. Wedderburn is of the opinion that the price of wheat would be increased here, and that it would not be decreased in Liverpool, the price being fixed in Liverpool by supply and demand, and the demand exceeding the supply; but he says it would make no difference what it sold for in Liverpool if prices could be increased at home. (631, 632.)

Mr. Wedderburn says a provision for a bounty, he thinks, of about 5 cents a bushel on wheat, a cent a pound on cotton, and probably a cent a pound on tobacco was offered in Congress as an amendment, without any hope of carrying it through. Senator Cannon, of Utah, made a very strong argumentative speech in its favor, as did also Senators Tillman and McLaurin, of South Carolina, and others. Some 8 or 10 votes were cast in favor of the amendment, more than Mr. Wedderburn expected. (631.)

Mr. POWERS does not believe an export bounty on agricultural products would be of any benefit to the farmer; the result would be the same as in the case of the German sugar bounty. The English farmer, as a result of the German sugar bounty, is able to feed his hogs raw German sugar as one of the cheapest articles he can give them, and he does so at the expense of the German taxpayer. The bounty has raised the price of sugar to the consumer in Germany and thus lessened the amount consumed. If the bounty were taken away the people would consume more sugar, and thus in 20 years make a market for as much sugar as the export bounty has. Mr. Powers does not believe that the bounty has played as great a part in the development of the German sugar industry as the scientific study of the principles underlying it, which has been fostered by the German Government. (176, 177.)

XVI. ADULTERATION OF FOOD.

A. General considerations.—1. Adulteration in ancient times.—Mr. KENNICOTT, formerly city chemist of Chicago, says that Greek history has handed down the name of one who excelled in ingenious mixtures, and knew how to impart a flavor of age to new wine. In Athens there was a special inspector whose duty it was to detect and stop adulterations. Pliny mentions the adulteration of bread with white earth. Mr. Kennicott deprecates the increase of adulteration accompanying the development of commerce. (529.)

2. Extent of adulteration.—Mr. WEDDERBURN, who has for some time been employed by the Department of Agriculture in the investigation of food adulteration, believes that about 15 per cent of the whole product of food and drugs consists of fraudulent adulterations, and that about 2 per cent is injurious adulteration. He declares that this estimate, which he made for the Department of Agriculture, has never been controverted. (634.)

Mr. DYE believes that a large proportion of groceries and many other products are adulterated. The pure-food laws have been of considerable advantage, but are not always effectively enforced. (91, 92.)

3. Causes of adulteration.—Mr. GEHRMANN, director of the laboratory of the Chicago department of health, notes two chief causes of adulteration of food. Competition leads to adulteration, especially of high-priced foods. Each dealer thinks it necessary to meet the price made by his competitors, and uses such adulteration as will enable him to do it. A second important cause of adulteration is the desire to preserve goods which remain on hand unsold, and which are in danger of spoiling. (635.)

4. Effects of adulteration.—Dr. SAMUEL J. JONES, president of the National Pure Food Association, believes that sophistication of food has far-reaching effects—physical, moral, and financial. Food deficient in nutrition impairs the health and working capacity of individuals. A man who is well nourished does not depend upon artificial stimulants. The dilution of food is demoralizing to the individual dealer, impairs confidence in business integrity at home and abroad, and thus militates against the interests of the State and the nation. (525, 526.)

Professor DAVENPORT, dean of the College of Agriculture of the University of Illinois, says that the farmer feels the adulteration of food products to be injurious to him, even when he produces the materials of adulteration. Thus when wheat flour is adulterated with corn flour, though both are farm products, the farmer feels that he is damaged through the loss of reputation of American flour, and the consequent loss of export trade. (272.)

Professor Davenport says the farmers feel that adulterated foods tend to unsettle confidence and values and restrict the consumption of products. In Illinois there is a pure food association composed largely of farmers, who advocate the principle that everything should be labeled and sold for what it is. The farmers are coming to feel that they must protect their trade-marks. (271, 272.)

Mr. AARON JONES considers the prevention of adulteration and deception in the sale of food essential for the safety of consumers, who are often injured by poisonous substances, and for the protection of the legitimate producer. The demand for maple sugar, apple vinegar, pure cheese, and many other products is greatly reduced by the sale of adulterated compounds. (39, 40.)

Mr. WEDDERBURN says that the farmer has a twofold interest in the question of pure food, in that he is injured both as a consumer and as a producer. His honey, made by bees, has to compete with so-called honey made of glucose, which costs 2 or 3 cents a pound. Pure fruit jelly has to compete with jelly made from refuse, parings, and cores sweetened with glucose, and sometimes mixed with timothy seeds to counterfeit the seed of the raspberry and strawberry. Lard has to compete with mixtures of stearin and hog grease. (633, 634.)

Mr. CLOHAN says the fruit grower is very much interested in pure-food legislation. Acid vinegars have largely taken the place of cider vinegars, sham apple butter may be made of pumpkins or turnips, and other fruit products are similarly adulterated. (601.)

Mr. KENNICOTT says that allowing a poor product to be sold keeps down the production of the good product, and would eventually drive good products out of the market entirely. (533.)

Mr. HITCHCOCK, of the United States Department of Agriculture, says that the cheese exports of the United States have greatly declined since 1880, by reason of the shipping of filled cheese as full cream cheese. The inferior quality of the American product was soon detected by the customers, and our trade fell off rapidly and greatly. (676.)

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5. National Pure Food Association.—Dr. SAMUEL J. JONES, president of the National Pure Food Association, testifies that this association was chartered by the State of Illinois in 1897, originally under the name of the National Association of Producers and Purveyors of Pure Food, the name being afterwards changed to the National Pure Food Association. The incorporators being convinced that the dealers in food products for profit should not have any part in the management of the association, they were made eligible only to associate membership, without the right to vote or to hold office. The association memorialized Congress in favor of the bill introduced by Senator Thurston to create a pure food commission, but has not committed itself to any other particular bill. The objects of the association are to secure pure, nutritious, and economical food, and the instruction of the people how to prepare and utilize it to the best advantage. Interest in the subject has been developed through the press, by public lectures, and through farmers' congresses and other agricultural bodies. The association has sent representatives to the National Pure Food Congress, which it does not antagonize in any way. (521-527.)

B. Particular adulterations.—1. Milk.—Mr. KENNICOTT, formerly city chemist of Chicago, says a common practice of Chicago milkmen is to remove a part of the cream and sell what remains as full cream milk. The skimming takes away the larger part of the food value. (529, 531.)

Mr. GEHRMANN, director of the laboratory of the Chicago department of health, says that supervision of the quality of milk sold in Chicago was established by a city ordinance in October, 1892, and was transferred to the department of health in September, 1893. During 1893, out of nearly 9,000 samples analyzed, more than 45 per cent were below grade. The first 500 samples were taken at railway stations immediately on arrival. Of these only 41 samples, or 18 per cent, were below grade. Of the next 500 samples, taken from dealers' wagons on the street, 374, or 75 per cent, were below grade. This showed that at that time the adulteration was chiefly the work of the city dealers. In February, 1894, an increased number of samples were taken in the poorer parts of the city, and it was found that skimmed milk was extensively sold there. In 1895 the department experienced great difficulty in securing the prosecution of offenders. As a result the percentage of poorer samples increased rapidly. In the latter part of the year the department began to publish the names of those whose samples were found below grade, in the daily papers, without awaiting the results of prosecution. This policy resulted in a great improvement in the character of the milk offered. In December, 1895, the prohibition of the coloring of milk and cream caused a temporary rise in the apparent proportion of poor samples. In September, 1897, prolonged dry weather caused a milk famine, and the use of water and other adulterants to eke out the short supply was apparent in the increased proportion of poor milk. (635.)

Dr. Gehrman submits a diagram showing a diminution of the per cent of milk samples found below grade in Chicago from 49 per cent in February, 1894, to about 2 per cent in 1897, with some temporary fluctuations due to special causes. (635, 636.)

Mr. KENNICOTT says that milk robbed of part of its cream is made to look rich by coloring with annatto or with aniline dyes. It is an unsettled question whether some of these dyes are injurious to health or not. Very little pure milk is sold in cities. Boston probably has the best milk in the country. In Boston, for a part of the year, the standard of milk requires 13 per cent of solids, while in Illinois milk which has 12 per cent of solids passes as pure. (531.)

Mr. AGER, master of the State Grange of Maryland, states that persons have recently been arrested in the District of Columbia for selling sophisticated cream and milk. He understands that standard cream must have 20 per cent of pure fat; some samples were found to have only 14 per cent. These samples looked as good as cream of standard richness. A yellow coloring matter had been added. Milk is sometimes colored to increase its apparent richness. A preparation of annatto is used for this purpose, as well as for coloring butter. The witness does not think it injurious to health. (116, 117.)

Mr. HAMILTON, Secretary of Agriculture of Pennsylvania, says that the boards of health of the principal cities of his State have recently taken up the matter of milk adulteration, and have greatly improved conditions. The adulteration of milk is easy to detect. Mr. Hamilton believes that the supply in the cities referred to is now reasonably pure. (371.)

2. Cheese.—Mr. FLANDERS, Assistant Commissioner of Agriculture of New York, says that the State of New York has for several years given instruction to its cheese makers in order that they might produce a uniform first-grade article. It has provided by statute for the issue of a brand bearing the words "New York State Full

Cream Cheese" to each factory that makes such cheese, and the agricultural department of the State prevents the fraudulent sale of filled cheese and of cheese falsely branded as to quality. The purpose has been to make the State brand a guaranty of the quality of the product. But some cheese dealers in the West, particularly in Chicago, have imitated the State brand and placed it on inferior goods. This injures the reputation of the cheese and the cheese makers of New York, and ruins the market. (995, 996.) (See also Wieting, 994.)

Mr. FLANDERS says that the New York State full cream cheese brand can not be protected under the patent or trade-mark or copyright laws. The person who registers a trade-mark must have a proprietary interest in it, and the State has no such interest in the cheese produced within its borders. Each proprietor of a cheese factory might file his particular brand, but the expense would be too great; the cost of filing the trade-mark would be \$25, and there would be the additional cost of protecting it in the courts. (996.)

3. Flour and corn meal.—Mr. KENNICOTT, former city chemist of Chicago, says that he does not know whether flour is adulterated with corn flour in Chicago or not. A friend of his has examined samples of flour without finding corn flour. (532.)

Mr. SNOW, statistician of the Orange Judd Farmer, says that the mixed-flour law of Congress has resulted in the almost entire abandonment of the mixing of wheat flour with corn flour. (237.)

Dr. SAMUEL J. JONES has been told of a miller who regulated the dilution of his corn meal by the customer's promptness of payment; if he was prompt, he got corn meal; if doubtful pay, he got a certain percentage of corn cob; and if very doubtful, he got a very large proportion of cob and very little corn. (527.)

4. Maple sugar and sirup.—Mr. SPEAR does not know of any adulteration of maple sugar in Vermont. The law of the State is very strict against it, and would be sharply enforced. Only about 10 per cent of the genuine Vermont product is sold in the form of sirup; the remainder is sold as sugar. So far as the sugar is not sent to special customers a large part of it goes to sirup houses outside of the State, where it is mixed with glucose and cane sugar and sold as pure Vermont maple sirup. The maple sirup found in the markets is a combination of about 20 per cent of the purest grade of maple sugar with glucose and cane sugar. This adulteration not only lowers the price of the honest goods, but discredits them with the consumer. Mr. Spear considers the labeling of such a combination "Vermont maple sugar" as much a counterfeit as counterfeit money. The consumer pays nearly the price of pure goods, and the producer of honest goods suffers. (408, 409.)

5. Olive oil.—Mr. KENNICOTT says that cotton-seed oil is as good food, or very nearly as good, as olive oil. He has used cotton-seed oil as a salad oil, knowing what it was, and he likes it just as well as olive oil. (533.)

6. Cream of tartar.—Mr. KENNICOTT says that cream of tartar is sold in Chicago which does not contain any cream of tartar whatever, but consists of soda calcium phosphate, similar to phosphate rock that is sold as a fertilizer. There is nothing unclean about it. The witness has found as much as 55 per cent of plaster of paris in cream of tartar. It was impossible to say whether it was added as plaster of paris or was produced in the manufacture of the soda calcium phosphate. The plaster of paris would be simply inert matter in the stomach. (533.)

7. Coffee, spices, and drugs.—Mr. KENNICOTT showed samples of ground coffee which contained dried grain, and samples of artificial coffee beans, unground. He also showed "fillers" for pepper, cinnamon, cayenne pepper, nutmeg, mustard, all-spice, and cloves. These fillers are composed of dried and pulverized grain. Ground buckwheat hulls are sometimes used to imitate black pepper. Similar substitutes are also extensively used for filling drugs. Fillers are made to resemble in appearance the spices or drugs with which they are to be mixed. These adulterations are not directly injurious. (530.)

8. Beer.—Mr. KENNICOTT states that he has never found anything particularly injurious in beer, although he has been told and has read of adulterations which are undoubtedly injurious. Some of the foreign beers have been colored with picric acid. Much beer is made with impure water, and this is a kind of adulteration. (532.)

9. Canned goods.—Mr. KENNICOTT says that canned pease are colored green with copper. (530.)

10. Restaurant foods.—Dr. SAMUEL J. JONES testifies that the proprietor of a Chicago restaurant brought a pie to a chemist of that city to be analyzed to determine what filling his competitor used in order to undersell him. The result of the analysis led the chemist to analyze other articles of restaurant food, and after doing so he came to the conclusion that he had taken all the down-town lunches he cared to, and that he would carry his lunch. (525.)

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11. Uncleanliness in preparing food.—Mr. KENNICOTT mentions the making of filthy foods, which may be unintentional, as being of the same nature as adulteration. He exhibited a piece of bread with a young rat baked in it. He also showed a piece of candy bought in a department store, which was dusted over with flour and appeared to be in a good condition, but which was found extremely filthy when the flour was removed. (530.)

12. Stock foods.—Mr. M. F. GREELEY, of South Dakota, complains that there are millions of dollars' worth of stock foods sold which are of very little value. The agricultural papers seem to be afraid to say what they think on the subject, possibly in some cases because the proprietors of the foods advertise extensively; and many of them do not know how little value there is in some of the foods. Mr. Greeley says the experiment stations ought to take up the question, as a few Eastern stations have, and publish the frauds. He also favors a national law on the subject, on the ground that local laws are not feared by those who violate laws. (940, 941.)

C. Oleomargarine. (See also *Oleo oil and butter*, p. CCCXII.)—1. **Extent of its use as butter.**—Mr. VAIL does not think the Vermont creameries use oleo in butter; he has never heard of a case against the creameries, and the Vermont law is very strict in that regard. (415.)

Mr. FLANDERS, Assistant Commissioner of Agriculture of New York, says that when the State agricultural department was established oleomargarine was manufactured in large quantities in New York, hundreds of thousands of pounds a year, and sold as butter. Now, none is made in the State and little is sold there; what is sold is sold clandestinely. (998.)

Mr. Flanders says that the violations of the oleomargarine law in New York are few when one considers the size of the State and the population. They sometimes result from the acts of persons outside the State. Thus a man in Buffalo was found to be selling oleomargarine as renovated butter. He claimed that he had been deceived, and it was not found possible to prove the contrary. The packages bore no marks to indicate that they contained oleomargarine. The packers had failed to comply with the United States law in this respect. The companies from which the goods had been bought were found to be "fakes," covers for the real producers. It is believed that the large manufacturers of oleomargarine, with some exceptions, conduct their business in a legitimate way. (996, 997.)

2. **Wholesomeness.**—Mr. FLANDERS regards renovated butter as by all means a more wholesome article of food than oleomargarine, "because one is a butter fat and the other is a fat that was never intended to go into the human stomach raw. It takes more effort to digest oleomargarine than it does to digest butter." He understands that oleomargarine contains 4 or 5 times as much stearin as butter, and that while good butter contains from 4 to 8 per cent of butyric acid, oleomargarine has only a trace of it. Butyric acid is an aid to digestion. (997.)

Mr. HAMILTON, Secretary of Agriculture of Pennsylvania, thinks that butterine made from healthy animals without the use of impure or injurious substances would not be injurious to health. (368.)

Mr. KENNICOTT, former city chemist of Chicago, regards butterine as a good food, and objects only to the selling of it as butter and at the price of butter. There is a very large legitimate market for butterine. (530.)

Mr. AGER, master of the State Grange of Maryland, does not consider oleomargarine a wholesome food; at least he would not buy it for his own use. The great objection to the trade in it, however, is the fact that it is sold for butter. "It takes the place and lessens the price of a good article." (116.)

D. Legal remedies.—1. **Existing pure-food legislation.**—*Massachusetts.*—Mr. STOCKWELL says the Massachusetts State Board of Health has appropriations to enforce the pure-food laws, and the Dairy Bureau punishes the fraudulent sale of oleomargarine. The oleomargarine law has stood the test of the highest courts and is being largely copied in other States. The food laws of Massachusetts are working well. (902.)

Pennsylvania.—Mr. HAMILTON testifies that the Pennsylvania pure-food law has done good service in clearing the shelves of grocery stores of articles of food injurious to health. It was formerly the practice of manufacturers to use preservatives, such as boracic acid and salicylic acid, which are regarded as injurious. There are some 13 inspectors whose sole business it is to secure samples, and a number of chemists whose business it is to analyze them and report to the dairy and food commissioner. Whenever the chemists report that an article is clearly a violation of the law suit is brought. The law does not reach the adulteration of goods with harmless substances. If the manufacturer marks on the package that it is a compound he may put in any adulteration not injurious to health, and the public may be deceived

in supposing that there is more of the valuable ingredient than there really is. Inert substances are not considered likely to be injurious. A certain amount of such material seems to be necessary in order to distend the stomach properly; but there may be so much put in as to make the food practically worthless. (367, 368.)

Illinois.—Mr. GEORGE testifies that Illinois has a butterine law, but not a pure-food law covering the entire ground. Even the butterine law is not what it should be. It compels the large packages to be marked, but boarding houses and hotels put butterine on the tables without notice, and people eat it without knowing what it is. (226.)

South Dakota.—Mr. GREELEY testifies that South Dakota has a pure-food law. (940.)

Kentucky.—Mr. NALL says the Kentucky pure-food law is under the direction of the Director of the Experiment Station. He is the official who sees that the pure-food law is enforced. (814.)

Louisiana.—Dr. STUBBS thinks food inspection is left to the cities in Louisiana. New Orleans has a chemist entirely engaged in the detection of impure food. (784.)

2. Character of laws needed.—Dr. GEHRMANN says that laws to promote purity of food ought to be extremely explicit as to quality and quantities of constituents. General expressions are differently interpreted by successive administrations, with the result that dealers are placed at a disadvantage and the public does not know what to expect. It is very desirable that food laws be uniform in the various cities and States. Food inspectors should be persons interested in the work, and the chief executive should have some of the qualities of the scientific man, but should be primarily a man of executive ability. Every case of adulteration should be fully tried, and political and personal considerations should be strictly excluded. Measures should be taken for educating the public in regard to requirements of the law. Finally, a penalty which dealers fear more than any fine is the publication of the names of those who sell impure food. (637.)

3. Need of national legislation.—Mr. KENNICOTT, former city chemist of Chicago, says that while some States, like Michigan and Massachusetts, have excellent food laws, and are able to diminish the practice of adulteration within their territory, not much can be done until national legislation is obtained. Goods which do not pass inspection in one State may pass in another. The great remedy is to force manufacturers to mark goods for what they are; but until we have national legislation with regard to the marking of goods nothing effective can be accomplished. (530, 531.)

Professor DAVENPORT, of the University of Illinois, is decidedly in favor of national legislation to prevent the adulteration of food. He says that the matter can not be controlled by State legislation, because strict laws in one State result in the dumping of adulterated products upon other States. He emphasizes the need of national legislation, providing that the brand on a product shall be a true index of what it is, both for home protection and for the protection of the export trade. (272.)

Mr. NORRIS says the National Grange has passed a resolution recommending pure-food legislation. He believes the United States is the only nation that has no law protecting its food products, and that adulterated products crowd out pure goods. (332.)

Mr. SPEAR says no matter of legislation is regarded with as much solicitude by the farmers of Vermont as a national pure-food law. They think it reasonable to ask maple-sugar manufacturers to put upon every package a statement as to its purity or adulteration. (408, 409.)

Mr. WIETING and Mr. FLANDERS, respectively Commissioner and Assistant Commissioner of Agriculture of New York, agree that the National Government should enact a law that no dairy or food products entering into interstate commerce may be falsely branded or labeled as to the State in which they are made. Bills to this effect have been introduced in Congress, but have not passed. They also approve the principle of the Grout bill, that whenever dairy or food products are brought into a State they should immediately become subject to the State law, even if in original packages, just as if they had been products of the State. (994, 996, 998.)

Mr. DYE considers it desirable that Federal and State legislation should cooperate in remedying the evil of adulteration, which is injurious to the producer of pure articles as well as to the consumer. Everything should be sold strictly for what it is. There should be a penalty for selling goods for pure which are not so. (98.)

Mr. COLLS, a farmer and dairyman of New Jersey, favors the enactment of a pure-food law. He says that while every man has a right to make any uninjurious article, he should sell it under its proper name. He should not manufacture oleomargarine and sell it for butter. (123.)

Mr. MILLER, secretary of the Ohio State Board of Agriculture, considers a pure-food law very difficult to enforce. Such a law should be of a national character,

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and the enforcement of it should be in the hands of the Department of Agriculture. (617.)

Mr. WEDDERBURN, master of the State Grange of Virginia, believes that there should be a national pure-food law based upon the interstate-commerce clause of the Constitution. The enforcement of it should be confided to the Department of Agriculture. (633.)

Mr. HANLEY thinks there should be a Federal pure-food law. Any agency that would establish the reliability of American goods would give them a greater market value. Everything should be branded as it goes out. The National Farmers' Alliance and Industrial Union favors a national pure-food and inspection law. (282.)

Mr. HAMILTON, Secretary of Agriculture of Pennsylvania, thinks that the United States ought to require all packages of food products to bear labels showing their constituents. This would prevent fraud and enable everyone to know what he was buying. Such a law would have to be national to be effective. The States could, however, have an analysis made to determine whether the contents of the packages corresponded with their labels. (371.)

Mr. NALL, Commissioner of Agriculture of Kentucky, is inclined to believe that pure-food legislation should be National rather than State, the rights of citizens of one State to do business in another State being so mixed up that sometimes protection is not found in State laws. In regard to drugs and food products generally other than agricultural products, Mr. Nall sees no reason for putting the execution of the law in the Agricultural Department. (814.)

Dr. STUBBS says there is quite a favorable sentiment among the farmers of Louisiana for a national pure-food law. They would prefer a national to a State law, because recent decisions in whole-package cases frustrate the State laws to a large extent. Dr. Stubbs would give the national Department of Agriculture the execution of the law. (784.)

Mr. GREELEY, secretary of the Board of Regents of Education of South Dakota, hopes that the Government will take hold of the subject of the adulteration of foods and drugs. (940, 941.)

Mr. MCKAY, a trustee of the University of Illinois, thinks there ought to be national pure-food legislation, for State laws are too desultory and conflicting to be very effective. The matter should be under control of the United States Department of Agriculture. Mr. McKay suggests that a special appropriation be made by the National Government to each of the experiment stations for carrying on investigations on the subject of pure food. (534.)

Mr. WILSON, master of the Illinois State Grange, favors a national pure-food law. (254.)

Mr. CLOHAN, of West Virginia, favors Federal pure-food legislation. He thinks pure-food legislation should be general and apply everywhere; otherwise there is nothing to hinder grocers in Pennsylvania or other States having pure-food laws when they get something that will not pass inspection from dumping it into West Virginia, where there is no such law. Mr. Clohan would lodge the execution of the pure-food law in the Department of Agriculture, or perhaps in the Department of Justice, as everyone is interested in the matter. (600, 601.)

Mr. SNOW testifies that pure-food legislation has been widely discussed at meetings of farmers' organizations, and that they all favor it. The antagonism to pure food legislation has grown out of the unwillingness of manufacturers to submit their business to public inspection. There have been organizations among manufacturers to postpone pure-food legislation. (237.)

Mr. GEORGE favors a national pure-food law to protect the consumer as well as the producer of farm products. (226.)

Mr. POWERS advocates Federal legislation providing for the inspection and guaranty of articles of interstate and international trade. He says there is loss to the American farmers from the fact that some of our corn shipped to European ports, though warranted by certain export cities, reaches there in an unmerchantable condition, the loss of foreign dealers reacting to the detriment of American exportation. The Government should find out what places are thus permitting the issue of valueless certificates, and should seek to protect the good name of American farm products in the markets of the world. In the case of meat products he thinks the inspection is well conducted by the Bureau of Animal Industry. (192.)

Dr. SAMUEL J. JONES, president of the National Pure Food Association, thinks the better element of manufacturers, who wish to be honest but are driven to the sophistication of foods by competition, would welcome relief from this state of affairs. He believes that it is the duty of venders to let people know what they are getting and paying for, and that the law should secure this. In his opinion the most natural place for conducting the inspection and control of food would be the United States Department of Agriculture. (527-529.)

4. Proposed legislation against oleomargarine.—Mr. BRIGHAM believes that the tax on oleomargarine should be increased. There is no injustice in the sale of oleomargarine as such, but most people believe they are buying butter. The pure-food laws of the various States have been of great advantage to the consumer and to the farmer, but officers are under strong temptation not to enforce them effectively. Legislation to warn the foreign purchaser as to the character of goods he buys would also be advantageous to the American farmer. (22-27.)

Mr. HAMILTON, Secretary of Agriculture of Pennsylvania, thinks that the United States ought to put a tax of 10 cents a pound on oleomargarine, "so as to raise the price of it so that it can not undersell butter in the same market." It costs about 7 cents to manufacture. The dealer gets 18 or 20 cents for it. This leaves so large a profit after paying the present 2-cent tax that the temptation to fraudulent substitution is very great. If the tax were 10 cents the profit would be so small that it would hardly pay to take the risk of evading the State laws. (370, 371.)

Mr. AGER would have a heavy tax put upon oleomargarine, and he would also have it colored pink instead of yellow. Mr. Ager states that there is very little butter which is not colored. He does not consider the coloring matter injurious to the health. He does not suppose that any of his auditors would use winter butter in its natural whiteness in preference to the colored article, even with knowledge of the artificial coloring. (116, 117.)

Mr. BACHELDER believes that any product which is not made strictly from milk and cream should be so distinguishable or so marked that all persons using it shall know that it is not pure butter. The present laws often require labeling by which the purchaser is notified, but the actual users in hotels, boarding houses, etc., generally suppose that it is pure butter. The witness has secured 32 prosecutions within one month for the violation of the New Hampshire law requiring hotels, etc., to notify their guests that oleomargarine is used. There is no objection to the sale of oleomargarine under its own name and character. (45.)

Mr. Bachelder advocates a tax of 10 cents a pound on oleomargarine colored in imitation of butter.

Mr. GREELEY, of South Dakota, says oleomargarine should be made to sail under its own colors, just as other foods and drugs should. Many prefer properly made oleomargarine, as it is possible to have it much cleaner than butter, because it is hard to keep milk clean. Mr. Greeley thinks no very severe oleomargarine law can ever be enforced. (945.)

Mr. STOCKWELL, secretary of the Massachusetts State Board of Agriculture, favors the Grout bill, feeling that oleomargarine is a fraud upon the dairy interests of the country which should be abated. The manufacturer of oleo should, at any rate, use some distinguishing color, so that it might be sold upon its merits.

Mr. Stockwell also favors the Brosius bill. (902.)

Mr. NORRIS says there is a good oleomargarine law in New York which is very well carried out, and that it should be extended throughout the whole country. (332.)

Mr. BUDGE, of North Dakota, thinks some way should be provided by which people should know what they are getting. Oleomargarine should be branded for what it is. (857, 858.)

XVII. FARMERS' ORGANIZATIONS.

A. Purposes, extent, and results.—1. **Ideas underlying the organization of farmers.**—Professor DAVENPORT, of the University of Illinois, believes that the original idea resulting in the organization of farmers was the need of protection. A wave of sentiment went over the country to the effect that everything must be organized. Among farmers there was a strong objection to middlemen, and in many sections the Grange was organized with that idea principally in mind. The Grange stores were not successful, as a rule, but farmers learned something about retail prices, and found that a profit of 25 per cent on dry goods, for example, was not very big pay. (268.)

Mr. BRIGHAM, Assistant Secretary of Agriculture, says that the National Grange and other farmers' organizations have been forced into existence by the combinations in other lines of industry, by railroad discrimination, etc. The first purpose of these farmers' organizations was to protect their financial interests, but later they sought to improve the social and intellectual condition of the agricultural classes. The organizations are not less active than in their earlier days, but are somewhat more conservative, undertaking to discuss thoroughly each proposition and to push it through. (18, 19.)

Mr. Brigham says there is no business that requires more general intelligence than farming. Moreover, the attractiveness of the farm can be greatly increased by educating the farmers. To this end the farmers' organizations are endeavoring to introduce educational, literary, and social advantages of various kinds. They aim to have an organization in every township. (8.)

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Mr. BROWN, president of the Georgia Agricultural Society, urges especially the necessity of organization among farmers to protect their interests and to educate them. Most farmers, especially in the South, think little about their business, and this in part explains their failure to diversify agriculture. (69, 70.)

Mr. GEORGE, of Chicago, enumerates five general organizations of farmers—the Farmers' Alliance, the Farmers' Alliance and Industrial Union (the Southern branch of the organization), the Farmers' Mutual Benefit Association, the Patrons of Industry, and the National Grange, Patrons of Husbandry. The farmers were organized for social and intellectual culture mainly, and for cooperative effort. Mr. George thinks the effect of organization has been very good. The Granger laws and perhaps the butterine law resulted from the organization of the Grange. The Farmers' Alliance assisted in securing legislation concerning butterine. These orders were all nonpartisan in the first place, their constitutions precluding partisanship, but they did not hold to that idea except theoretically; practically they became political parties, and in that way have failed. The declaration of principles of the Farmers' Alliance was practically used as a platform for the People's Party. The Grange, which perhaps stands at the head of these organizations, has steered clear of partisanship during the last 25 years. (222.)

Dr. CROWELL says the Grange movement, the Farmers' Alliance of the South, the Wheel in the central South, and almost all agricultural organizations have been called into existence by the necessity of explaining why the farmer was getting so small a proportion of what the consumer paid for farm products. It has been necessary to look at the relation of agriculture to the distributive system and the world market. (337.)

Mr. WILSON, master of the Illinois State Grange, thinks farmers should be organized for the discussion of matters of common interest, both as to the best manner of cultivation and such great economic questions as transportation, foreign markets, etc. (250.)

2. Farmers' organizations in various States.—Massachusetts.—Mr. STOCKWELL testifies that there are in Massachusetts 34 agricultural societies represented on the Board of Agriculture, 9 horticultural societies, 16 farmers' and mechanics' clubs and associations, 24 farmers' clubs, 16 Pomona and 158 subordinate granges, as well as the State Grange, and 18 agricultural organizations of a miscellaneous nature. Mr. Stockwell thinks the improvement in agricultural methods has come very largely from these organizations. (893.)

Ohio.—Mr. MILLER says there are various farmers' organizations in Ohio, the Grange being, perhaps, the leading one in numbers and influence. (613.)

North Dakota.—Mr. BUDGE says there are not very many farmers' organizations in North Dakota. The Grange and the Farmers' Alliance have gone to pieces. The people do not seem to take much interest in the grain-growing associations, and there are very few farmers' clubs. The Farmers' Alliance ran into politics and Populism; the leaders ran it to benefit themselves. (851.)

Mr. PROM, of Milton, N. Dak., says there is now no organization among the farmers of that district. There was one once—the Farmers' Alliance, originally started for discussing agriculture for the benefit of farmers—but it turned into a political association and went to pieces. (792.)

South Dakota.—Mr. JUMPER says there are no grain growers' associations, alliances, or granges in the northern half of South Dakota. They have all gone out of existence. (737.)

Mr. GREELEY, of South Dakota, does not believe in the organization of farmers, as a rule, his particular reason being that organizing tends to eliminate individuality and independence. He thinks clubs and associations in the country are apt to have too many rules and regulations. In South Dakota the organizations have been drawn into politics. The farmer can not think as sharply as the politician, who has nothing but politics to think about and will "work" these organizations, even though they swear they will have no politics in them. Mr. Greeley is glad to note a growing tendency among the best farmers of his section to depend more upon themselves and less upon organizations and legislation for success. In some parts of South Dakota there are a few small farmers' clubs. (937, 938.)

Virginia.—Mr. WEDDERBURN says there are practically no organizations of farmers in Virginia. The Grange was very largely organized at one time, but it got into politics and broke up; though an attempt was made to keep it up for a number of years, it is practically out of existence. The Farmers' Alliance went the same way, but a little more quickly. The Horticultural Society and farmers' clubs here and there are practically the only organizations keeping up an existence in the State. There are several very fine farmers' clubs. Mr. Wedderburn mentions in particular the Woodlawn Club, in Fairfax County, composed principally of New Jersey Quakers, who

migrated to Virginia before the war and bought some of the original Mount Vernon estate. He characterizes them as thrifty, intelligent, industrious, and successful farmers. (624.)

West Virginia.—Mr. CLOHAN says the Farmers' Alliance was very short lived in West Virginia. It went into politics, and was apparently of no value to anyone. The idea of the Alliance was to be a great political party and get the offices. (600.)

Kentucky.—Mr. NALL testifies that there are numbers of organizations among the live-stock breeders in Kentucky, and recently he has endeavored to get farmers to organize county clubs, showing that it would be of great assistance to the State Department of Agriculture if they would do so. (811.)

North Carolina.—Mr. WHITE testifies that there are granges, agricultural societies, and farmers' alliances in North Carolina, but colored men are not admitted to them unless they form separate organizations. There were a good many colored alliances until the organization came into disrepute by getting into politics. The Farmers' Alliance of North Carolina drifted into the Populists, who made an alliance with the Republicans. There is a statute prohibiting political organizations of a secret character, and as the Alliance meetings are secret they could not be kept up. Among the colored tenant farmers there is little or no organization or meeting for the discussion of agricultural methods. (424, 425.)

Mr. GRAHAM, president of the Farmers' Alliance of North Carolina, testifies that the Alliance in its palmy days was a great benefit to the farmers in that State; it nearly broke up the lien system. The Alliance borrowed money and bought goods and sold them at cash prices, reducing the price of flour and other articles one-half. In this way the farmers got on their feet, and the mortgaging of crops to-day is much less prevalent than formerly. Unfortunately politics got into the Alliance, but Mr. Graham looks for a reorganization with politics eliminated. He estimates that the membership in North Carolina is between 5,000 and 6,000. (437.)

South Carolina.—Mr. HAMMOND, a cotton planter of South Carolina, says that both the Grange and the Farmers' Alliance have existed in his region, but they have passed away. (829.)

Georgia.—Of farmers' organizations in Georgia Mr. HALE says:

"At one time the Grange and the Farmers' Alliance were both there, but both tumbled into politics and thought they were going to benefit agriculture entirely by legislation. They began at the wrong end. If they had made them educational institutions for the farmer and taught them to mind their own business and become better business men they would have succeeded better."

There are now no permanent organizations covering the whole State except the State agricultural and horticultural societies. Mr. Hale does not believe that either the Alliance or the Grange has a subordinate organization in the State. There are some local organizations. (390, 391.)

3. Benefits of organization.—Dr. CROWELL says organization has raised the farmer's standards of living and of profit by improving his purchasing power. He has become a more intelligent purchaser, and organization has given him a larger view of his function in the community. He has come to feel that the agricultural interest is so intimately connected with all other economic interests that he must maintain a high standard of living in order to preserve his social efficiency. To some extent organization has prevented the migration of young men from the farm by giving them association and opportunity for leadership. (337.)

Mr. KERCHUM thinks farmers' organizations have been of great benefit. The farmers' organizations in New Jersey have been the means of disseminating information and have been of advantage in the purchase of fertilizers and other supplies. (135.)

Mr. COLES says there are always benefits resulting from an organization if it is carried on properly. It gives the members ideas and protection and they can cooperate to a certain extent, though farmers do not cooperate as well as men in many other occupations. (126.)

Mr. NORRIS believes that the great need of the agriculturist is organization and a more intelligent knowledge of the affairs of the country and of his own business. He is informed by an institute worker that wherever the Grange or farmers' clubs have a firm hold in New York State the farmers are more progressive than in other counties. Mr. Norris does not urge the organization of the Grange on the ground of its financial benefits as much as for its educational and social benefits. The great social benefit of the organization is that it brings all the members of the family into one order where farm and household matters are discussed. It opens up a new avenue of thought to the farmers' wives and creates a better feeling among the farmers. (329.)

Mr. BRIGHAM says that organizations have been very beneficial in protecting the farmers' against unjust combinations to force down prices of agricultural products or to put up prices of goods bought by the farmers. Mr. Brigham refers especially to one case where wool buyers sought to fix the price in Ohio at 25 cents. The State

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Grange, by a circular to farmers to hold back their wool, kept the price above this figure.

It was formerly impossible for farmers to buy agricultural implements directly from the manufacturer. They had to pay an exceedingly high profit to middlemen. The various organizations have done much toward ascertaining the first cost of such implements and securing arrangements for buying them directly, if desired. By means of such arrangements the middlemen have been forced to content themselves with reasonable profits. The witness speaks also of a case where his organization was successful in preventing Arbuckle Brothers from refusing to sell their coffee to dealers who disposed of it at less than the fixed manufacturer's price. The attempt of the National Cordage Company to put up the price of binder twine from 10 cents to 25 cents was also checked by the refusal of the farmers belonging to organizations to buy any twine whatever. (18-20.)

Mr. DYE believes that the organization of farmers is of great advantage in enabling them to cooperate in buying goods in large quantities, especially fertilizers and groceries. It also helps them to cooperate in selling goods, thereby reducing the cost of transportation and the expenses of middlemen. Organization also improves the condition of the farmer generally, increases his intelligence, etc. (94.)

Mr. WILSON testifies that the Patrons of Husbandry have effected some good legislation, both State and national. They secured the railroad legislation known as the Granger laws of Illinois. He refers also to the oleomargarine law, pure-food legislation, and the raising of the Commissioner of Agriculture to a Cabinet position, and says the organized farmers are entirely responsible for free rural mail delivery; also that it was largely through the Grange that the interstate commerce law was passed. Not a railroad in Illinois obeyed the law reducing the passenger traffic from 4 to 3 cents until the farmers carried it to the Supreme Court and won the case.

Dr. CROWELL thinks that, in spite of the failure of the Potter law to reduce railroad rates, the influence of farmers' organizations on transportation has been helpful. (337.)

B. Particular organizations.—1. Patrons of Husbandry.—Mr. JONES, master of the National Grange, states that the fundamental purpose of the Patrons of Husbandry is to elevate and improve the agricultural classes, socially, intellectually, morally, and financially.

There are between 27,000 and 28,000 Grangers in the country. The membership in a local grange is not allowed to fall below 13. The largest number in any one local organization is 607. Aside from these subordinate bodies there is the county or Pomona Grange, the State Grange, composed of representatives from county and local granges, and a National Grange, composed of the masters of the State granges.

One of the chief purposes of the order was to institute a harmonious spirit among the farmers of different sections. This it has largely accomplished. Locally also its social advantages have been of inestimable value. Farming by its very nature tends toward too much isolation. The Grange has done much to promote harmony among individuals, social enjoyment, and refined usages. A majority of the attendants at the local meetings are women, who appreciate highly the advantages offered.

From an educational standpoint the organization has improved the public-school system in the country districts everywhere, and is now insisting that agricultural science be taught in the schools. At its meetings themes relating to agriculture, domestic and political economy, and the duties of citizenship are discussed. After men and women have been in the order for a year, fully 95 per cent of them take part in the educational features. The organization also makes efforts to beautify the roads and homes. It aims to increase the attractiveness of farm life, insisting on the value of the farm as a home, and not merely as a source of income. In this way it has kept the value of farms from decreasing. (29, 30.)

Mr. JONES says the National Grange is not partisan, but it does seek legislation of various sorts in the interests of farmers. It has legislative committees in every State, but its members realize that the farmer can not be favored beyond his just deserts without injury to others, and that injury to others reacts on the farmer. The organization expects much from the work of the Industrial Commission, and believes that it should be perpetual. It is prepared to cooperate with the commission in any way. (30, 31.)

Mr. BRIGHAM says the National Grange is steadily increasing in strength. It was founded in 1866, but had little growth until 1872. It now includes about 28,000 organizations, and has gained in membership probably 100,000 during the past 10 years. It does not enter party politics, but endeavors to secure various political reforms, such as direct election of senators, and to educate its members politically. The results accomplished in this direction have been very encouraging. (20, 21.)

Mr. AGER, master of the Maryland State Grange, says that the Grange was organized for social, educational, and financial benefits. The educational feature was considered especially important, and he thinks the greatest benefit of the order is educational. The members must be engaged in agriculture or in occupations which do not conflict with it; clergymen and school teachers are admitted. The State of New Hampshire has 21,200 members in more than 200 granges, but the order is not generally prosperous in the South. There was at one time a strong organization in Maryland, but it has been materially reduced. Many were disappointed because it did not assume political features, and many others expected it would put money in their pockets without any effort on their parts. At each meeting questions are selected for discussion at the next meeting, and papers are read on those questions. Any question of interest to agriculturists is acceptable, but partisan politics and sectarian religion are excluded. Professors from the Department of Agriculture and from the Maryland Agricultural College are often invited to the county meetings, which are held quarterly. The order has National, State, county, and local organizations. National and State convocations are held annually. Mr. Alger thinks the grange has been beneficial in making better farmers and better citizens, and that the social feature is of much value. Members make many acquaintances, and there is a beneficial fraternal feeling existing in the order. The Grange holds to the principle of doing business for cash, maintaining that it is better to hire money and pay interest than to go in debt. (113, 114.)

Mr. CLOHAN says the Patrons of Husbandry have been in existence at least 25 or 30 years in West Virginia, and the farmers connected with the organization have improved their methods of farming and of buying and selling. Within 4 or 5 years after the Grange was organized the price of fertilizers was reduced nearly one-half by buying in carloads. The Grange also sold to some extent. Mr. Clohan thinks, however, that the greatest benefits derived from the organization are social and moral rather than financial. The isolation of farmers causes them to become selfish and careless about the appearance of their places. Having a visiting committee resulted in a general improvement; if the Grange committee was going to visit a man's farm he would want to put in about a week getting the briars cut out, fences straightened up, etc. Mr. Clohan also emphasizes the value of the discussions on agricultural methods. (600.)

Mr. HALE says the Grange is doing splendid work in some States where it is working as an educational organization. In Michigan, New York, California, Pennsylvania, Ohio, New Jersey, and all the New England States it is doing grand work for agriculture. Mr. Hale believes there should be organizations of farmers for educational purposes in every community. (391.)

Vermont.—Mr. SPEAR testifies that the Grange in Vermont is more of a social business organization than strictly educational. (405.)

Massachusetts.—Mr. STOCKWELL says the Grange is doing an excellent work in Massachusetts and working in perfect harmony with the board of agriculture. It has done a great deal to add to the intelligence and attractiveness of the farmer's home. The Grange is very largely taking the place of farmers' clubs in Massachusetts, but some of the clubs still remain. Institute speakers are supplied to them where possible. (895.)

New York.—Mr. NORRIS, master of the New York State Grange, says granges have been established in all but about 6 counties of that State. The Grange has organized fire relief associations throughout New York, which have saved the farmers thousands of dollars in safe and economical insurance. (320, 329.)

Mr. Norris says the Grange is not a political organization; partisan politics are never discussed in the order. Its ultimate objects are sociability, fraternity, and intelligence. (329.)

Illinois.—Mr. WILSON, master of the Illinois State Grange, says that organization has taken some action on the subject of public warehouses or elevators, but it has never crystallized into any definite legislation; the organization has never been strong enough. The Grange in Illinois is in a flourishing condition, however, and gradually increasing in numbers. Though not itself in business, the State Grange has made arrangements whereby the farmers can purchase supplies at very satisfactory prices. (250, 251, 253, 254.)

2. National Farmers' Alliance and Industrial Union.—Mr. HANLEY says the National Farmers' Alliance and Industrial Union of America represents a membership of something over 3,500,000 practical farmers and planters in the United States, composed of all shades of political and religious opinions. The main purpose of the union is to look after the interests of agriculture in a nonpartisan way, as manufacturers look after their interests. The farmers are organizing a trust to fight another trust and to resist its attempt to get products for less than the farmers are entitled to. (281, 282, 285.)

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Mr. Hanley testifies that the attitude of every member of Congress on matters of interest to agriculture is subjected to the closest scrutiny of the National Farmers' Alliance and Industrial Union. It is the policy of the society to use all its efforts to secure the nomination on all party tickets of farmers in agricultural communities, and thus assure the election of a representative of agriculture whichever party wins. The society will furnish its members with intelligence covering the acts of representatives in Congress and in State legislatures. (290, 291.)

3. Grain Growers' Association.—Mr. MORAN, president of the National Grain Growers' Association, says that association is composed entirely of wheat growers. The organization encourages the erection of farmers' cooperative grain warehouses, a number of which are already in existence. The association's convention at Fargo in the winter of 1898-99 is described as a "great gathering," the opera house being "filled from cellar to garret." There were lectures by very prominent men, including President James J. Hill, of the Great Northern Railroad. While the farmers formerly looked upon Mr. Hill as one of their worst enemies, from his meeting and talking to them at public meetings, they seem to have changed their views and now look upon him as a friend of the farmer. (709.)

4. Agricultural societies, etc.—Professor DAVENPORT says there is a strong tendency for farmers interested in the same line of agriculture to effect organizations. There are a great many live-stock breeders' associations, bee-keepers' associations, dairymen's associations, horticultural societies, etc., and still other organizations which aim to consider farming as a business. There is getting to be a strong desire on the part of farmers to study economic questions, which can not be considered at farmers' institutes, where political and religious subjects are barred. The National Pure Food Congress and other national gatherings of farmers aim to discuss broad questions involving the economic relations of agriculture to other industries. The discussions are devoid of the bitterness once exhibited, and the breadth of view is encouraging. (268, 269.)

Vermont.—Mr. SPEAR testifies that there is in Vermont a dairymen's association, a Merino sheep breeders' association, a horse breeders' association, a bee-keepers' association, and a maple sugar association, which obtain the best talent for instruction. There are also State and county fairs. (405.)

Ohio.—Mr. MILLER says there were movements made in scientific agriculture by a few prominent agriculturists of Ohio as early as 1832, but they had not unified their work so as to form a State organization until 1846, when the State Board of Agriculture was organized. (608.)

South Carolina.—In Mr. HAMMOND's neighborhood in South Carolina there is an agricultural society or farmers' club which has held monthly meetings, except for a month or two during the war, since 1843. Discussion lasts from 11 to 2. There are two or three men who speak every time, and no one else speaks. It is, however, a pleasant social gathering and profitable. (829.)

Georgia.—Mr. STEVENS says that for nearly 60 years there has been in Georgia a State agricultural society, an organization of the leading agriculturists of the State, also a horticultural society and a dairy association. The object sought is the improvement of agriculture, horticulture, and dairy methods. These societies, together with similar less known organizations, have been very beneficial to the State. (915.)

Louisiana.—Dr. STUBBS says the State agricultural society composed of the farmers and planters of Louisiana holds a week's session annually. The leading farmers and planters take part. (782, 783.)

Dr. Stubbs testifies that the Northern Louisiana Agricultural Society holds its monthly meetings on the grounds of the experiment station at Calhoun, where it has built a hall. People from the adjoining parishes attend the meetings not only for the agricultural benefits, but also to see each other and find out what is going on. Once a year the society holds an agricultural camp meeting on the station grounds, lasting 3 days. There is no charge, and from 3,000 to 7,000 people are on the grounds during the whole time. They pitch their tents and camp out. The adjoining parishes, through their police juries (corresponding to county commissioners) contribute from \$25 to \$100 a year to a premium farm fund. The mornings are devoted to discussion of agricultural subjects by educators or farmers, the afternoons to the examination of stock and other exhibits, and the nights to question boxes. Any planter may ask a question, and it is answered by anyone who can answer it. (780, 781.)

Dr. Stubbs says enormous exhibits are always made at these meetings, and from \$300 to \$500 a year, contributed by the adjoining parishes, is distributed in premiums. Public-spirited citizens add to the amounts given by the police juries, and the merchants give certain premiums. The interest is growing. There are usually from 100 to 200 horses and mules on exhibition, mostly home raised, besides cows, hogs, sheep, and farm products. There is no trotting and no betting. (781.)

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break away from their own store and buy where they can buy cheapest. Mr. George doubts the possibility of organizing farmers thoroughly for commercial ends. He has worked at it for several years, but there are so many interferences that failure seems inevitable. The leaders become ambitious and want offices, or some outside influence makes use of the Grange or the Alliance for its own benefit. (222.)

5. Proposed legislation in aid of cooperation.—Mr. HOLMES is of the opinion that cooperation among farmers would be strengthened by legislation promoting honesty and efficiency of administration. He suggests that incorporated cooperative companies should be subjected to the supervision of a State officer or commission corresponding to that to which banks and insurance companies are subjected, the supervision to consist of examination of accounts and publicity of the business. He believes this would protect many cooperators. Mr. Holmes would prefer that Congress should legislate for the cooperative corporations engaged in interstate commerce, if possible. (160, 161.)

XVIII. GOVERNMENTAL ACTION IN BEHALF OF AGRICULTURE.

A. United States Department of Agriculture.—1. **A national department of applied science.**—Dr. TRUE compares the United States Department of Agriculture to a great agricultural experiment station, both working along the higher lines of scientific research to more practical lines and giving out a large amount of information. (139.)

Professor DAVENPORT quotes Secretary Wilson to the effect that the United States Government interests itself in agriculture in three ways: (1) In collecting information about agriculture as a commercial enterprise; (2) in investigating the principles of agriculture, through the Department of Agriculture and the experiment stations; (3) through the establishment of agricultural colleges in each State. (259.)

Requests for information.—Mr. WHITNEY says the Department of Agriculture is constantly in receipt of requests for information as to where certain settlements of people could be made to grow certain crops, and very frequently the utmost ignorance is shown as to localities and conditions. (860.)

Dr. WILEY says the men who are putting their money into the beet-sugar industry come to the Department of Agriculture to ask where to locate their factories, because the Department has collected the data and studied the subject, not from a monetary, but from a purely scientific point of view. A large factory built in Colorado in 1900 was located by the Department of Agriculture; a great many localities in the State wanted the factory and were bidding for it, but the investors wanted to put the factory in the region that would produce the most business. Some capitalists who desired to locate a factory at Fredericksburg, Va., applied to the Secretary of Agriculture for information, and he advised them not to do so, though very good beets could be grown there, because beets grown 300 miles farther north had a sugar content 4 per cent greater and would make 80 pounds more sugar to the ton at the same expense; their competitors farther north could therefore undersell them in any market. (648.)

Distribution of bulletins.—Dr. HOWARD says that owing to recent Congressional legislation there is only one class of bulletins of the Department of Agriculture which can be freely distributed to all applicants, namely, the Farmers' Bulletins. For the large bulletins the mailing list is restricted, but they can be purchased from the Superintendent of Documents for 5 or 10 cents apiece. The Division of Entomology issues circulars giving concise directions about specific insects. (762.)

Scientific aids in the Bureau of Soils.—Mr. WHITNEY says several college men have agreed to go into the Department of Agriculture at low salaries (\$40 a month) and put themselves under the direction of the tobacco expert employed by the Bureau of Soils. They will go into the tobacco sheds and learn how to handle tobacco, and then will have some training in the laboratories in the principles underlying the manipulation of tobacco. Mr. Whitney predicts that these young men will go out from the Department at salaries of from \$3,000 to \$5,000, as other men have who have been trained in the Department. Men are leaving positions in which they were getting \$1,000 or \$1,200 and coming to the Department for \$40 a month and the experience they can get there. Young men readily come to the Department at such low salaries because they acquire an intimate knowledge of farming operations, of soils, of the production and management of tobacco, etc. Some of the young men from the Department have had offers to go out West and protect lands from alkali at \$2,500 or \$3,000. (867, 868.)

2. Bureau of Animal Industry. (See also *Diseases of animals*, XI B, p. CCLXXI; *Exclusion of American cattle from European countries*, XV B 3, p. CCLXVI.)—Dr. SALMON,

Chief of the Bureau of Animal Industry of the United States Department of Agriculture, classifies the work of that Bureau under eight heads, as follows:

- A. Control of contagious diseases of animals in the United States.
- B. To prevent importation of contagion.
- C. To prevent exportation of contagion.
- D. Meat inspection.
- E. Investigation of diseases and remedies.
- F. Cooperation to prevent disease.
- G. To aid exports.
- H. Collection of information.

Control of contagious diseases of animals in the United States.—Dr. SALMON says the disease particularly in view when the Bureau of Animal Industry was established was contagious pleuro-pneumonia of cattle, which was causing much anxiety among stock raisers and had interfered with exports of live cattle. This disease was completely stamped out by cooperation between the Bureau of Animal Industry and the authorities of the interested States.

The disease second in importance was Texas fever, to prevent the spread of which a quarantine line was established. (See map facing p. 742.) The portion of the country south of this line is permanently infected with Texas fever, and while the cattle in that area do not suffer greatly from the disease, they carry the contagion with them when they are taken to other parts of the country, and so produce fatal outbreaks. The quarantine does not prevent the shipment of cattle by rail for slaughter, provided proper precautions are taken in unloading; and cattle to be sold for grazing are allowed to be shipped from the infected district during November and December without restriction. The result of the quarantine and inspection has been to prevent Texas fever almost entirely in the territory north of the quarantine line, and also to prevent its development among cattle en route to Europe.

Sheep scab, though easily cured, has not been easily understood by sheep owners, and has spread until it has become one of the greatest obstacles to the prosperity of the sheep industry. Inspectors have recently been stationed in the Western States and Territories to prevent the shipment of diseased animals and to supervise the dipping of diseased sheep. Inspection for this disease is also maintained in the principal stock yards.

During the quarantine season of 1899 the employees of the Bureau inspected and supervised the movement of 1,058,484 cattle, and supervised the disinfection of 39,663 cars in which infected cattle had been carried; 1,801,379 sheep were examined for sheep scab, and 626,838 were dipped under the supervision of the inspectors. (742.)

Efforts to prevent the importation of contagious diseases.—Dr. SALMON says that animal quarantine stations have been established at Boston, New York, and Baltimore, where cattle from countries where pleuro-pneumonia has existed are held in quarantine for 90 days; other ruminant animals and swine are detained 15 days. Inspection and quarantine stations have also been established along the Mexican and Canadian borders. Tuberculin tests are also required in order to guard against the importation of animals infected with tuberculosis. Inspectors have recently been sent to Great Britain and to Canada to make tuberculin tests, so that diseased animals may be rejected before shipment. (742.)

Efforts to prevent exportation of contagion.—Dr. SALMON says that horses, cattle, and sheep are inspected before shipment in order to prevent the exportation of contagion. The animals are marked with tags, and health certificates are issued for cattle and horses; it has been impossible to issue certificates for sheep, on account of the existence of sheep scab and the general infection of stock yards and cars. During the fiscal year ending June 30, 1900, 305,182 export cattle, 73,426 sheep, and 37,080 horses were thus inspected. (743.)

Meat inspection.—Dr. SALMON says meat inspection has been established at the principal packing houses to guard against the interstate and foreign shipment of diseased meat. The inspection is made before the animals are slaughtered and again when the carcasses are being dressed. The sound and wholesome meat is marked for identification and certified to in accordance with the law. During the fiscal year 1899-1900 34,737,613 carcasses were inspected.

A microscopic inspection of pork for trichinæ is also maintained, but it is applied only to pork for export to countries which require such inspection. The greater part of the pork products goes to Germany and France. Only 55,809,626 pounds of microscopically inspected pork were exported during the fiscal year 1899-1900, though in some previous years as much as 120,000,000 pounds have been exported. (743.)

The Bureau of Animal Industry makes an agreement with abattoir managers that they will dispose of condemned meat according to the regulations of the Bureau. There is no law authorizing this arrangement, but the Bureau has not been able to

cover the entire country with its inspection, and will not put an inspector into an abattoir unless this is agreed to. When meat once gets on the market it is impossible to know whether it stops in the State where the slaughter was done or is shipped out. A Federal inspector once condemned a tuberculous steer which the Illinois inspector passed. The State commission demanded that the carcass should be turned over to it to be used locally. On investigation it was found that it had been sold to a large canning establishment in Chicago, and it was impossible to say whether it was to be used in Illinois. (745.)

The Bureau inspects all the large abattoirs which purport to do interstate business, but has not been able to cover all the smaller places that do interstate business. The 34,000,000 animals inspected during the year 1899-1900 included about 5,000,000 cattle, 6,000,000 sheep, and over 23,000,000 hogs, by far the greater part of the animals slaughtered for meat. Dr. Salmon does not see his way clear to include in the inspection the large number of small places where 50 to 100 hogs and 10 to 15 cows are killed daily; the Bureau has not been able thus far to get enough inspectors for the purpose, although the appropriations have been as large as could be used to advantage. Dr. Salmon estimates the entire slaughtering of bees at 8,000,000 or 7,000,000 a year. (750.)

Investigation of contagious diseases and their remedies.—Dr. SALMON says that investigations have been conducted with reference to Texas fever, hog cholera, sheep scab, tuberculosis, rabies, and various other diseases.

Texas fever.—All of the mysteries regarding Texas fever have been cleared up, and it is now possible to control it very effectually. The species of tick which causes the disease is being eradicated in many sections, and it is possible to inoculate the cattle needed in the Texas fever district for breeding purposes before they are shipped from the Northern States so that they will resist the fever when exposed to it.

Hog cholera.—The prevention of hog cholera is a problem on which the experts of the Bureau are still working.

Sheep scab.—In the control of sheep scab it very early became necessary to use dips, which will cure the disease without injurious effects, and two standard dips have been adopted.

Tuberculosis.—Investigations have been made to determine the prevalence of tuberculosis, the effect of tuberculin when used for its diagnosis, and the infectiousness of dairy products.

Rabies.—Investigation shows that rabies has become very common in the United States. Not only does it affect dogs, but a large number of horses, cattle, and swine are bitten and die of it. Many persons are also bitten, and a considerable number of them contract the disease. (743, 744.)

Cooperation with State authorities and individual stock owners.—Dr. SALMON says the Bureau supplies State authorities with tuberculin to be used in testing animals for tuberculosis. The tuberculin is manufactured in the laboratory of the Bureau, and is supplied free of expense for official use.

Mallein, for detecting glanders in horses, is supplied in the same manner, both to State authorities and to the War Department. The Bureau has also been making vaccine for blackleg in cattle, which is supplied directly to cattle owners.

Where the Texas fever quarantine line crosses a State or Territory, as in Virginia, North Carolina, Georgia, Tennessee, Oklahoma, Texas, and California, the line is maintained by cooperation between the State authorities and the Federal Bureau. The Federal authorities alone could only make a quarantine line corresponding with the boundaries of States. (744.)

Dr. Salmon adds that Texas fever is almost entirely prevented by this cooperation. The quarantine line is made in the first instance on State lines; then in the case of States which are partially free from infection and which will cooperate with the Federal Bureau, it is put across the territory of the State. That is a great inducement to cooperate. (750.)

Dr. Salmon says the Federal Government has done nothing toward stamping out any disease except pleuropneumonia and sheep scab. It has never gone into the States and condemned animals except in the pleuropneumonia work. That was a great emergency, and in most cases the States made the Federal inspectors State inspectors also, the expenses, however, being borne by the Federal Government. (749.)

Promotion of exports of animals and animal products.—Dr. SALMON says that besides the trichine inspection and the inspection of live animals and meat for export, the Bureau maintains an inspection and control of cattle fittings on steamers carrying animals to Europe. The strength, space, ventilation, etc., and the number of attendants are prescribed. These regulations have reduced the losses in transit tremendously. When the regulations went into effect the insurance upon export cattle was about 8 per cent of their value; it is now considerably less than 1 per cent.

Experimental shipments of butter, cheese, and eggs have also been made, and much has been done to create a demand for these American products, especially in Great Britain. (744.)

Collection of information.—Dr. SALMON says information is collected and diffused in regard to (1) the nature and treatment of prevailing diseases, (2) the characteristics of various animals and the methods of breeding and feeding them, (3) the dairy industry, and (4) the animal industry generally. (745.)

Personnel—Appointment, qualifications, and tenure of office.—Dr. SALMON says all the inspectors, assistant inspectors, microscopists, stock examiners, and taggers are appointed under civil-service rules, and are not changed for political reasons. The microscopists do not have steady work, their work varying with the export trade. The majority of the inspectors and assistant inspectors are quite young, because they are appointed at \$1,200 a year, and also because a young man fresh from college can pass an examination better than one who has been in practice for a time. Dr. Salmon says the establishment of his Bureau has been of advantage to the science of veterinary surgery by the investigation of a number of diseases that were not understood before, and has also been of advantage to the profession by furnishing employment for a number of men. All the inspectors and assistant inspectors are veterinarians. This demand for veterinarians has led in turn to an effort to supply the demand by the establishment of veterinary departments in a good many colleges. (750, 753.)

Attempted bribery of inspectors.—Dr. SALMON says that in one Western abattoir attempts were made to bribe three inspectors of the Bureau. The inspectors had been changed in order to get additional evidence. Action was then brought against the manager of the abattoir, but the judge decided the inspection law unconstitutional on the ground that the meat did not become a subject of interstate commerce until actually in shipment, and refused to apply any penalty. As this was a criminal case it could not be appealed. Dr. Salmon thinks the inspectors are honest and report any improper advances on the part of the abattoir managers, but after a man gets acquainted with the abattoir authorities it is human nature to be lenient with them, and this can only be counteracted by changing the inspectors. (752.)

Inspectors in Europe.—This Bureau has 3 inspectors in Great Britain, 2 for cattle and sheep and 1 who inspects the cattle coming from Great Britain. Our meat exporters are required to pay for the meat inspection in Germany and France. (751.)

International cooperation.—Dr. SALMON says that his Bureau has more or less correspondence with scientific investigators abroad, and hears of everything they do. There is more or less cooperation by exchange of material for investigation, but no cooperation in executive work. (751.)

3. Bureau of Forestry.—Mr. WHITNEY says the Division [now Bureau] of Forestry concerns itself with the problems of reforestation, protection against forest fires, and more rational methods of cutting timber. (878.)

4. Division of Entomology.—Dr. HOWARD says that when he first came to Washington the only appropriation for entomological work was for the salary of the entomologist and one assistant. Now there is an annual appropriation of about \$10,000 for statutory salaries, besides a lump fund of \$22,500, about three-fourths of which is expended in salaries of investigators who may be used in any investigation. The Division has recently investigated a good many special topics, e. g. insects attacking garden crops and citrus crops, beneficial insects from abroad, etc. The work could be done more expeditiously with larger appropriations. Dr. Howard feels sure that a great deal more money could be spent to the advantage of agricultural classes. He cites the increase of the appropriations, however, as showing that the appreciation of the importance of his work is growing. (763.)

A certain amount of work is done in cooperation with State authorities. Dr. A. D. Hopkins, of West Virginia, who has paid special attention to insects injurious to forest trees, has been employed by the Division of Entomology to study the damage done by insects to the forests of Washington, Oregon, Idaho, and Maine. The experience which he gains in this way is of value both to the State and to the General Government. Other State officials have been employed in the same way. There is also an association of all the economic entomologists; each man studies conditions in his own locality and the association brings the information together. (761, 762.)

5. Work of other divisions and bureaus in relation to insects.—Dr. HOWARD says it is almost impossible to get a pure *paris green*, but the Division of Chemistry is analyzing a large number of chemical insecticides. The Division of Vegetable Physiology and Pathology studies the diseases of plants, some of which are spread by insects. The wilt of the melon leaf, for instance, a bacterial disease, is carried by insects. There are many insects which are injurious to animals—the horse bot, the ox warble or grub, the sheep bot, etc.—and they come within the scope of the Bureau of Animal Industry. (762.)

6. Investigations of food and foodstuffs.—Dr. WILEY, Chief Chemist of the Department of Agriculture, says the making of macaroni is a large industry in San Francisco, because of the large Italian and other foreign population, and the Pacific wheat until recently made an excellent article; but complaints were made by the millers that the wheat would not make macaroni as it did a few years ago. The Department of Agriculture, on investigation, found that the content of gluten had fallen so low that the wheat was no longer suitable for making macaroni. Dr. Wiley mentions this as an instance of an investigation which a wheat grower or miller would hardly be willing to undertake, while the Agricultural Department, in the interest of agriculture as a whole, can do a good work by pointing out the causes which produce the depreciation, and if possible suggesting remedies. (643.)

Mr. A. J. WEDDERBURN, corresponding secretary of the National Pure Food and Drug Congress, has made several reports on food adulteration as special agent of the Department of Agriculture. One of these was on the adulteration of butter and butter nostrums, published with considerable addition as *Farmers' Bulletin No. 12*. Another was a report on the adulteration of flour, which was published by order of the Ways and Means Committee of Congress, and was followed by legislation in the early part of the Fifty-fifth Congress compelling the branding and taxing of adulterated flour. (619, 620, 633.)

Mr. Wedderburn also made reports Nos. 25, 32, 40, and 41 of the Division of Chemistry. He refers to the various parts of *Bulletin No. 13* as the most extensive and best literature on the subject of food adulteration in the world. (619, 620, 633.)

7. Sugar-beet seed station.—By authority of Congress a station was established in Nebraska under the control of the Department of Agriculture, with Dr. WILEY as director, to see what influence the soil and climate of the United States would have upon the production of a high-grade sugar beet. The station was continued only 3 years, but it proved that the seeds grown in this country, when planted side by side with imported seeds of the same character, produced beets averaging 20 pounds of sugar more to the ton than those grown from European seed, a perfect demonstration that we should produce our beet seeds here, even if by a costly process. No further attempts have been made by the Government to grow high-grade seed, nor have any private individuals engaged in the business. The Secretary of Agriculture who took office in 1893 did not believe in any kind of paternalism, and he called the growth of seed "paternalism gone to seed," so he abolished the station and sold all the appliances. No further attempts have been made by the Government to grow high-grade seed, but some of the experiment stations are devoting their attention to the matter. (See *Bulletins 30, 33, and 36, Division of Chemistry.*) (642, 644.)

Dr. Wiley thinks it would be very advisable for the Government to continue the work of demonstrating how beet seeds can be produced, but not to produce them commercially. Dr. Wiley is opposed to the free seed distribution of the Government as bad in principle, but declares it the duty of the Government to do a work which no individual will do, because it is without any possibility of pecuniary gain. In the absence of private endowment for such purposes, it is the duty of the Government to promote the interest of agriculture in every line. The development of high-grade seeds in this country is necessary from a pecuniary point of view. We can not afford always to import our seeds; they are worth 10 cents a pound by the cargo, and at least 20 pounds should be planted to the acre. If we have 100,000 acres planted in beets we are sending at least \$200,000 out of the country each year for beet seed, and as the industry increases we must produce the seed at home. (643, 644.)

8. Office of Experiment Stations.—Dr. TRUE testifies that the Office of Experiment Stations is a sort of clearing house for agricultural education and experimentation; it receives the reports and bulletins of all the agricultural colleges and experiment stations in this country and many foreign countries, reviews them, and publishes as much of their contents as may be of general advantage in America. Personal visits have been made to every part of the United States and to many European countries, for the purpose of studying questions pertaining to agricultural education and experimentation. (138.)

Irrigation investigations.—Mr. MEAD gives a list of the publications of the Office of Experiment Stations on irrigation, published since his connection with the Department as expert in charge of irrigation investigations. (1049, 1050.)

9. Division of Statistics.—Mr. HYDE, Statistician of the Department of Agriculture, says that while the necessity of agricultural statistics is unquestionable, there are far greater difficulties encountered in their collection than in the case of any other great department of the world's business, such as mining or manufacturing; partly because of the character of the business, and partly because of its wide distribution and the minute subdivision of operations. These difficulties can not be overcome by indi-

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vidual effort. It was perhaps the greater facility with which a knowledge of the operations of other branches of business is obtained that gained for them their much earlier and more adequate recognition in legislation. The collection of agricultural statistics was for many years the work of an obscure section of one branch of a bureau in the Department of the Interior; but a statistical office early became a necessity to the farmers, and such a branch of the Department of Agriculture has been in continuous operation since 1863. Some of the most general and greatest benefits which have accrued to agriculture have been the result of knowledge obtained from this office. It tends to increase the rewards of industry by augmenting production through the analysis of comparative results by the maintenance of equilibrium between supply and demand, and by contributing to stability of value through reducing the risks of trading to a minimum.

The Division of Statistics issues monthly statements relating to the existing conditions throughout the country, based largely upon data obtained from voluntary correspondents. Besides about 2,750 principal county correspondents, each of whom has 3 assistants covering specified districts, and from 6 to 15 township correspondents in each county, there are 43 salaried State statistical agents, each of whom maintains an independent list of correspondents completely covering the State, and ranging from 20 to 700 in number. The returns are carefully tabulated and weighted according to the relative importance of each county represented before the summarized report is submitted to the Department. From States west of the Mississippi the reports of State agents are telegraphed in cipher.

No individual is allowed to serve upon any two of these groups of correspondents. The tabulated reports of the correspondents and State agents are brought together on the 8th of each month, providing the Statistician with 3 separate estimates, covering the same territory and the same crops, made by separate corps of correspondents, each reporting for a territory with which he is thoroughly familiar. These data, however, are supplemented by the reports of salaried special field agents who systematically traverse the producing portions of the country, procuring all possible data and carefully analyzing the situation, while reports concerning the final yield per acre are further obtained from a very large list of individual producers, each reporting for his own farm. The total number of correspondents of all classes in the crop-reporting service aggregates nearly 250,000.

In tabulation the figures are carefully weighted so that each county and State may have its proper influence in determining the totals, according to its crop importance. The census figures are used as a basis, acreage and production being carried from year to year by the percentage method. Correspondents are asked to report in percentages, comparing the acreage and production with that of the preceding year, and the condition of crops with a normal condition. The yield per acre and prices are reported quantitatively.

The cotton reports obtained in the manner above described are supplemented by returns on special schedules from a list of special cotton correspondents, embracing a very large number of persons intimately concerned in the industry, a complete list of cotton ginneries, and a list of planters, each reporting for his own plantation. This method of investigating cotton production, however, is employed only for making a preliminary statement, the final figures being derived from statistics of movement and consumption obtained from transportation companies, port officials, and mills. This final report can not be completed until after August 31, the close of the commercial cotton year.

Statements relating to live stock and the principal farm crops, except cotton, are made public on the 10th of each month; the cotton statements are issued on the 3d of each month during the growing season. The statements are sent out by telegraph, so that the information may be made available simultaneously throughout the country; and in order that the information may be placed within easy reach of the farmer at the earliest possible moment, printed cards are mailed to every postmaster in the United States within a few hours of the time when the statements are telegraphed, to be posted conspicuously for the information of the public. (840, 841.)

Mr. Hyde says the crop reports might be positively detrimental to the interests of farmers if possessed by only a few persons or restricted to commercial circulars. It is therefore the aim of the Division of Statistics to make the widest possible distribution of the information it receives as promptly and speedily as is consistent with accuracy. The monthly crop reports are mailed as promptly as possible to the State statistical agents and those who report to them; to the county correspondents and their assistants; to the township or district correspondents; to cotton planters; to 1,200 newspapers, mostly rural; and to other persons, mainly farmers. The reports relate at different seasons to the conditions of soil, weather, planting, growth, harvesting, yield, quality, transportation, markets, and prices. They are sent regularly and

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gratuitously to all persons who ask for them, and the demand for them leaves little doubt that considerable value is set upon them. (842.)

Mr. Hyde says that in the promotion of relations of mutual benefit between producers and consumers the Division of Statistics has benefited agriculture to an incalculable extent, and has incidentally benefited all legitimate occupations and all consumers. He predicts that when certain improvements in the crop-reporting service shall have been made, there will be no division of any Government department, and certainly no independent organization, that will be promoting so greatly and so generally the agricultural interests of the country. The benefits conferred upon agriculture by statistics have no more attained their full limits than agriculture has attained its full development. Through the gradual utilization of whatever knowledge of physical conditions and of human needs may be available and susceptible of numerical expression, and the exposition of its relation to agriculture, the statistician of the future will be able to promote the agricultural interests of the country in directions now hardly dreamed of. (842.)

Mr. BUDGE, of North Dakota, is of the opinion that the monthly crop reports have a tendency to apply the rule of supply and demand, and to that extent at least counteract the effect of gambling in grain. He considers the crop reports a good thing. (857.)

Criticisms of the crop reports.—Mr. HAMMOND thinks that speculation in cotton is stimulated by the Government crop reports, and that the stimulation is largely unnecessary and due to the unreliable character of the reports. The Government statements, he says, are mere guesses. They might be made much more reliable. He would have the Department of Agriculture prepare a township map of the cotton belt, showing the amount of the crop in each, according to the most accurate enumeration available. Then he would have paid inspectors make some 8 tours of inspection during the year, visiting certain townships and portions of townships, and by personal inspection obtain actual figures upon which the Department might base estimates of the growing crop. Such figures would be the average number of plants in a given length of row, their average height, the count of bolls under definite regulation, etc.

But after the picking season begins, the gin-house returns would furnish the best basis for a forecast of the crop. Ginneries, like other manufacturing establishments, are being consolidated. The public ginney is superseding the old plantation gin house. The public ginner has no interest in withholding information as to the number of bales turned out, and it is a part of his business to know what the small gin houses in his locality, competing with him, are doing. Unbiased reports could be obtained from him. They can not be obtained from the cotton growers who correspond with the Department. All the cotton goes through the ginneries within a short time after it is gathered. Ginned cotton may be stored for months and years on the plantation and in warehouses, but unginned cotton is not. By December 31 95 per cent of the cotton is ginned; and if the Department would get returns from the gin houses, the size of the crop might be accurately known. (831, 836-838.)

Mr. DYK believes that there is a certain tendency for the bulletins of the Department of Agriculture to overestimate the probable crops, thus tending to depress prices. The time of greatest injury to the crops is that of maturity, so that previous estimates are apt to be unduly exaggerated. (97, 98.)

Mr. MORAN, president of the Grain Growers' Cooperative Association, desires the abolition of the forecast crop reports of the Department of Agriculture, on the ground that it is one of the most disastrous elements in destroying the value of farm products. These reports, he says, can not be accurate until the thrashing machine has done its work. (720.)

10. Section of Foreign Markets.—Mr. HITCHCOCK testifies that the section of foreign markets of the Department of Agriculture depends as far as possible upon the official reports issued by various foreign governments. It also has had the cooperation of the United States consular service and some assistance from special agents employed by the Department of Agriculture to study agricultural conditions in foreign countries. For information concerning our own export trade the office is very largely dependent upon the reports of customs officials published by the Treasury Department. (666.)

11. Introduction of American products abroad.—Mr. SNOW testifies that Secretary Rusk secured an appropriation for introducing American products abroad, but the work was stopped 2 years after its inception, so there has never been a fair opportunity to judge what might have resulted. The agent selected by Mr. Rusk went to Denmark and solicited grocers to handle some American products, and with the United States minister gave a dinner of corn products. Denmark did not then import a pound of American corn products, but from that time there has been an

increasing trade in these products with Denmark, amounting (1899) to 20,000 or 25,000 barrels of corn meal a year, and still increasing very rapidly. (239.) (See also *Increased exportation of grain impracticable and undesirable*, XV D 3, p. CCCXLIX.)

18. Suggested extensions of the Department's work. (See also *Proposed agencies for developing foreign trade*, XV E, p. CCCXLIX.)—MR. MORAN, president of the National Grain Growers' Cooperative Association, says his association desires an official inquiry into the cost of raising grain, cotton, and meat, to be undertaken by the National Department of Agriculture, in order to furnish accurate data as a basis for remedial legislation. (720.)

The association also approves increasing the annual appropriation for the Department of Agriculture to at least \$10,000,000, to enable it to keep pace with the importance of the greatest industry of the country. (720.)

B. State departments of agriculture.—1. New York.—MR. FLANDERS, Assistant Commissioner of Agriculture of New York, says that the New York State Department of Agriculture is an outgrowth of the Dairy Commission, which was created by an act of 1884 to stop the sale of adulterated milk and the fraudulent sale of oleomargarine as butter. An educational branch for the purpose of giving instruction to farmers in making uniform, first-class products was afterwards added to it. In 1893 more work was confided to it and the name was changed to Department of Agriculture. The educational work consists of imparting knowledge to the agriculturists of the State through a bureau known as the Bureau of Farmers' Institutes. The department now stops the fraudulent sale of oleomargarine as and for butter, filled cheese, cheese falsely branded as to quality, stops the sale of impure and adulterated milk, the sale of calves under 4 weeks of age, the sale of sugar made in imitation of maple sugar, the sale of vinegar containing less than 4½ per cent acetic acid, the sale of adulterated linseed oils, and the sale of condensed milk containing less than 25 per cent of butter fat. It is also charged with the enforcement of the law for the suppression or prevention of contagious and infectious diseases of domestic animals and with the suppression or extermination of infectious or contagious diseases of fruit trees. The department also distributes the State bounty for the production of beet sugar and the money appropriated by the legislature for agricultural fairs. (997.)

Mr. Flanders says that New York does not gather any statistics of agricultural products except those relating to butter and cheese manufacture. (998.)

2. Pennsylvania.—MR. HAMILTON, Secretary of Agriculture of Pennsylvania, says the department of agriculture of that State is organized very much as the National Department of Agriculture is. The secretary is appointed by the governor for a term of 4 years. There is a deputy secretary, also appointed by the governor, who is the director of farmers' institutes; a dairy and food commissioner, who has charge of the enforcement of the pure-food laws and does what he can to promote the dairy interests; a forestry commissioner, who has charge of the whole question of forestry; an economic zoologist, who looks after the diseases and insects affecting crops, investigating their habits and making suggestions for the suppression of their ravages; and a veterinarian, who has charge of the suppression and prevention of the diseases of domestic animals, and is a member of the State Live-stock Sanitary Board, which has very large powers in providing for the inspection and quarantining of diseased animals. These are also clerks and other subordinate officers. The secretary has a supervisory control of all the division officers, and is directly in charge of the inspection of commercial fertilizers and the enforcement of the law regulating their sale; he sees that samples are collected and analyzed and the results published. He also has a fund for making special investigations into matters of agricultural interest. The department has 4 correspondents in each county, who report on the prices of farm animals, crop statistics, and farm wages. (347, 349.)

3. Ohio.—MR. MILLER, secretary of the Ohio State Board of Agriculture, says there are no two State departments of agriculture similarly organized. Ohio has perhaps the most complete department of agriculture in the United States, except that of Pennsylvania. The laws of Ohio provide for county and district agricultural societies, which are entitled to send one delegate each to the annual meeting of the State Board of Agriculture at Columbus, in January. These delegates, together with 10 members selected at the previous meeting, who constitute the Board of Agriculture during the interval between the meetings, constitute the Board of Agriculture for the day on which the meeting is held. The president, vice-president, and treasurer are elected from the members of the board, and a secretary and assistant secretary, who may or may not be members of the board, are also chosen. (605.)

Mr. Miller says the law of Ohio requires the State Board of Agriculture to hold an annual State fair or exposition, and to conduct farmers' institutes throughout the State. The statutes also provide that the secretary of the board shall collect and publish agricultural and stock statistics and be the inspector of commercial fertilizers sold and used in the State. (605.)

Crop statistics.—Mr. MILLER says that Ohio has a very complete system of gathering statistics as to grain and stock conditions. There is a very great demand for the monthly reports, all the dealers considering them very valuable and trying to get them at the earliest moment. At times prices are affected by these reports. Mr. Miller thinks they tend to settle prices back to their normal conditions. (615, 616.)

Local fairs.—Mr. MILLER testifies that each local society organized under the laws of Ohio and operating under the rules of the State board draws a per capita allowance from the county funds, and is obliged to file with a board a statement under oath that all its rules have been complied with, and to make a full exhibit of its transactions. The State board does not allow any local society to permit the sale of intoxicants, or immoral exhibitions of any kind, at its fairs. The horse department is supposed to encourage the breeding of improved stock, and as speed is one of the requisites of a driving animal, they show the speed as well as the style and action of the animals; but no pool selling or gambling is allowed. There are also, however, what are called county agricultural societies which are distinct from those organized under the law and receive no allowance from the counties, and over which the State board has no control; these allow pool selling. (607.)

4. *Alabama.*—Mr. POOLE testifies that the Department of Agriculture in Alabama is supported from a tag tax on fertilizers which passes through the hands of the commissioner, and is covered into the treasury. An expense fund of \$500 a month is allowed the commissioner for holding farmers' institutes, for the purchase of seeds, etc. (919, 920.)

5. *Louisiana.*—Dr. STUBBS says the Louisiana State Board of Agriculture and Immigration consists of 1 farmer or planter from each Congressional district, together with certain ex officio State officials, including Dr. Stubbs, the Governor, the president of the agricultural college, the Commissioner of Agriculture, the director of the experiment station, and the vice-president of the board of supervisors of the agricultural and mechanical college. The board has an office in Baton Rouge, from which a large amount of agricultural literature is issued. (782.)

6. *Cooperation between national and State departments.*—Mr. MILLER says the laws have not been framed so as to bring about any considerable cooperation between the national and State departments of agriculture. (607.)

C. Various matters connected with government.—1. *Political representation of farmers.*—*In Congress.*—Mr. HANLEY gives statistics showing that of each 1,000 men in the Union Army in the civil war 487 were from agricultural pursuits. In contrast with this showing he quotes President Clayton of the Farmers' Congress as saying that the farming element of the country had only 35 members out of 444 members in the national House of Representatives and only 1 member in the Senate; that the chairman of the Senate agricultural committee and 10 of the 18 members of the House agricultural committee, including the chairman, were lawyers, and that the only chairmanship held by a farmer was that of the Committee on Ventilation and Acoustics. (290.)

Maryland.—Mr. AGER thinks that the farmers of Maryland are not as well represented in the legislature in proportion to the numbers and interests they represent as other classes. (114.)

West Virginia.—Mr. CLOHAN testifies that the farmers generally control the legislature of West Virginia, but always divide on political lines. (604.)

2. *Bills introduced in the New York legislature.*—Professor BAILEY, of Cornell University, says that 31 special bills in aid of agricultural interests were introduced in a recent New York legislature.

"A large number of these were regulatory and police measures. One made it obligatory upon State institutions to give preference to New York State products when buying supplies. One proposed to make it mandatory upon commission merchants to render to the consignor the names and addresses of purchasers, thereby affording the farmer a check on the middleman. One related to regulations concerning the sale and analysis of feeding stuffs. Eight had to do with adulteration and regulation of articles of food and feeding. Two related to sugar beets. Four were concerned with establishing legal sizes of packages. Four protected the farmer from nuisances, as weeds and rabbits. One sought to check the spread of diseases of bees. One related to the control of commercial fertilizers. Two appropriated money for the furtherance of agricultural education. With the exception of the two bills to promote education, all the 31 proposed measures aimed only to protect the farmer and to give him a fair chance to work out his own salvation. They could not make him a better farmer nor relieve any fundamental difficulty." (1010.)

3. *Fence laws.*—*Ohio.*—Mr. MILLER says Ohio has a law prohibiting the roaming of domestic animals at large, and the farmers are not obliged to use fences. He does not think they will use as much wire fencing as they would if prices were lower, but does not think farmers in Ohio will ever dispense with fences, having been educated from generation to generation to fence their farms. In some localities, however, it is a growing practice to discontinue the building of fences. (615.)

West Virginia.—Mr. Clohan suggests that if the fence laws of West Virginia could be dispensed with, it would do away with the wire trust, as far as barbed wire is concerned; but there is no law in the State governing the animals running at large, and the farmers have to depend upon their fences. (602.)

South Carolina.—Mr. HAMMOND says that the South Carolina farmers succeeded, after many years of effort, in passing a law requiring the fencing in of stock, and the punishing of owners who allowed their stock to trespass on the unfenced lands of others. He regards the result as injurious. Less fencing is necessary, but the amount of stock has diminished, and, since it is no longer necessary to preserve the woodland as a source of fence material, the destruction of the woods has gone on the faster. The fences also acted as barriers to the washing of the hills, and their removal has increased the damage from freshets. Mr. Hammond says one can drive 100 miles in the country without finding a fence. Probably no other civilized country has so few fences as South Carolina. (828, 834.)

4. Regulation of railroads and elevators.—Mr. NORRIS says the railroads and elevator men in the Northwest have unduly taken advantage of the producers, but he thinks that legislation has improved matters somewhat, so that they now ask only about one-half where they used to take two-thirds. (331.)

South Dakota.—Mr. M. F. GREELEY testifies that the people of South Dakota have not much confidence in the railroad commissioners, but are about as distrustful of them as of the railroads; perhaps too much so. The railroad commissioners are elected by the people. Mr. Greeley thinks the railroad commission has tried hard in a good many instances to afford relief, but there are so many changes and complications in the law and so many deferred trials that it does not get very quick or good results. (940, 943.)

5. Salaries of public officers.—According to Mr. JONES, the National Grange believes that for the most part the salaries of local, State, and national officers are more than commensurate with those paid for similar service in private life. The decrease in the prices of commodities has meant practically a large increase in salaries. The burden of taxes is a serious one. It is recognized that owing to the insecurity of public positions salaries should be somewhat higher, but the extravagant style of living of many public officials has a demoralizing effect on the minds of the people. Enough should be paid to secure the best service, and full and faithful service should then be demanded. (33.)

D. Proposed remedial legislation.—(See also under separate heads throughout digest.)—**1. Various proposed reforms.**—Mr. PECK, of Georgia, feels hopeful that much good will come from the Industrial Commission, and says the farmers need help, if anything can be done to help them. Mr. Peck proposes the following remedial legislation: (1) A change in the banking system (apparently to enable national banks to loan money on real estate); (2) an export bounty on all agricultural products; (3) Government ownership of transportation and other public utilities, and, pending that, an amendment giving the Interstate Commerce Commission power to enforce decrees; (4) restriction of land ownership. (462, 463.)

Mr. CLOHAN, of West Virginia, thinks there is no chance to relieve the ills of the farmer by legislation except in the matter of taxation, and perhaps in the control of railroad rates and accommodations. (603, 604.)

2. Regulation of trusts and other corporations.—Mr. BRIGHAM, Assistant Secretary of Agriculture, believes that there should be some regulation of trusts and great corporations. Though many of them claim that the public does not suffer from their actions, there is danger that they will prove oppressive when they get thorough control of the business. The State grants corporations special privileges and has a right to require them to do a legitimate business. State legislation has so far not proved very successful. Federal legislation is desirable, but is probably not constitutional unless the business is in some sense interstate. (26, 27.)

Mr. JONES, master of the National Grange, believes that the liberty of the people, the values of their property and of their labor are put in jeopardy by the growing power of trusts, and that there is need of legislation to restrain them. (31.)

Mr. POWERS says that some corporations are organized by villains to swindle the public. Some trusts are organized in that way, and some are legitimate, as some corporations are, and have honest men back of them. He predicts that the next few years will witness the collapse both of trusts and of small corporations organized fraudulently for swindling purposes and not under public control, causing much greater loss than the exactions of combinations in constraint of trade. (191.)

Mr. Powers says the existing legislation concerning trusts, which is largely prohibitive, is in line with the legislation of England from 1300 to the beginning of this century against organizations in restraint of trade, which was largely the regulation

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of labor. All these attempts in England for 500 years were futile, and in so far as the organization of capital is profitable it will grow in spite of legislation. (192.)

Mr. Powers emphasizes the need of bringing all corporations under complete public control and making their affairs public. The cry against trusts hides the real issue and delays the effort to secure the regulation of corporations until they are so large that the difficulty of regulation is increased. Mr. Powers believes that a large amount of the talk against trusts is fostered by certain classes of men who are promoting them and are interested in making the people believe that there are profits on all the watered stock they issue in order that they may sell that stock. He believes that there are men even in public life interested in trusts who are advocating laws against trusts, and expect to make their money in selling their stock when the collapse comes. Mr. Powers says that most of the State and national laws relating to trusts have resulted in giving trusts other forms, and have assisted the movement for the organization of great capitalistic combinations instead of deterring it. Mr. Powers advocates the regulation of corporations by the States in which they do business, as insurance and banking companies are regulated, though the principle would doubtless have to be modified in the details for each line of industry. Any State has the power to require publicity and to bar any corporation from doing business if it fails to observe reasonable regulations, even if it was created elsewhere. Such regulations would render ineffectual the plan of incorporation in one State for the purpose of getting around the laws of some other State. (191, 192.)

Mr. HAMILTON, Secretary of Agriculture of Pennsylvania, also believes that the legislation that is needed for trusts is the same that is needed for smaller corporations. He does not believe it would be possible or wise to banish the trusts, but believes that there should be legislation which would enable individuals to protect themselves against powerful combinations. The average individual now has no power to gain redress because of the expense of litigation. The State is bound to supply this protection, because it granted to the corporations the powers they possess. (374.)

Mr. STOCKWELL, secretary of the Massachusetts State Board of Agriculture, considers enormous aggregations of capital and the unequal division of wealth a menace to our institutions. He feels sure that immense revenue to the rich by oppression of the poor can not continue. Exorbitant prices curtail the laborer's power to buy, and thereby the mills are rendered idle and the product is unsold. The farmer is the loser.

Mr. Stockwell conceives trusts to be an evil as they are now. The increased cost above what is necessary in any line is unjust, and to that extent a tax. (896, 897.)

It seems to Mr. Stockwell that national legislation should declare that great combinations and giant monopolies are not infant industries to be protected. Mr. Stockwell admits that the protective tariff helps to a limited extent the independent tinplate plants, but says it also puts immense profits into the hands of the trust, by which it can at any time destroy or absorb the weak industries; or perhaps they are allowed to live for the influence they have in sustaining the tariff.

As further remedies for trusts Mr. Stockwell advocates taxation and severe laws against combinations endeavoring to control trade. (897.)

Mr. Stockwell predicts that the large oil company which is trying to compete with the Standard Oil Company will eventually be dissolved, or else work in perfect harmony with the latter, as the so-called competing sugar refining companies have with the American Sugar Refining Company. The results of the contest between the American Sugar Refining Company and the Spreckels interests, and of the coffee war between Havemeyer and the Arbuckles, are not encouraging symptoms, and the fate of the smaller producers in their contest with the Standard Oil Company is not likely to encourage small capital to enter contests with large combinations. (897.)

Mr. HALE, a fruit grower, of Georgia and Connecticut, thinks trusts are a hindrance to trade, but does not think they can create a permanent monopoly. He would not be surprised if they went to pieces of their own weight. The life of trade is the individual back of small concerns. Taking the personal element out takes the life and soul out of business. Mr. Hale would rather have his money in a good farm than in a trust. (399.)

Mr. Hale thinks the removal of the tariff in the case of monopolies, while doing some good, might harm others. He suggests uniform legislation requiring publicity of accounts. (399.)

Mr. DYE, secretary of the New Jersey State Board of Agriculture, says men have a perfect right to consolidate capital for carrying on great industries, but when they attempt to monopolize trade, drive others out of the business, and fix prices, they ought to be regulated. (98.)

Mr. NORRIS, master of the New York State Grange, says the position of the farmers of New York is that anything that tends to make a monopoly of a product should be discountenanced. (332.)

Mr. STEVENS, commissioner of agriculture of Georgia, says it will require great wisdom to determine what regulations should be established for trusts and other forms of monopoly. Combinations of this kind should be intelligently resisted and broken down. There have been no favorable results from existing antitrust laws; something more far-reaching will have to be enacted before favorable results can be obtained. (916.)

Mr. GEORGE, of Chicago, thinks there are two sides to the trust question. Organization of capital is necessary to carry on great enterprises, but unless guarded against the trusts are a menace. Where there is no limit on nature's supply of an article, as in the case of ice, the trust may not have a monopoly, but may prove a great economy. It throws men out of employment, but by thus economizing it may deliver ice for 25 cents instead of 40 or 50 cents a hundred pounds. (225.)

Mr. HOLMES, of the United States Department of Agriculture, defines a trust to be an association of individuals, partnerships, or corporations for the purpose of regulating, maintaining, or raising prices or rates, or for the purpose of regulating the management of the undertaking, in which purpose there is a considerable degree of success, but not necessarily that of a monopoly. A trust, he says, may include farmers, dairymen, and fruit growers, and as a matter of fact these men have been organizing trusts in all parts of the country. (157, 158.)

Whatever legislation is enacted with regard to trusts must necessarily apply to this farmers' movement, which has been beneficial in no unreasonable sense to a large fraction of American producers. These associations are an outgrowth of the economic necessities of the time. They try to do away so far as possible with the middleman, who is one of the leeches of American agriculture. Mr. Holmes objects to the suppression of these agricultural trusts, but has no objection to their regulation. He believes in the regulation of trusts and of corporations, and would like to see their business subjected to publicity. (157-160.)

Mr. GREELEY, secretary of the Board of Regents of Education of South Dakota, advocates giving the Federal Government absolute power over all combinations of capital for the regulation of prices of products and transportation. Such control, he says, would do much to eliminate the feeling from the farming classes that every man's hand is against them, and that they must be sustained by favorable legislation. (941.)

3. Rural mail delivery.—Mr. BRIGHAM believes that farmers all desire the establishment of free rural mail delivery. They need it more than the people of the smaller towns. One man could save a hundred families from going a considerable distance for their mail. (27.)

Mr. STOCKWELL, secretary of the Massachusetts State Board of Agriculture, says free rural mail delivery means bringing the country into quicker, easier, and more direct communication with the rest of the world, and more contentment to the farmer. Mr. Stockwell thinks it strange that rural delivery has been so long delayed, and suggests that 3 to 9 mail deliveries a day in the city as compared with none in the country is a discrimination against the latter; foreigners in the city are served at least 3 times a day, while native citizens in the country, who help to pay for the service, must get their mail as best they can at their own cost and inconvenience. Mr. Stockwell suggests that electric railways be used for carrying the mails to country homes. He regards free mail delivery as the imperative demand of the times, and declares it is the duty of the Government to broaden the service. (904.)

Mr. GREELEY, of South Dakota, predicts that rural delivery will prove one of the greatest blessings and educators ever brought to the back-country farmer; and declares that its value can not be overestimated. It not only helps to make the farmers more content, but enables an excellent class from the towns and cities to make permanent homes in the country—a class who would never do so without regular mails. (944.)

4. Postal savings banks.—Mr. GREELEY, secretary of the Board of Regents of Education of South Dakota, declares that nothing could help the common wage-earner more than well-established postal savings banks. He has known many a man who could not be induced to save a dollar because he knew of no safe way to keep it in small amounts. He has urged not a few young men to save, who promptly showed accounts with banks which had failed, and declared that they would not try again. (944.)

Mr. BRIGHAM says the National Grange is on the whole in favor of postal savings banks. The only objections are that it would take capital out of the community, and that there might be difficulty in investing it. (27, 28.)

Mr. STOCKWELL thinks that there is a feeling among the farmers of Massachusetts in favor of postal savings banks, but that they are not so interested in the matter as formerly. The banking facilities in Massachusetts are excellent. (904.)

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Mr. HAMMOND, a cotton planter of South Carolina, thinks that secure savings banks, perhaps postal savings banks, would do much to educate and elevate the negro. (839.)

5. **Direct election of Senators.**—Mr. JONES says the National Grange is in favor of the direct election of Senators. Since the experience of 1899, when legislation was stagnated in many States, there seems to him to be little need for argument. (32.)

XIX. TAXATION.

A. Indirect taxes.—1. **How the tariff affects the farmer.** (See also *Sheep husbandry*, IX E 3, p. CCXXXVI; *Tariff on sugar*, X 4, p. CCLXXI.)—Professor BAILEY, of the College of Agriculture in Cornell University, says that the protective tariff is of less value to farming than to manufacturing, and this may be one reason of the inequality between the two businesses. What benefit the farmer secures from tariff protection is largely indirect. Yet "it is difficult to believe that protection can be assigned as a cause of any general agricultural decline, for the farmer has shared in whatever general prosperity the tariff protection may have brought." (1011.)

Mr. NALL, Commissioner of Agriculture of Kentucky, is of the opinion that agriculture has not had some of the advantages of legislation that manufacturing and some other lines of business have had—tariff legislation, for instance. He is inclined to believe that the tendency of protection has not been toward the agricultural classes. Mr. Nall has always favored reasonable encouragement to other lines of business, believing that the establishment of factories helps the farmers within reach of them, but he is inclined to think with the people of Kentucky that Congress has gone a little too far in most instances, and that the tariff duties have had a depressing effect on agriculture. (809.)

Mr. POWERS knows of no direct protection to the farmers. To catch certain voters a nominal tariff is put upon certain agricultural products brought in from other countries. It may affect prices a trifle on the border, but generally speaking prices are not affected. In so far as the tariff develops home markets and brings people into the country, however, it is an indirect protection, without which the farmer would feel the world competition under very much worse conditions. Mr. Powers says the tariff on steel rails is of as little consequence to-day, when steel rails are exported, as the tariff on farm products. (176.)

Mr. STOCKWELL, of Massachusetts, says the farmers have been and are generally in favor of a protective tariff for the benefit of the people and to encourage industries, but not to build up oppressive combinations of capital and giant monopolies. The farmers of New England gain somewhat from the protective tariff on agricultural products imported from Canada and the provinces, particularly hay and potatoes; and also from the tobacco tariff. Yet, on the whole, Mr. Stockwell considers protective legislation injurious to the farmer, increasing the prices of what he has to buy and of labor, thus more than offsetting the advantage he receives from a better home market. (901.)

Mr. WEDDERBURN, master of the Virginia State Grange, does not believe in a protective tariff. He objects to "protecting the manufacturer and making the farmer pay the bill and letting him scuffle for his price on his product." If manufacturers are to be protected, the farmer should have an equal protection that would enable him to buy the manufactured products. Mr. Wedderburn does not believe there is any farm product except wool that has any protection. The duty on tobacco does no good because this country exports hundreds or thousands of pounds for every pound imported. Mr. Wedderburn is familiar with the fact that there are tariff duties on certain agricultural products from abroad, but says that in the case of the great staples which are exported, such as wheat, a tariff of \$5 a bushel would not amount to any more than no tariff at all, because the price is fixed at Liverpool, the central market of the world, and the price paid in this country is the Liverpool price less the cost of transportation to Liverpool. The tariff on vegetables practically amounts to nothing, because transportation is so an important a feature. No tariff has been put on cotton, although cotton is imported from Egypt in sufficiently large quantities to materially reduce the price of sea-island cotton. Mr. Wedderburn believes that if one class of people is to be protected all should be. If there is going to be a duty on anything he would favor a duty on long staple cotton. (625-627, 631.)

Mr. Wedderburn complains of the high prices the farmer is obliged to pay for his purchases. He has had to pay for protected products more than their real value, and has had to sell at prices fixed in the world's markets. There has been an advance of 75 to 80 per cent in 2 years in the price of plows, and of every manufactured product, so far as he is able to discover, coming under the the protective-tariff laws.

Everything that is protected has a fictitious value put upon it, and the consumer pays the tax. (624, 627.)

Mr. BURKE, editor of the *Farmer's Voice*, says a purchaser of an article subject to tariff pays the tariff tax, plus interest and profit. (195.)

Mr. BROWN, president of the Georgia State Agriculture Society, thinks that possibly the tariff is too high, but that it alone can not have any great effect in depressing agriculture in Georgia. The greater part of the goods which the Southern planters buy are manufactured in this country; many of them are not subject to tariff. He believes, however, that the tariff on cotton manufactured articles imported from Europe is really paid by the planters in this country. (60, 64.)

Mr. HALE, of Georgia and Connecticut, believes that in all our tariff laws, with the exception of the McKinley tariff, protection was given to everyone else at the expense of the farmer. Under the McKinley law the protection was more equal. The farmers are willing to stand on an equality with the others. If others have protection they want it also. (397.)

Duty on hides.—Mr. GHEELRY, of South Dakota, thinks the duty on hides helps the cattle raisers materially at present. (942.)

Sugar and rice.—Dr. STUBBS, says the sugar crop of Louisiana amounts to only about one-seventh of the consumption of the United States, and the present rice production of Louisiana, Texas, Carolina, and Georgia is less than half the consumption of the country; hence the tariff is of great value to both sugar and rice producers, though it will be years before they can hope to supply the home demand. (773.)

Mr. POWERS believes that if the import duty were removed from sugar the people would use more sugar and get it cheaper. (177.)

Protection to California products.—Mr. NAFTZGER testifies that the Mediterranean fruits pay a duty of 70 cents a box and 30 cents freight, putting them practically on a par with the California fruits, which have to pay \$1.05 a box for freight; there is a differential of 5 cents against the California, and 30 cents additional if they are refrigerated. The Californians claim that the lemons grown in that State are better than the Mediterranean lemons. They are seedless, while the foreign fruit has a great many seeds. A chemical test was recently made and decided in favor of the California lemons. The Mediterranean lemons have rather a thicker skin because they are not cured; the California lemons are sweated down after they are taken from the trees. They run on an average larger than the foreign lemons. The Italian lemons are often shipped much smaller than 300 to the box. (959.)

Mr. NAFTZGER thinks the existing tariff duties should not be reduced, either by legislation or by treaty. The existing duties give California an advantage on several items, such as wines, olives, raisins, prunes, walnuts, and almonds; but the reduction proposed in the French treaty would work a hardship to the fruit interest, as would also the Jamaica treaty. (965.)

So far as Mr. TURNBULL is informed, the people of California do not wish the tariff to be lowered in any case, by reciprocity treaties or otherwise. (987.)

2. Protective duties proposed for the benefit of agriculture.—Mr. COLES, a farmer and dairyman of New Jersey, considers it necessary to give agricultural products all the protection possible. He mentions wool and hides in particular as articles on which a higher tariff is needed. He says that between three and four hundred million dollars' worth of agricultural products are imported which should be produced in this country. Nearly everything that can be grown in this country should be encouraged as manufactures have been encouraged, and this would help to diversify agricultural products. (123.)

Hemp.—Mr. NALL says the farmers of Kentucky complain of the competition with foreign-grown hemp, manila, sisal, and jute being admitted free of duty. Hemp is grown in the blue-grass region, but the product has fallen from 21,000,000 pounds to 4,000,000 pounds. Mr. Nall does not think that all the falling off is due to the competition of foreign hemp, because burley tobacco took up a good deal of the hemp land; but the farmers complain that they can not compete with the Sisal hemp and Manila hemp or jute and jute butts, introduced free of duty. The reduction from 21,000,000 to 4,000,000 or 5,000,000 pounds has not increased the price, but has probably kept it from falling flat. The Kentucky-grown hemp went to New York, Boston, etc., and was used for cordage and domestic twine. Mr. Nall thinks the demand was diminished by the invention of iron ties for cotton. A great deal of hemp tow was once used for making cheap twine and rope for binding wheat and baling cotton, but it is not now used for those purposes. There has been a substitution of Sisal and Manila hemp, especially for twine binders; and jute is used for twine and jute butts for bagging. For binding twine the Kentucky hemp has been superseded by the Sisal, out of which a cheaper twine is made. To this, Mr. Nall thinks, is partially due the diminished hemp acreage of Kentucky, affecting injuriously not only the

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the support of the county and township governments are levied upon real estate, horses, and cattle. There is also a small tax on dogs which goes to reimburse persons whose sheep have been killed, when it is impossible to find out whose dog did the killing. The State returns to the county three-fourths of the tax received on money at interest. Property is assessed by elected assessors, and the valuations revised by the county commissioners, after opportunity for appeal. The township boards of road supervisors, school directors, and overseers of the poor fix the amount of tax to be levied for roads, schools, and care of the poor, respectively, so that the township is maintained by taxes levied by its own officers. The tax for ordinary school purposes is limited to 10 mills, and there is also a limit for the road tax, but the road supervisors can get around it by running the township into debt. Real-estate assessments are made once in 3 years. (352, 354.)

Mr. Hamilton testifies that the assessment of real estate in Pennsylvania varies from one-fourth of the value to more than the property is worth, according to the judgment of the assessors. He has known of property divided by a township line, one part of which was assessed twice as much as the other, though they were as nearly alike as possible. The tax rate differs according to the pleasure of the several township boards. It may reach 30 mills, or it may be only 3 or 4 mills. The county rate is fixed by the board of county commissioners, and is usually from 3 to 5 mills. The State taxes are fixed by statute. (353.)

Mr. Hamilton testifies that the officers who make the assessments are elected, and frequently their intention as to raising or lowering the valuation is known before the election. In many cases it is understood that a candidate, if elected, will lower valuations, or if there are large property interests in a locality held by comparatively few persons and the large majority of voters hold small amounts of property, the chances are that the pledge will be made that values shall be raised.

Mr. Hamilton believes that 3 assessors, selected because of their good judgment and integrity, should be appointed in each township by the court. Then the assessments throughout the county should be revised and equalized by a body composed of one man from each township board of assessors instead of by the county commissioners, who have no knowledge of the situation in the various localities. There should be a right of appeal to the board of county commissioners with opportunity for the aggrieved taxpayer and the assessors to be heard. (357.)

Ohio.—Mr. MILLER, secretary of the State board of agriculture, says that in Ohio values are fixed by township and district assessors. Real estate is assessed once in 10 years and personal property annually. Some very incompetent men are elected assessors, and they doubtless favor their friends sometimes. Appeal lies to the county board of equalization, but appeals are not made, as a rule. Many owners of intangible property refuse to answer the questions of the assessor, in which case the assessor makes such return as he can from the information he can secure and adds 50 per cent as a penalty. Most owners of intangible property let this stand, but often a property owner makes affidavit that it is too high and makes his own returns, which is in many cases accepted. A tax commission recently found that a very considerable part of the intangible property was not placed on the tax rolls. Mr. Miller thinks the trouble is laxity in the execution of the law. (611, 612.)

Mr. Miller says that Ohio has for a few years past had a tax-inquisitor law. The counties are authorized to employ a man to investigate the holdings of the citizens of the county, and if he finds that they have been escaping taxation report the amount to the auditor. Large amounts of property have been discovered through these inquisitors. Mr. Miller thinks Ohio has no State inspection of taxes, but there is a State Board of Equalization. (612.)

Illinois.—Mr. BURKE testifies that the taxation of personal property in Illinois is governed by a new law. The taxpayer renders his own statement on a schedule, subject to revision by the board of review. Taxation of personal property was increased about 46 or 47 per cent by this law. (195.)

Mr. Wilson testifies that land is assessed in Illinois every 2 years, and new improvements may be added each year. (248.)

North Dakota.—Mr. FROM says that in North Dakota property is valued by the assessor, and then a levy is made to meet the expenses of the different counties. The tax is supposed to be on the actual value of the property. It is upon the assessed value, which is a great deal below the actual value. (791.)

South Dakota.—Mr. GREELEY says the aim in South Dakota seems to be to assess property at about two-thirds the value, or possibly less. The rate of taxation is fixed by the county board, and the assessments are equalized by the State Board of Equalization. (935.)

Maryland.—Mr. AGER says there is no regular period for general reappraisal in Maryland, and the only general assessment within 20 years was that of 1897. During the regular assessments only new improvements are noted.

Mr. Ager illustrates the working of this system as follows: "When I first came to Hyattsville I had 20 cows and 3 horses. The treasurer came and took down the amount of stock I had. I paid tax on that for 10 or 15 years, while I had double that amount a good deal of the time." (111, 112.)

Virginia.—Mr. WEDDERBURN thinks the State tax in Virginia is between 40 and 50 cents on \$100. The total tax in Fairfax County is about \$1.30; in Alexandria County it is in the neighborhood of \$2. The county tax is levied by the board of supervisors, all of whom are farmers in Fairfax County. Property is assessed once in 5 years, very reasonably and low. The State tax is equally borne by all the property of the State; no discrimination is allowed under the constitution. A committee recently sent out circulars for information about the amount of taxation levied in the various counties and townships of Virginia. Returns were received from about 33 counties, showing that the taxes for county and township expenses in these counties were very nearly \$1,000,000—nearly three times as great as in any 33 counties in North Carolina. Mr. Wedderburn thinks there are too many officeholders. At Fairfax Court-house there is a county treasurer, a board of supervisors, magistrates, 2 assessors, and other officials. (621.)

Mr. Wedderburn thinks taxation the burning question in Virginia, and the real reason for calling the constitutional convention. He thinks the convention would not have been called on account of the suffrage question alone. The strongest white district went strongest against the constitutional convention, and the strongest black district went strongest for it. (621, 622.)

West Virginia.—Mr. CLOHAN testifies that the rate of State taxation in West Virginia is 35 cents on \$100. The county rate is fixed by the county court, composed of three elected Commissioners. In Berkeley County the county tax is 45 cents. The heaviest tax is a district-school tax, fixed by the school commissioners. There is also a road tax laid by the county court but levied on the districts according to their needs. One district may pay 10 cents, another 15, and another 20. (599.)

Kentucky.—Mr. NALL says the Kentucky rule is to value property for what it would bring at a fair voluntary sale. The assessor is looked after by the board of supervisors in each county, and there is also a State Board of Equalization. Until recently the railroads have largely escaped taxation, but since they have been put into the hands of the Railroad Commission there is not so much complaint on that score. (811.)

North Carolina.—Mr. WHITE thinks the taxes are fair and equitable in North Carolina. There is an income tax on salaries and wages which some have grumbled about, but Mr. White thinks it nothing more than right. (432.)

Tennessee and Mississippi.—Mr. NORFLEET testifies that the rate of taxation is over 3 per cent in Memphis and about 3 per cent on agricultural lands in the Delta. In the front counties about 17 mills constitute the levee tax, and the remaining 13 the State and county tax. Open land is assessed at \$8 to \$12 per acre. There is also an acreage tax of 5 cents an acre. (489.)

Desert lands in California.—Mr. NAFZGER testifies that the desert lands of California are valued at an extremely low rate, but he thinks they are usually taxed in proportion to their value with other property. (951.)

2. Taxation of mortgages.—*Vermont.*—Mr. SPEAR testifies that there has been a great deal of dissatisfaction in Vermont during the past decade over the taxation both of mortgages and of mortgaged real estate. This double taxation is a heavy burden upon the farmers who are in debt for their holdings. (407.)

West Virginia.—Mr. CLOHAN, a farmer of West Virginia, declares emphatically that taxation is the most serious matter the farmers have to contend with. The practice in West Virginia is to make real estate bear the whole burden of taxes. If a man buys a farm for \$10,000 and puts only \$2,500 into it, he must at once pay taxes on the whole value of the farm. When the farmer borrows money he has to pay 6 or 7 per cent, because the lender will tell him he has to pay 1½ cents county tax, and must put up the interest to cover that amount. As a matter of fact, though the laws call for the listing of evidences of indebtedness, they are not listed. The assessor is generally a candidate for reelection, and does not want the enmity of the money lender, who is generally an influential man. When the assessor finds the creditors they refuse to list their notes and securities, and he can not levy a tax on notes and mortgages unless he can see them. When the assessor comes to Mr. Clohan's farm, Mr. Clohan says to him: "There are the horses, there are the cows and everything; you value them;" but a man does not open his desk and show his mortgages, notes, and bonds. The farmer pays the tax on real estate, and pays the tax over again to the lender. (598, 599.)

Ohio.—Mr. MILLER, of Ohio, says "the owners of the intangible property actually own their property, while the man who pays the taxes on his real estate is paying for the privilege of calling it his own at some future time." (613.)

3. Taxation of corporations.—Exemption of the telephone monopoly in Massachusetts.—Mr. STOCKWELL testifies that by the charter granted by Massachusetts to the telephone company many years ago the stock is exempted from taxation to the amount of about \$50,000,000. The company protects its monopoly by covering the ground so that nobody else can get a foothold. The ground is so well covered that competing companies can not offer sufficient inducements so that cities will allow a second line of appliances. A competing company has been laying wires in Boston, but when they attempted to get the same right in Worcester the conditions were so hard that they had to give it up. Mr. Stockwell thinks it the duty of the State or nation to cease to protect any corporation which receives an undue proportion of the profit of that protection and does not share it with the people. Mr. Stockwell's impression is that certain industries export products and sell them abroad at a lower price than at home. In such cases he says the tariff should be taken off, and if exemption from taxation has been granted it should be revoked. (897, 898.)

Assessed value of the property of corporations in New York.—Mr. DEVO, Secretary of the Board of Tax Commissioners of New York, says that he has succeeded in separating the assessments of the property of corporations from other assessments, and finds the proportion surprisingly small, ranging from 12 per cent of all assessed values in New York County to 31 per cent in Schenectady, and averaging 14½ per cent for the State. This includes steam railroads, 3.47 per cent; street railroads, 1.6 per cent; telephone and telegraph companies, 0.25 per cent; gas, electric-light, and power companies, 1.15 per cent; banks, 2.73 per cent; and miscellaneous, 5.33 per cent. (1000.)

Mode of assessment in Ohio.—Mr. MILLER testifies that in Ohio each railroad corporation is assessed by a board composed of the auditors of the counties through which the railroad extends. The practice is to assess the company so much a mile for the main track, so much a mile for side tracks, so much for termini and improvements, and so much a mile for rolling stock. Mr. Miller does not think this is an equitable method of taxation as it is conducted, and believes in a general rather than in a local method of taxing railroads. He thinks the Nichols law applied to railroads would be very much more successful than the present law. (613.)

The Indiana plan.—Mr. AARON JONES says the railways in Indiana have always been taxed on the value of their property, but about 10 years ago the new plan was begun of having that value ascertained by the State Board of Equalization and apportioned among the separate localities. The effect has been to increase the railway assessments from \$66,206,000 to \$161,039,000. The actual selling value of the visible property is sought by taking account of the market value of the capital, the earnings, etc. Every minute item of property owned by the railways must be scheduled. The witness considers this system just and satisfactory.

Palace cars, telegraph and telephone lines are assessed in essentially the same manner, and the assessment has been largely increased by doing so. (35, 36.)

Mr. BRIGHAM says the valuation of railways in Indiana is about double per mile that in Ohio. Pennsylvania raises practically all its State revenue from corporations; there is no direct State tax on land. (16.)

4. Occupation tax in Pennsylvania.—Mr. HAMILTON says there is an occupation tax in Pennsylvania, levied under the assumption that the constitution forbids taxing except under a classification, so that the tax must be low enough to make it possible for the most impecunious lawyer, for instance, to pay it. In a certain county lawyers are put down at \$250, and if the rate is 1 mill the lawyer is taxed 25 cents, though his income may be \$10,000 or \$20,000. In this county physicians are taxed at \$200; ministers at \$75; county superintendents at \$250; professors of colleges and academies at \$250; superintendents of high schools at \$200; common-school teachers at \$50; merchants at \$200; shopkeepers at \$100; clerks at \$100; mechanics at \$100; apprentices at \$50; bosses and foremen at \$75; civil engineers at \$250; surveyors at \$150; bank presidents at \$400; bank cashiers at \$250; county officers at \$250; president judge at \$300. The law gives the president judge a salary of \$4,000. Farmers do not pay an occupation tax in Pennsylvania. (353.)

Mr. Hamilton thinks it would be possible under the constitution of Pennsylvania to classify occupations according to the amount of business done or the income. (355.)

C. Taxation of agricultural property.—1. Overtaxation of the farmer.—Mr. POWERS says there is no question that the farmer, of all classes in the United States, has the least chance of escaping taxation. In New York State the city people pay, in proportion to their wealth and ability, only one-third of what the country people do; and it is but just that large sums are raised in the cities to support the country schools. Taxation in cities involves heavier expenses than are common in the country, but the people paying them have special advantages. There are many

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so-called taxes in cities—as for sidewalks, water, and sewers—charged against the abutting property, which are really not taxes, but investments under the name of taxes. (185.)

Mr. GEORGE, of Chicago, thinks that the farmers of the United States pay considerably more than their fair share of taxes, their visible assets being subject to assessment at all times. (221.)

Mr. W. H. BURKE, editor of the *Farmer's Voice*, says that in cities property is hidden, but the property of the farmer is visible. An average Chicago man worth ostensibly \$10,000 will spend more money in a month than a farmer worth \$10,000 will in a year. He will have more personal property than the farmer will, but much of it will be so minute as to escape the assessor. Even where property can not be hidden, Mr. Burke thinks there are good grounds for believing that assessors are influenced in their estimates. He has known the property of the Pullman Car Company to be assessed ridiculously low. (194.)

Referring to a series of articles published in the *Chicago Times* early in 1897, showing inequalities and discriminations in assessments, Mr. Burke says the assessed valuation of Chicago at that time was about \$77,000,000 less than in 1878, when the population was only about 350,000. (200.)

Mr. Burke cites a pamphlet by Mr. Lawson Purdy as authority for the following statement: In Monroe County, N. Y., containing the city of Rochester, the assessed valuation of real estate is more than double that of Oneida County, though the personal property assessment in Oneida County is nearly double that of Monroe County. In the four city counties of Missouri personal property amounts to 15½ per cent of the total assessed valuation, and in the remainder of the State 29½ per cent. In St. Louis personal property amounts to 14½ per cent of the total valuation, and in Camden County, a typical farming county, it amounts to 37 per cent. Mr. Purdy is quoted as saying that it does not appear that taxes on personal property benefit the farmers in Missouri. (193, 194.)

Professor DAVENPORT says all the farmer's property is open to inspection. The assessor is one of his near neighbors, who knows exactly how much land and personal property he has, and what it is worth. As an assessor, Professor Davenport has succeeded in finding a \$100 note, which would be ridiculous in a city. He says it is much more difficult to get at the personal property of any other profession than that of a typical farmer. (226.)

Mr. NORFLEET, a cotton factor of Memphis, thinks there is not much ground for the claim that real-estate taxes are heavier in the country than in the towns, but the personal property of farmers is more exposed, and they pay more fully on what they own than those pursuing other occupations. Speaking with special reference to Mississippi and Tennessee, he says property is assessed on the same basis in city and country, at about 40 to 60 per cent of the value (perhaps about one-third in some instances), according to the conscientiousness of the owner and his particular friendship with the assessor. (489.)

Professor BAILEY, of Cornell University, thinks the farmer is taxed relatively too high, but the amount of excess is so small as compared with the earning power of the investment that it can scarcely be regarded as contributing, in any large degree, to agricultural decline. (1011.)

New England.—Mr. BACHELDER believes that farm property in New England is assessed at higher rates than city and village property. Many farms remain on the tax list at rates fixed many years ago, when they were more fertile and valuable. (43.)

It seems very clear to Dr. CROWELL that the rate of taxation on farms in many States is too high. In Massachusetts farm land is assessed at \$1,000 which will sell for \$600 or \$700, so that the rate of taxation is much higher than where property sells a good deal above its tax valuation; consequently people are not going to invest in rural real estate. Dr. Crowell thinks real estate, especially rural real estate, is bearing too large a burden of taxation. (341.)

Mr. STOCKWELL says the farm is seen and taxed; there is no escape; but probably from 1,500 to 2,000 millions of intangible wealth escapes taxation in Massachusetts. If this were remedied it would lower the taxation of the farm very greatly. The double burden falls on the productive industries, and most heavily on the farmer.

The school tax is not entirely for the benefit of the town, but of the State, and the roads are not entirely for the benefit of the town, but of the traveling public; yet the taxes for these purposes are on the town. The removal of industries, population, and wealth makes this a heavy burden.

Mr. Stockwell says Massachusetts has the best corporation laws of any State, and honest returns are enforced; but Massachusetts people desiring watered stock or a little fraud step into the adjoining States and come back with a Maine, Delaware, or the New Jersey charter. So Massachusetts business is carried on in Massachusetts

cities and towns free from control of the State tax commissioner, and contributing nothing, though receiving all the advantages and protection of the laws of the State.

These, Mr. Stockwell says, are three of the ways in which taxation has fallen very heavily on the farmers. (888, 889.)

Mr. Stockwell adds that in the western part of Massachusetts the ordinary farmers dependent upon their farm crops have been found to be really oppressed by taxation, because wealthy residents demand so many improvements and the town is obliged to do so much. The farmers are proud of the town, but want some relief from the taxation that is driving them away. Lenox is a great summer resort for wealthy New York people, but Mr. Stockwell thinks the real estate valuation has not increased in consequence of their improvements as it should have done. (889, 890.)

Mr. Stockwell testifies that real estate in the farming communities of Massachusetts is in some cases valued for more than it would bring at forced sale. (889.)

Mr. Stockwell says there is no greater crime in Massachusetts than the exemption of the rich and the double taxation of the poor. There are indirect taxes—tariff duties and trust monopolies—and direct taxes caused by the exemption of \$15,000,000 of wealth. Mr. Stockwell quotes a well-known gentleman as saying, "The poor always have paid the taxes and they always will." (889, 898.)

New York.—Mr. Devo, secretary of the New York Board of Tax Commissioners, says that the only subdivisions of his State for purposes of taxation are cities and towns. There is no separation of farm lands from village property. While the local assessors generally declare that they assess property at its full value, this is not accepted as a fact. The State board equalizes assessments for State taxes, according to the proportions which the assessed values bear to the real values, as nearly as they can be ascertained. It is the opinion of the commissioners that farm property is generally assessed more nearly at its real value than city property. The reason is believed to be that farm lands have greatly declined in value. It is also believed that property worth, say, from \$1,000 to \$5,000 is assessed most nearly at full value, and that the more expensive buildings, both residences and manufacturing or business property, usually bear the lowest relative assessment, both in the city and in the country. (990, 1000.)

In reply to a question concerning the taxation of agricultural property, Mr. NORRIS, master of the New York State Grange, expresses the opinion that landed property pays an unfair tax as compared with personal property, real estate being visible, while money is put into the form of bonds or concealed. He thinks the fault is largely in the enforcement of the law. (326, 331.)

Mr. Norris says there has perhaps been as much discussion of taxation in the granges of New York as of any one subject. The farmers are of one mind that land pays an unfair proportion of the taxes. Some are in favor of exempting personal property, but others favor taxing it. (329.)

Mr. BURKE refers to an inquiry into taxation as affecting farmers in four counties of New York, instituted by the United States Department of Agriculture in 1896, which showed that the farmers bear a large proportion of the taxes. (193.)

Mr. WIERING does not think that the farmers in New York are disproportionately taxed. The average farm of 100 acres pays a tax not exceeding \$25. He does not think that this amount can make the difference between good times and hard times to the owner of such a farm. (994.)

Professor BAILEY, of Cornell University, quotes a letter from a representative New York farmer, in which it is stated that an ordinary farm of 100 acres has to pay taxes amounting to not far from \$70 a year. (1007.)

New Jersey.—According to Mr. DYE, secretary of the New Jersey State Board of Agriculture, the methods of assessing property in different parts of New Jersey are lacking in uniformity, although the State board of taxation, which was recently established, had an important influence in reducing this evil. Practically all farm property is assessed while other forms of property escape. The taxation of corporations of different kinds has been sufficient since 1884 to cover the expenses of State government, except the State school tax, but the local taxpayers do not profit by this tax. There is a project now on hand, in view of the increase of State taxes, to distribute part of them among the counties. The average tax rate for all classes of governments in the State in 1897 was \$1.78 per \$100. In the urban counties, where the average assessment is 60 per cent of the true value, the rate was \$2.13; in the agricultural counties, where the property is assessed at full value, the average was \$1.26. (90, 91.)

Mr. COLES considers the tax laws about as equitable as they can be made, but complains that some officers do not do their full duty in executing them, so that sometimes taxes are not properly equalized. Everything in agriculture can be seen by the assessor, while in some other occupations the property can be concealed. (128.)

Mr. KETCHUM, of Mercer County, N. J., says the valuation of farm land in that county is higher than that of city property. In some instances a hardship results

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from the farmer's own persistence in putting too high a value on his property. He does not reconcile himself to the shrinkage in values, especially if his farm is for sale. On the other hand, some farm land is occasionally rated too low by the assessor, especially if he wants to be reelected. The rate of taxation of agricultural property varies from \$1.38 to \$1.45, as compared with about \$2.50 in Trenton. (134.)

Pennsylvania.—Mr. HAMILTON believes that real estate holders, including farmers, are taxed out of all proportion to other classes of business men in Pennsylvania. Mr. Hamilton thinks that real estate bears too much taxation, and that some other things are taxed too lightly. With the development of business most of the people are employed and receive salaries, some of them very large, and the amount of their tax is almost nothing. Mr. Hamilton knows of men who get salaries of \$5,000 a year whose road tax is 75 cents, while a common day laborer in the same community pays a road tax of \$1.80. There are judges of courts who get salaries of \$4,000 or \$5,000 who pay a tax of \$300, while a man who owns a house worth \$2,000 or \$3,000 will be taxed upon its full value, though he may have no income whatever and may be in debt for the property. Merchants who do a large business pay almost no tax on their occupation. The tax on a farm property worth \$6,000, at a 10-mill rate, is \$60 a year, though the farmer's income from the investment, after his own labor is paid for, would perhaps not be over \$300, and if there is a failure of crops the tax must come out of the original property or other funds. A man with a salary of \$5,000 a year would pay only \$3 as a 10-mill tax on his occupation. The salaried man who invests his salary in a mortgage on a farm pays a 4-mill tax to the State, and if he puts his money into a farm he will pay, on an average, a 10-mill tax. The effect of the difference is to keep men from buying farms. Mr. Hamilton says it was equitable at the origin of the Government to make real estate bear the burdens of government, but the system has not been adjusted to meet new conditions. (355, 356.)

Mr. Hamilton says that in 1890 Secretary Edge, of the Pennsylvania State Board of Agriculture, collected statistics of actual sales of farm property in the State and the tax paid by each piece of property. The number of farms returned was 556 in 48 counties; they had been sold for \$4,225,805, and paid a tax of \$40,282.65. The rate, not deducting the tax on farm animals, which is comparatively insignificant, was 9.50 mills, and after deducting the personal property was 8.66 mills. Mr. Hamilton at that time made an examination of a county, omitting the boroughs, and found that the taxation on the actual value of the property, including horses and cattle, was 9.9 mills. In 1891 the secretary of the State board of agriculture collected statistics upon 8,081 farms, the estimated value amounting to \$51,525,929 and the taxes paid to \$440,317.96. In 1894 the property on the list was increased to 19,719 farms, and in 1895, 24,734, the total value being \$151,529,458 and the total tax \$1,259,847.17, or 8.3 mills. Examination by a different method showed that real estate in Pennsylvania, in country and city, at that time paid about 15 mills. (354.)

Ohio.—Mr. MILLER, secretary of the Ohio State Board of Agriculture, says the laws of Ohio require that all property shall be taxed at its actual value, but it is generally understood that property is not assessed for all it would bring under the most favorable conditions. Mr. Miller has no doubt that the farmers of the State pay an undue proportion of taxes, because securities are not placed on the tax list, while the farmer's property is exposed to view and can not escape the assessor's eye. (611.)

Mr. BRIGHAM believes that farmers pay relatively much more taxes than other classes. The real estate itself in the country is usually assessed higher than in the cities, especially where the same officer or authority makes the assessments in both. Certain wealthy taxpayers in the town usually see to it that a man is chosen as assessor who will be inclined to favor town property.

Personal property of farmers is assessed at from 40 to 50 per cent of its true value in Ohio, while other forms of personal property, merchandise, bonds and mortgages, bank property, etc., probably are not assessed above 15 per cent. This is not because the farmer is more honest, but because he can not secrete his property. It is not pretended in Ohio that any property is assessed at its full value; the assessment at the best is only from 40 to 75 per cent. But the farmer's personal property is almost all visible, and he is required to swear to a minute statement of his possessions. The assessor knows fairly well the value of the different articles. The merchant, on the other hand, gives a rough sum for his assessment, and usually very much below the true value of his stock, and the assessor is incompetent to correct it. Manufacturers of Ohio, under the law itself, were formerly exempt from taxation on their products on hand. It was shown a few years ago that some of the strong State banks were assessed at less than \$2,000. National banks can not escape so largely, since their books are open, but the courts in certain cases have held that their property could not be assessed at a higher rate than property around them. (14, 17.)

Indiana.—Mr. JONES confirms the opinions of Mr. Brigham as to the relatively excessive taxation of agricultural property, referring especially to the State of Indiana. He adds that the schedules of questions used in assessing personal property apply especially to farm property and are less detailed as to other classes. A uniform method of assessing personal property is desirable. Much evasion of taxation is justified by the taxpayers on the ground that assessments are so unequal. If a note is turned in at all it will naturally be at its full value, while merchandise, etc., are confessedly assessed much below real value. Taxes would be lowered by one-third if all property were assessed. Wealthy men do not always escape taxation, but securities of different kinds, which they largely hold, are frequently exempt from taxation or are not discovered.

The farmers are often without representation on State boards of equalization, and yet those boards are more familiar with the value of farm lands than of city property, and assess it too high. (34, 36.)

Illinois.—Mr. WILSON, master of the Illinois State Grange, says the farmers of Illinois are not satisfied with the system of taxation. The farmers are paying the greater part of the taxes—probably 78 or 79 per cent. The farmer can not conceal any property even if he is so inclined; it is all out under the assessor's eye. The farmers are not great money lenders, and their surplus is generally invested in real estate, stock, or something visible. The farmer gives an itemized account of all his property, and he is about the only man who does. The assessor asks the number of horses, cattle, hogs, and chickens, whereas in the city or village he asks the merchants the amount of their merchandise in one question. The bankers nearly escape personal property taxation. Mr. Wilson thinks if one man itemizes his property every other man should do so. (247, 248.)

Minnesota.—Mr. HANLEY believes farmers pay much more in taxes than they should, as compared with other industries. As a representative of the farmers before the Minnesota State board of equalization, he found that leading merchants and jobbers who were rated at \$1,000,000 and carried \$750,000 insurance stated that \$65,000 was all that they ought to pay taxes on. They said, "If you tax us, you will drive us out of this State." (278.)

South Dakota.—Mr. GREELEY, of South Dakota, knows of no intention that the farmer should be overtaxed, but says all the farmer has can be seen, and for that reason he pays more nearly on what he has than one who has his money invested otherwise. Many farmers feel that they are unfairly taxed. (935.)

Maryland.—Mr. AGER thinks agricultural property in Maryland and other States bears a heavier taxation in proportion to profits than any other property, because it is all visible, and a great deal of invisible property is never taxed. He believes many men will perjure themselves in returning their property for taxation when they would not in any other case. (111.)

Virginia.—Mr. WEDDERBURN, master of the Virginia State Grange, says the farmers in Virginia pay what would be called in other States a low tax rate. His opinion is that the farmer has the best of it, as compared with the merchant and manufacturer. Mr. Wedderburn does not believe in the Virginia system of licenses and taxes on manufactures. (621.)

Kentucky.—Mr. NALL considers the Kentucky tax law sufficient, but says the administration of it has failed to bear equally upon farming lands and other property. The farmer's land lies before the assessor, and is very apt to be assessed up to its full value, while a great deal of corporate and invisible property has escaped; but investigations are now bringing these out, and the evil may be corrected. The answers to Mr. Nall's inquiry on the subject indicate that agricultural lands bear more than their just proportion of taxation. (811.)

South Carolina.—Mr. HAMMOND, a cotton planter of South Carolina, says that the present weight of taxation on agricultural property is three or four times as great as it was a generation or more ago. The burden is endured without rebellion only because it is distributed among small taxpayers who do not realize it. "A charge of \$1 poll tax and of \$1 road tax is collected from a negro who has not a change of clothes, upon the penalty of putting him on the chain gang if it is not paid. The assessment valuation of property is preposterous, unequal, and unjust. When made by local boards of assessors all sorts of favoritism is shown." (827, 828.)

Georgia.—Mr. HALE declares that in Georgia and everywhere else real estate pays more than its share of taxation. The taxation of agricultural property in Georgia is on a par with other real estate. The rate of taxation is moderate. Mr. Hale suggests that it might be better if more taxes were raised and used for the public benefit. (387.)

Mr. PEEK says taxes on farms are pretty heavy in Georgia. The rate is about 6½ mills, and nothing on the farm can escape taxation. The assessments generally compare very well with the cash value. (460.)

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from the farmer's own persistence in putting too high a value on his property. He does not reconcile himself to the shrinkage in values, especially if his farm is for sale. On the other hand, some farm land is occasionally rated too low by the assessor, especially if he wants to be reelected. The rate of taxation of agricultural property varies from \$1.38 to \$1.45, as compared with about \$2.50 in Trenton. (134.)

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Mr. HALE believes there should be a uniform law in every State requiring the listing of all property once a year, under a very severe penalty. (387.)

Mr. NORRIS thinks that all classes of property should bear as nearly as possible an equitable proportion of taxes, either by a listing system or some other system. (326.)

Mr. HANLEY believes in taxing every article of property, visible or invisible, on its full cash value. He proposes that certificates of stock should not be transferable as legal assets unless stamped to show that the tax has been paid upon them. He believes uniform legislation necessary, because for individual States to undertake such taxation would drive people to other States. (278.)

Mr. MILLER says there are in Ohio a good many farmers' clubs which discuss taxation and other questions pertaining to agriculture. The farmers' organizations very generally believe that franchises and intangible property should be placed on the tax duplicate at their actual value. Mr. Miller believes that intangible property should be assessed according to its earning capacity. (613.)

Mr. NORFLEET is of the opinion that a very low rate of taxation should be fixed on personal property, so that it would come to the surface and be assessed. (489.)

Mr. BURKE thinks it a human impossibility to prevent deceit, perjury, and fraud under the present mixed system of taxation. The system is too confusing; no one mind is capable of grasping it. State officers might accomplish something, however, by consultation and adopting the best measures possible. (200.)

Appointment of assessors.—Mr. STOCKWELL testifies that in Massachusetts the assessors are elected by the people of the town. He thinks it would be far better if they were removed from the influence of the electors by being appointed. One man of prominence and wealth can assure the election of an assessor to his liking or endanger that of one who does his duty. The rich influence the assessors by threatening to leave the town and by putting the honest assessor out of office. (889.)

Mr. MILLER, of Ohio, thinks it would be an advantage to have assessors appointed instead of elected, if excellent men were appointed, because men who are elected assessors are greatly inclined to favor the voters of their districts. (611.)

Taxation of evidences of indebtedness.—Mr. CLOHAN suggests a twofold remedy: (1) He would allow the borrower to make a mortgage a matter of record and have the tax he pays credited on the interest due on his note. (2) He would also have any evidence of debt without the assessor's stamp showing that it had been listed for taxation every year declared uncollectible. (599.)

Objections to the personal-property tax.—Mr. RALSTON submits a report which he prepared for the Washington Board of Trade upon a bill proposed to be introduced in Congress, relative to the assessment and collection of taxes in the District of Columbia. In this report Mr. Ralston sets forth certain objections to taxation of personal property: (1) Such a tax is inquisitorial in its nature. (2) Because of this fact false returns are rendered, and wherever the enforcement of the personal-property tax is attempted truthful men suffer and the unscrupulous gain. (3) Personal taxes are unequal with reference to the ability of businesses to bear them, and therefore force some men out of their occupations and so foster monopoly. (4) A personal tax does not commonly rest on those at whom it is directed. A tax on the stock of a store-keeper is ultimately paid not by him, but by his customers. It is therefore not a tax upon accumulated wealth, but upon the necessities of life, and therefore falls upon the poor in infinitely greater degree than on the rich. In like manner a tax on money loaned is secured by the lender from the borrower, in the shape of commissions or of a higher rate of interest. In this case also the necessitous pay the tax and the wealthy escape. (5) A personal tax is always a double tax. If a man borrows \$1,000 to help in buying a piece of real estate worth \$2,000, and if he pays taxes on the value of the real estate and also on the \$1,000 borrowed, it is evident that he pays taxes on a total valuation of \$3,000, or pays twice on the borrowed \$1,000. But all personal taxation is double taxation in a broader and less obvious sense. Real estate increases in value, according to the opportunity it affords for the possession, preservation, and production of personal property. If we tax both the opportunity for producing, preserving, and enjoying wealth, as represented by real estate, and also the thing preserved or enjoyed, in the form of personal property, we inflict double taxation. (6) Some personal property, as Government bonds, is exempt by law, and this introduces an inequality between some owners of personal property and others. (7) A personal tax is readily evaded. (8) A personal tax interferes with thrift and throttles industry. To tax articles produced is to diminish production, and to diminish production is to lessen comfort and create squalor. (9) The assessor can know little of the personal property he assesses, especially under city conditions. (1034, 1035.)

Mr. Ralston cites a considerable number of official reports condemning existing systems of personal-property taxation as inefficient and unjust. The Controller of the State of New York in 1898 declared in his report that the tax upon personalty

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is "unjust as between individuals, unjust as between communities, and, as experience has shown the world over, it is impossible of even approximately just administration." The commission appointed to inquire into the expediency of revising the tax laws of Massachusetts, in its report issued in October, 1897, states that "everywhere, without exception, the testimony is that this part of the system of the general property tax is unequal, unsuccessful, often demoralizing to tax officers, always irritating to taxpayers." The New Jersey Commission on Taxation, in its report of 1897, declared that "the only ones who now pay honest taxes on personal property are the estates of decedents, widows and orphans, idiots and lunatics." The Ohio Tax Commission reported in 1893 that "the system as it is actually administered results in debauching the moral sense. It is a school of perjury. It sends large amounts of property into hiding. It drives capital in large quantities from the State." (1037, 1038.)

Mr. GEORGE, formerly an assessor, says a banker in his town bought Government bonds previous to the first of May, when an assessment took place, and after the assessor had made his estimate, found it profitable to sell the bonds and loan out the money, sometimes at 10 and 20 per cent, on short-term paper. In Chicago tangible property is practically confiscated, while those who have their investments in some other form escape by not listing their property. Even under the new compulsory law they are refusing to schedule their property. A man does not want to lie if he can escape it by saying nothing at all. (221.)

Mr. BURKE says the farmer is chiefly to blame for the personal-property tax. He always demands it, on the mistaken hypothesis that the business man would escape if personal property were not taxed. (195.)

2. Equalization on the basis of local taxation.—Mr. RALSTON mentions a plan recently proposed in the New York legislature for the equalization of taxation between communities. It is proposed to fix each community's share of the State tax as a percentage of the tax which it raises for local purposes. (1028.)

3. Partial exemption of houses.—In a report prepared for the Washington Board of Trade upon a bill relating to taxation in the District of Columbia, Mr. RALSTON suggests a partial exemption from taxation of houses occupied by their owners. The exemption proposed extends to \$1,000 of assessed value in each case. It is suggested that such a measure would increase the number of home owners by placing a premium upon the purchase of homes and diminishing the annual outlay necessary to maintain them. It would stimulate the construction of more and better houses and increase the employment of labor in building them. The whole community would share in the benefit of this quickening effect. It would tend to the use of larger lots, because men would be better able to afford them, and would so promote the health of the community. The temporary diminution of revenue would probably be speedily offset by the increased production of houses and by the rise of land values due to the larger use of land. (1036, 1037.)

4. Taxation of productive property and occupations—License taxes.—Mr. HAMILTON, Secretary of Agriculture of Pennsylvania, believes that all income-producing property, professions, occupations, and industries, including the franchises of corporations, etc., should be taxed according to net income or profit. The implements of the trade or occupation, carriages for personal use, furniture and other naturally unproductive property the necessary parts of the equipment of a comfortable home should be exempt. A house or building that may be rented should be taxed, being capable of production. The tax on each piece of property should have a direct relation to its income-producing power, and should never exceed the net income. The State can not afford to require an individual to pay a tax greater than the producing power of his property, for anything that impoverishes the citizens is a detriment to the State. Mr. Hamilton would tax vacant lots in accordance with the average annual increase in value, and would apply the same principle to undeveloped mining property and woodland. A part of the income, he says, should be left to the owner as interest, so that he can be induced to keep his money in that kind of property and ultimately make it productive; then the State will get the advantage of the tax. To tax comparatively unproductive property, as a vacant lot, according to the value of the surrounding lots, would be confiscating the property. (359, 360, 363.)

Mr. Hamilton testifies that about 50 years ago Pennsylvania was forested through a breadth of perhaps 100 miles from the Virginia line to the New York line; but to-day there is hardly any timber in all that region, and it is impossible for a man to hold timber land. The tax on timber land will confiscate it in a very few years, and the owners have been obliged to cut the timber and sell it in self-defense. Localities have raised the tax on timber land so that the annual growth would not begin to pay the tax and the interest on the money invested. Quantities of lands have been abandoned and sold at tax sales because the owners could not afford to hold them. If there had been some system by which the owner had been allowed a fair income,

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a million acres would be to-day in the hands of the owners for the maintenance of a great industry which has nearly left the State. Landowners are coming to the Forestry Commission and wanting it to take lands at from 50 cents to \$1.50 an acre which a few years ago were worth a large amount of money because of the timber on them. (363.)

Mr. Hamilton suggests that reforested lands should be taxed annually on their estimated income-producing power, and that when the timber is finally cut the tax should be levied upon the product, instead of putting a ruinous tax upon the land while the timber is growing. Putting the main tax on the product would defer the cutting of the timber as long as possible, and make it to the advantage of capitalists who wished to invest their money over a long series of years to put it into timber land, with the assurance that it would not be taxed out of existence, but would ultimately pay a revenue. (365.)

Mr. Hamilton is of the opinion that places of religious worship, educational and charitable institutions, and cemeteries and burial lots should be exempted from taxation, a tax upon them being a discouragement of religion, morality, education, or charity. Every man is bound to support good order, and the church is the best policeman in any city; any burden laid upon the church is an additional burden upon the individuals composing it, and it is unfair to increase the burdens of men who are already doing their full duty as citizens and taxpayers, by requiring them to pay a tax upon an object of beneficence. (358, 361, 363.)

Mr. HAMMOND, of South Carolina, suggests the classification of lands and the valuation by classes and the taxation of licenses and franchises. He would also advocate a license tax on cotton planting in proportion to acreage. This would diminish the excess of expenditure in that direction and turn the energies of the community profitably to other pursuits. (828.)

Mr. MILLER thinks the constitution of Ohio should be so amended as to make it legal to impose a license or control the sale of intoxicants. There would be a more responsible class of people in the business, it would be better controlled, and a larger revenue would be received from the business which adds greatly to the burdens of the people. (613.)

Mr. RALSTON declares that trade licenses or occupation taxes infringe the inalienable right of all men to life, liberty, and the pursuit of happiness. They nearly tax out of existence the poor and defenseless, while the rich accept their comparatively small occupation tax as a partial protection against competition. To them the occupation tax is useful in the maintenance of business monopolies. This is in itself a gross perversion of the taxing power. However, the identification of those engaged in certain occupations is sometimes desirable, and a high license tax on certain occupations may be desirable for police reasons. Identification could be secured where necessary by a nominal tax of 25 or 50 cents a year. (1035.)

5. Income, inheritance, and corporation taxes.—Mr. POWERS says the systems of taxation of most of the States need complete remodeling. They were developed at a time when all property was visible; but visible forms of wealth now make up only about one-half of the total, and about one-third of the property of the country escapes taxation. To meet these conditions we must change our methods and adopt various forms of taxation suited to the time—the corporation tax, inheritance tax, and income tax. (184.)

Mr. AGER favors an income tax and both a collateral and a direct inheritance tax, and says that corporations should pay their share. (112.)

Mr. JONES, master of the National Grange, advocates a graded income tax, with the exemption of a reasonable cost of living. The tax should be so adjusted to the general property tax as not to involve a double burden on the same income. Mr. Jones opposes the single tax, and also the inheritance tax, on the ground that if a man has paid taxes fairly during his life it is unjust to take from his children a part of the property he leaves. (36, 37.)

Mr. GEORGE believes that the only way to reach capital successfully is by an income tax. He says it is easy for a man to pay taxes if he gets the money, but it is not easy to pay taxes if he is not earning anything. (221.)

Mr. HALE favors an income tax in the States. He believes in the justice of a graduated income tax, but he would have everyone a taxpayer. He thinks the humblest citizen would have more interest in local and State governments if he paid a small tax. Mr. Hale does not think that any upright business man would be injured by having his income made public. (387, 388.)

Mr. STOCKWELL considers the income tax a just tax, but not sufficient. There should be also a tax on property, and honest returns should be enforced. (900.)

Mr. Stockwell declares that those corporations that yield a return of 12, 20, and 40 per cent ought to be taxed according to ability. It is perfectly legitimate to let their returns be known to the Government which protects them and gives them their

opportunity. Taxation of the giant monopolies according to their ability would not help the prices to the consumer, but would lessen the burden of general taxation. (898, 900.)

Mr. RALSTON, in a report prepared for the Washington Board of Trade with reference to taxation in the District of Columbia, deprecates the levying of any special tax upon corporations, excepting those which enjoy natural or artificial monopolies. If any such special tax is to be levied, he suggests, as one involving the minimum of evil, a tax upon their net earnings. (1035.)

6. A single tax on land values.—Mr. REDDING, director of the Georgia Experiment Station, would substitute the single tax for the present system of taxation, taking all taxes off personal property. (452.)

Mr. BURKE, editor of the *Farmers' Voice*, advocates a single tax on land values, believing that there is no other form of taxation that is equitable and just under all circumstances. No one can own personal property to a very large amount, except in the form of jewelry and small trinkets, unless it is in some way related to land. Stocks and bonds have their basis in land. A merchant would not escape taxation under the system proposed, because he must have a store, the rental on which would go into the public treasury. Taxation, Mr. Burke says, should encourage trade, and not put a fine upon it; the benefit would be diffused through the community, because goods would be sold more cheaply. The hypothesis of the single tax is that society has created land values. It is a form of taxation which is not taxation at all, but simply rental regulated by the law of supply and demand. The fee simple would not be altered and the mode of assessment and collection would not be changed. (195, 196.)

Mr. Burke thinks assessment would be equitable under the single-tax system because the map in the county treasurer's office would show the valuation of each piece of property. He thinks no other scheme of taxation has ever been devised to open taxation to the inspection of all. A published list of taxes would not show anything under the present system because of the improvements on some property; but if there were no buildings involved any discriminations would be apparent. The single tax, he says, would also prevent inequalities between different sections of the State, because there would be a common basis for comparison. (198-200.)

Mr. Burke says the farmers of Illinois do not want the single tax, but thinks they would favor it if they did not have an idea that it would disturb their fee. Under it the farmer would not pay a tithe of the taxes he now pays, and every railroad and every corporation which has the slightest relation to land would pay upon its land values in the same ratio as himself. A farmer would pay only upon original land values. Cook County would pay its fair share. Mr. Burke cites figures to the effect that Cook County has more than one-third of the total real estate values of the State, but only one sixty-third as much as the rest of the State in watches and clocks, one twenty-second as much in carriages and wagons and in money, and one-tenth as much in credits, as shown by the assessed valuation. Personal property is only 13½ per cent of the total valuation in Cook County and 17.7 per cent in the remainder of the State. Mr. Burke says some one must make up for every piece of personal property that escapes taxation. (197, 198.)

Mr. Burke thinks a single-tax law would settle the question of trusts, as well as the question of taxation, by destroying special privileges. (200.)

Mr. RALSTON defines the single tax as

"A system of taxation which calls for the levying of all taxes on the value of land, exclusive of the improvements borne upon the land. When carried to its logical ultimate, it would involve the doing away with all tariff taxes, and with all license taxes, with a possible exception in so far as license taxes are imposed for police reasons; the abolition of all taxes on personal property and of taxes upon the improvements upon land, leaving as the sole subject of taxation the value of land itself, the one thing which is not the direct result of labor, and which is rather the incidental result flowing from the advancement of the community, from the perfection of government, from the educational and other advances incidental to the community, transportation facilities, and any of the elements that would naturally conspire to maintain or increase the value of land."

Mr. Ralston explains that the single tax is entirely different from land nationalization, and does not involve any ownership of land by the state or any change of ownership or management. Mr. Ralston understands that the socialists believe in land nationalization and would have the community own the land and determine the use to which each parcel should be put. The single taxers would leave the land in the possession of its owners and leave them the management of it as exclusively as now. (1019, 1027.)

In the belief of single taxers there has been a constant groping toward the single tax for several hundred years. Mr. Ralston cites several French philosophers of the seventeenth and eighteenth centuries. Turgot, the great French minister, tried to reform the system of French taxation in the line of a single tax. The vested interests of

France were too strong for him and he ultimately lost his power. Later several English writers set forth the general principles which are now grouped under the name of the single tax. The theory has been elaborated most logically and most completely by Mr. Henry George. Mr. George did not claim to be the originator of his system. The ideas which are associated with his name may be found in writings of far earlier date. He assembled and grouped those ideas and clothed them in a style of unsurpassed literary excellence. Mr. George himself refers in the course of his argument to such names as those of Adam Smith, John Stuart Mill, and Herbert Spencer. The present movement toward the single tax may, however, be dated from the publication of Mr. George's *Progress and Poverty* in 1879. Mr. George's campaign for the mayoralty of New York in 1886 gave notoriety to the movement, and it was brought again into prominence by his second campaign for the mayoralty in 1897. (1019, 1020.)

Mr. Ralston mentions several legislative proposals which have looked toward partial or complete adoption of the single tax. About 1891 a subcommittee of the Committee of the House of Representatives on the District of Columbia, headed by Hon. Tom L. Johnson, made an investigation of the system with respect to the advisability of putting it into effect in the District of Columbia. The report of the committee was favorable and was supported with an abundance of tables. When the Wilson bill was before Congress an amendment was introduced providing for the taxation of land values throughout the United States as a supplement to the taxation of imports. The amendment received the votes of such men as Mr. Harter, of Ohio, Mr. Tracy, of Albany, N. Y., and Mr. John De Witt Warner, of New York City. It was of course defeated. At the last session of Congress a bill was introduced for the gradual adoption of the single tax in the District of Columbia. It was referred to the Committee of the House on the District of Columbia, and nothing came of it, though it received the sanction of the labor organizations of the District.

Some 3 years ago an amendment to the constitution of the State of Washington was passed by the legislature and submitted to the people to permit local bodies to adopt the single-tax system, if they should desire, for local purposes. Though not necessarily a single-tax proposition, it was so treated by the people and press of the State. It was defeated, but it received a very heavy vote in the popular election. At the last session of the legislature of Colorado a somewhat similar constitutional amendment was adopted by a vote of about 4 or 5 to 1, which will be submitted to the people in 1902. A similar amendment was discussed in the last session of the legislature of Delaware. It passed the lower house and was defeated in the senate by pure accident, through the momentary absence of one advocate of it, and the negative vote of another, cast under a misunderstanding. Several similar propositions have come near adoption in other States at recent sessions of their legislatures. One was lost in the State of Michigan about 2 years ago by 1 vote in the house, after having passed the senate. (1020, 1021.)

Mr. Ralston declares that the single tax has received the very general sanction of labor organizations throughout the country, and that it is impossible to find any opposition to it among them, unless on the part of individuals who have not studied the question or who are biased by what they consider their more immediate personal interests. A surprisingly large proportion of newspaper men also believe in the single tax. The idea does not yet find support in the editorial columns of the press; but this, the witness believes, is because the editorial columns are largely controlled by the business office, and business interests are not yet sufficiently educated on this subject to realize that their best development will be found in the line of the single tax. (1020, 1021.)

Some 60 years ago the common council of the town of Alton, Ill., passed a resolution providing that all taxes should be levied upon the value of the land, and that improvements and personal property should be exempt. Mr. Ralston's knowledge of the fact is derived from a report of a case in one of the earliest Illinois Reports. The case related to the validity of a tax deed. The constitution of Illinois provided that all property should be taxed, and the question arose whether the town of Alton had violated this provision. The supreme court decided that Alton had no right to make the exemptions it had made. Mr. Ralston remarks as a curious fact that the arguments of the attorneys for the town in this case were substantially the arguments now brought forward by single taxers; namely, that such a system of taxation would prove beneficial to industry, would tend to the building of houses, and might do away with the holding of land out of use, for speculation, to the detriment of the community. Mr. Ralston describes a similar experiment in which he himself was directly interested. The town of Hyattsville, Md., where Mr. Ralston lives, decided in 1892, by vote of the board of commissioners, to exempt improvements from taxation. Personal property was already exempted. Upon the assessment roll of the

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town was a column for land values, a column for improvements, and a column for personal property. The only change of system was to strike out the improvement column and the personal property column. The rate of taxation was raised from 15 cents to 25 cents. Taxes were collected under this system for 1 year. The speculators of the town antagonized the movement and appealed to the courts. In the circuit court the town was sustained, but the court of appeals held that the measure was not authorized by the charter of the town and was unconstitutional. Mr. Ralston adds that since that time the single tax has not been attempted in this country, largely and perhaps altogether because of constitutional difficulties. (1022, 1031.)

In New Zealand a considerable proportion of the colonial taxes are levied on the value of lands, exclusive of improvements. A considerable number of towns or local taxing districts have also adopted the single-tax system for local purposes. No town or taxing district in New Zealand, having once made the change, has gone back to the old method. Adjoining towns, seeing the benefit of the new plan, have adopted the single tax by majorities running as high as 8 and 10 to 1. (1022, 1023.)

Mr. Ralston asserts that a tax upon the value of improvements deters the making of improvements. If it is a good thing that improvements be made, we ought to avoid that which in a degree prevents them. One of the most effective ways to diminish the number of dogs is to tax them. In France there is a tax on windows and doors. It diminishes the use of windows and doors, to the detriment of health. England had the same experience with a window tax, and also with a tax on fireplaces; the number of windows and the number of fireplaces were diminished. The tax on houses has an effect exactly similar to that of a tax on dogs or on windows. It compels people to live in poorer houses, because in paying their rent they have to pay the tax. It limits the employment of labor in producing houses. (1023.)

Mr. Ralston discusses the question of the taxation of improvements upon land from the point of view of the benefit derived from the expenditure of taxes. If a street in front of a house is improved, the value of the house is not increased or maintained by it. The value of the house is added to by things that the owner does—painting or building an addition. The town, by improving the streets, adds value to something, but not to the house. The whole benefit of the street improvement is added to the value of the land. The same is true of sidewalks, sewers, and water systems. The value of the land is increased by such improvements, but the value of the house itself remains the same. It is said that the house ought to be taxed because the taxes pay for protection from fire and from violence; but the fire department and the police, however efficient, do not in the least increase the value of the house. They do increase the value of the land. If a house in one locality is better protected from fire or from thieves than a house in another, the land that that house stands on will have a higher value than the land that the other house stands on; but the houses themselves, if they are similar, will be of equal value. For a tax upon a piece of land, whether it is expended in street improvements or in police or fire protection, the owner of the land gets a money return; but for a tax upon his house he gets no return. Somebody, however, does get it. Suppose that beside the house there is a vacant lot; the value of that vacant lot is increased just as much by the street improvements and by the protection against thieves and against fire as the value of the lot on which the house stands. The owner of the vacant lot gets the return, not only for the tax which he pays on his lot, but also for a part of the tax which his neighbor pays on his house. The single taxer holds that in this injustice lies the secret of the maladjustment of society. So long as taxes are laid on the property of one man and expended for the benefit of another man, a proper adjustment of industrial conditions is impossible. It is necessary to readjust the system of taxation upon the clear, logical, and just basis of giving a man just what he pays for, and not taking money from one man and giving it to another. (1022, 1023.)

Mr. Ralston points out that great quantities of land that ought to be used are held idle, in order that their owners may make a profit by the rise in value. The people in the cities are crowded together in narrow quarters, and the workmen who would be glad to build larger and better houses for them are deprived of employment. If the tax on houses were abolished and the tax on vacant lands were increased, it would no longer be profitable to hold land idle for speculative purposes. When the adoption of the single tax in Hyattsville, Md., was proposed, some of the landholders said, "If we have the single tax the tax on land will be so high that no poor man can buy a lot." But when the single tax was adopted they said, "We can not afford to pay these taxes, and we shall have to sell at any price if we do not get rid of the single tax." The effect of the single tax would be to increase the amount of land available for use, to lower the selling price of it and encourage building, to increase the employment of labor, and to give the people better conditions. (1025, 1026.)

Mr. Ralston declares that in the opinion of the upholders of the single tax the recurrence of hard times is due to the vicious system of holding land for speculation, which is connected with a vicious system of taxation, and until this is corrected hard times will constantly recur. The inheritance law of France is believed by single taxers to have contributed to the comparative exemption of France from industrial depressions and to its rapid recovery from the ravages of war. France does not allow a man to will away more than a certain amount of land from his children. The system is not theoretically the best, because it divides land into too small holdings and makes it impossible to work land in the most economical way. Yet in a large degree it has proved the salvation of France. (1026, 1029.)

Mr. Ralston says that in the opinion of single taxers one man has as good a natural right as another to be upon the earth and to enjoy the blessings of life, liberty, and the pursuit of happiness. If one man owns the land upon which others have to live, he possesses not only his own right to life, liberty, and the pursuit of happiness, but theirs too. They have to pay him for the privilege of existence. Men are not equally free when one has to pay tribute to another to get at the earth upon which all must live. Assuming the equal right of all men to make use of the earth, no measure is necessary to secure this right except the payment into a common fund, to be disbursed for the common benefit, of the special value which accrues to the owners of land merely as owners. If 20 men were common owners of a horse and the yearly value of the use of the horse were \$20, the rights of all would be secure if one man used the horse and paid \$20 into a common fund, to be disbursed to all the stockholders. So if the net rental value of the land of the United States is \$1,000,000,000 a year, if the owners of land pay that billion dollars into the common fund and it is disbursed for the benefit of the whole community, the equal rights of everyone to the land upon which all work and live will be recognized, and the extremes of poverty and wealth which now exist because certain persons get the whole benefit of the value of land will disappear. (1026.)

Mr. Ralston explains that under the single-tax system the taxes for the General Government, as well as for the State and the localities, would be collected just as the State and local taxes are collected now. No new system would be necessary. It is impossible to say with accuracy what proportion the share of United States taxes which would fall to a particular State, together with all the State and local taxes, would bear to the rental value of land. Mr. Shearman, in his work on Natural Taxation, shows satisfactorily, in Mr. Ralston's judgment, that the present rental value of land, exclusive of improvements, is more than enough to meet all local and general taxes. (1026, 1027.)

Mr. Ralston does not admit that private ownership of land has been instrumental in bringing us to our high position in civilization and wealth. He thinks it has been a deterrent, in that it has enabled land to be held out of use. This withholding of land has thrown people out of work, has prevented the orderly development of cities, and has amassed great wealth in the hands of some people and held others in poverty. (1028.)

To the question whether a small manufacturer might not be ejected from his place of business by a rich and powerful rival, under the single-tax system, by the process of outbidding him for the use of the land on which his factory stands, Mr. Ralston replies that such a bid could not be accepted by the assessor nor supported by the community. The tax to be levied is determined by what the community generally is willing to pay for the use of the land. It would not under any circumstances be determined by the extraordinary offers of an individual. Property does not rise in value in an extraordinary degree in a particular square and not in a neighboring square similarly situated. (1029.)

Mr. Ralston goes on to say that the tax on land would increase with the value of land just as it does now, though in a greater degree. It happens to-day that improvements become valueless because of changes in the surroundings of the land. Improvements which were made 20 or 30 years ago at great expense may now be entirely disregarded in selling the land in some cases, because they are no longer suitable for the situation; they have become valueless. That might happen under the single tax to the disadvantage of owners, but it happens to-day. (1028.)

Mr. Ralston expresses the opinion that taxes can be shifted only through some change that they make in the value of the thing taxed. The value of a thing is increased either by increasing the demand or by diminishing the supply. Taxing a hat discourages the making of hats and diminishes the supply. A man will not go on making hats unless he can get the tax out of the consumer. Taxing a house diminishes the supply of houses, because people will wait before building houses until they can get the tax out of the tenants. Diminishing the supply increases the value.

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This increase of value which the tenant has to pay to the owner constitutes the shifting of the tax. But the tax upon land does not in any way diminish the supply of land. It rather increases the available supply, by opening up for use land which would otherwise be held for speculation. It diminishes rather than increases the value of land. It does not introduce any condition which enables the owner to get more rent from the tenant, or, in other words, to shift the tax upon him. (1032, 1033.)

Mr. Ralston says that while a great manufacturing concern like the Brooks Locomotive Works would perhaps be greatly benefited, its taxes greatly lightened, by the adoption of the single-tax system, almost all the home owners in the town would also be benefited. No one would suffer except the man who was holding his land out of use or who had improved it inadequately. In support of this statement Mr. Ralston cites the actual experience of his town of Hyattsville. When this town adopted the single tax its total assessment was \$600,000. The lands were valued at about \$400,000, improvements at \$200,000. When the land value only was taken as a basis the \$200,000 of improvements was stricken off the rolls, and the tax rate was raised from 15 cents to 25 cents a hundred. Practically every householder in the town paid less tax than before, yet the town raised slightly more revenue. Vacant land was assessed just as high as improved land similarly situated, and the whole amount of the tax which was taken off the householders was put upon the speculators. (1030, 1031.)

Mr. Ralston declares that the tax on land values is not a tax on labor but on opportunity. Labor does not create land values. It is the people as a whole that create land values, and the more intelligent they are, the more they advance in every respect, the higher the land values go. (1031.)

Mr. Ralston admits that if a man owns a lot and is unable to improve it as surrounding lots are improved the tax might be raised under the single-tax system until he should be unable to pay it. He admits that this might amount to confiscation. The question arises, he says, whether that sort of confiscation is right. If the owner created the land value, or if he can show any natural right to the land, the confiscation is wrong; but if the value of the land was created by the whole community, as it is, and if the owner did not create the land or bring it into existence, the confiscation is right. The man who is simply a landholder, doing nothing with the land, whether from poverty or from any other cause, while his neighbors are building up the town around him, is doing a positive injury to the community. If he could show as clear a title to the land as to his hat or his house, which he has made, no doubt he should be permitted to keep it in spite of the injury he does; but he can not. The hat or the house was made by his individual labor, or by the individual labor of men who have conveyed it to him. The value of the land is created by the community; and the whole community, being the creator, should have the benefit of the value. (1031, 1032.)

Mr. Ralston admits that farmers in general are prejudiced against the single tax, and suppose that it would lay a special burden upon them. He declares that this is a mistake. The farmer thinks of himself as a great landowner; in fact, he is not. He is a great land user. Land ownership, measured by value, is predominantly in the cities. The farmer pays a heavy tax on goods coming through the custom-house; he pays a heavy tax on his personal property, out of all proportion to the personal tax paid by men in cities; he pays a tax upon his house, his barn, his outbuildings, his fencing, his fruit trees, and upon everything that he does to give value to his premises. In the case of the average farm the value of improvements is vastly greater than the value of the naked land. Mr. Ralston cites an instance in Prince George County, Md., in which a tract of unimproved land about 25 miles from Washington sold for \$1.10 an acre, and a neighboring piece of land, equally distant from the railroad, improved with fences, stables, barns, and a fair, average farmhouse, sold for \$20 an acre. Mr. Ralston admits that this is an extreme instance, but it differs from average cases only in degree. Mr. Ralston refers to an investigation made about 5 years ago by Mr. Robinson, a statistician of the Department of Agriculture, covering 6 or 8 counties in New York State and perhaps some in Pennsylvania. The conclusion was that the farmer would be largely the gainer by the adoption of the single tax. Mr. Schilling, of the Bureau of Labor Statistics of Illinois, in a report of some 5 or 6 years ago, pointed out the fact that the value of a single acre of land in the city of Chicago was greater than the value of some whole counties in Illinois—land, improvements, personal property, and all. There are lots on F street in Washington, says Mr. Ralston, of perhaps 2,000 square feet, which are worth as much as 50 farms in Prince George County, Md., with all their improvements. (1024, 1025.)

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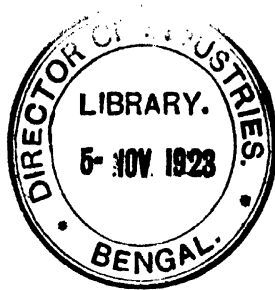
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TESTIMONY.

INDUSTRIAL COMMISSION.

AGRICULTURE AND AGRICULTURAL LABOR.

TOPICAL PLAN OF INQUIRY OF SUBCOMMISSION ON AGRICULTURE AND AGRICULTURAL LABOR.

[The term agriculturist as herein used includes farmers, planters, dairymen, stockmen, nurserymen, gardeners, fruit growers, and all others engaged in agricultural pursuits.]

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WASHINGTON, D. C., March 13, 1899.

TESTIMONY OF HON. JOSEPH H. BRIGHAM,

Assistant Secretary United States Department of Agriculture.

The commission met at 11.30 a. m., March 13, 1899, Mr. Farquhar presiding.

Assistant Secretary Joseph H. Brigham, of the Department of Agriculture, testified. (The syllabus on agriculture was followed in the examination of the witness.)

Q. (By Mr. FARQUHAR). What has been your connection with agricultural matters?—A. I have been connected since 1873 with the grange, or the Order of the Patrons of Husbandry. I served 10 years as master of the State Grange of Ohio, and was 9 years master of the National Grange. I was also for some years a member of the State Board of Agriculture of Ohio. During that time I have visited nearly every State in the Union and came constantly in close touch with the farmers of the different sections of the country, which has given me, of course, some opportunity to understand the conditions in the different sections. I do not pretend to be an expert or to know it all, but I have had those opportunities.

Q. Are you a farmer?—A. Yes; I came off my farm when I moved here.

Q. (By Mr. A. L. HARRIS.) What has been the increase in the locality in which you live in the number of laborers employed upon the farm?—A. I think, among the farmers where I am best acquainted, the labor that is employed the year round, the regular employees, are about the same in number—that is, there has not been much decrease; but in hiring transient labor there has been quite a decrease, in my judgment.

Q. What is the condition of those so employed compared with former years?—A. I think that farm laborers have a very much better time than they did 50 years ago. I know that you could hire the best of help on farms then in Ohio, on the Western Reserve, for from \$10 to \$12 a month, and very often they would work from daylight to dark.

Q. What part of Ohio do you live in?—A. I live now in northwestern Ohio; I was born on the Western Reserve, in Medina County. I speak of conditions 50 years ago in Medina County. I was about 10 years of age then, but I know about what they got at that time.

Q. During the time you were master of the National Grange and traveling through the United States in the interest of the grange, did you have an opportunity to observe the condition of the hired labor from time to time?—A. Yes; I had a good opportunity to do so.

Q. What is your opinion of the condition of the hired labor upon the farm of late years?—A. I think he has a very decided advantage over the farmer himself. He has pretty good wages, and the work is not ordinarily quite as heavy, because of the use of machinery, as it was years ago, and is done with much less muscular effort, and the man who boards in the family lives just as the family does, eats at the same table, and they have many advantages that they did not formerly have. It is quite customary for the farm hand to keep a horse and buggy. They have much better times and more conveniences than they did when I was working on the farm for \$12 a month.

Q. So far as labor is concerned, has the small farmer, as a rule, much advantage over the hired man?—A. Not any. When the prices are low he is at a disadvantage, because the wages do not fluctuate as the prices of agricultural products fluctuate. There has been a gradual increase in the pay of the farm laborer from what it was when I was a young man. The hours of labor have been greatly reduced. Occasionally there is a man that gets his help out at 5 o'clock in the morning, but they are very few. I remember when I was out milking cows at 4 o'clock in the morning, and when I got through at night it was dark. They worked more hours; swinging a scythe and cradle was hard, muscular work. They do not do it now. They ride a sulky plow, and a great many other machines that lighten labor, and the farm hand has a better life, better pay, etc., than years ago, when I was a young man.

Q. What has been the effect of improved agricultural machinery on the price of labor?—A. I do not think it has decreased the price of labor. It has decreased the employment of labor in harvesting and haying time a little, but it has not decreased the price. The price has been maintained, and in my judgment it has rather increased. In New England they do not expect to hire a man for less than \$1.25 a day, and they give him his dinner during the busy season.

Q. Compared with 30 or 40 years ago, does the hired man on the farm do as hard work, the same drudgery, now as then?—A. There has been a great improvement in that respect; there are some classes of hard work yet, pitching manure, and some ditching. The latter is usually done by men employed especially for that work.

Q. As a rule, where you have ditching or any extremely hard work, do you generally engage men who follow that business?—A. In ditching, they do; when a man is hired as a farm hand he is expected to do whatever there is to be done. The ditching is not very much, except in the low, wet lands. Of course a hired man is expected to do some ditching if not otherwise engaged; he is expected to help; but we always have experts come to do that kind of work.

Q. What are the causes of irregular employment on the farm?—A. The haying used to last, you know, for several months—several weeks at least; now the good farmer wants to do his haying all up and get it out of the way before harvest time, and then his wheat and oat harvest is not expected to last more than 4 or 5 days; in a few days he can do more now with two men than he could do with several hands in several days when I was working on the farm.

Q. Where do you procure transient labor in busy seasons now?—A. It is a very difficult matter to procure it at all. You have to make arrangements some time ahead in order to be sure, and have to pay pretty good prices to get it.

Q. Do you go to the villages or cities for the help?—A. Yes; we go to the villages, but we do not go to the cities very often. I do not live near enough to the

cities to get labor from them. They will come out and help us thrash, if we pay them pretty good wages; they say they get good food; they like to get together in groups of men. For very heavy work, like corn cutting, it is very hard to get men.

Q. Do you get any assistance in your part of the country from the Canadian labor?—A. Not very much, if any; not where I live. In Michigan they get some, but very little in our part of the country.

Q. Do the railroads extend any facilities to the agriculturists in bringing labor from distances, if desired?—A. No; not that I know of. I never knew them to extend any help of that kind.

Q. Please state the hours of labor upon the farm in different seasons and in different agricultural industries.—A. The situation varies somewhat. In the South they put in more hours than in the North—colored laborers put in more hours. When I was a young man, as I told you, we put in the time from about 4 or 5 o'clock in the morning until about 8 o'clock at night. Of course there were the meal hours, and an hour at noon to take out of that, but we started early and worked very late. Since the war there has been a change in that respect, at least the hours have been greatly reduced, until 10 hours a day is considered good time to put in on the farm. If a man works a team he is expected to take care of his team before that time, and to be ready to be in the field at about 7 o'clock; they take an hour for noon and close generally at about 6 o'clock; of course they have to put up their team. Some farmers let them stop work at 5 o'clock, so they can put up their horses for the night and give them a good currying. They do not get farm labor, ordinarily, for more than 10 hours a day during the busy season, and in the winter a little less than that—about 8 or 9 hours.

Q. (By Mr. RATCHFORD.) Is the reduction in the hours of farm labor due to new machinery or to organizations among the farm hands?—A. There is no organization that I know of among the farm laborers. It is becoming a custom among the farmers generally, I think; they feel they will get as much and better work out of a day of 10 hours than if they undertake to put in too many hours. The man with his team gets into the field at 7 o'clock and works until noon, gets his dinner, and works until about 6 o'clock; then they don't feel like wooden men, as a man will if he does not get sleep enough.

Q. Has it been your experience that a greater and better amount of work is performed in shorter hours?—A. I think 10 hours' good work on a farm is about the limit of what a farmer could expect or would be benefited by getting. I think more hours of labor in a day than that, ordinarily, would be of no advantage to the farmer. I think the man feels better if not worked too late.

Q. (By Mr. FARQUHAR.) Do many agricultural laborers belong to organizations in which they undertake to regulate the hours of labor?—A. No, sir. Of course farmers usually work themselves; they go to the field, take hold and labor; they are on very good terms with their help. Very many of these laborers are members of the farmers' organization.

Q. Are your organizations open to employer and employee, to male and female?—A. Yes, both. Some of our very best members in these organizations are the men and women that work for the employer on the farm.

Q. (By A. L. HARRIS.) Please state the social relations that exist as a rule between hired labor on the farm and the farmer himself.—A. It varies somewhat in different sections of the country. In the North the hired man is usually a member of the family; some farmers prefer to hire a married man, and build him a house so that he can board himself. It relieves the farmer's wife and family of some labor. There are times, always, when members of a family like to be by themselves, and prefer not to have anyone live in the same house with them. A majority of the unmarried laborers are employed by the month or year and board with the family.

Q. (By Mr. FARQUHAR.) How permanent is farm labor?—A. I think that the farmers in the real farming sections of the country, where they make a business of farming—they employ help most of the year, as much now as they ever did. I think the only reduction that has come in that respect is in the transient labor. Many farmers with only 80 or 100 acres like to get along with only one man for permanent help.

Q. What is about the average time men work for the same farmer?—A. A decent sort of farmer (there are some farmers who are not as good as they might be, though they average with other people), when he gets a good man, does not like, ordinarily, to make a change. He will do everything that is reasonable to keep the same help for years. When a man has worked a good while for a farmer, he is very liable to get to a point where he almost owns the farm, and then it is sometimes necessary to change. There is a little of that in human nature. If they get a poor hand they change as soon as possible.

Q. (By Mr. A. L. HARRIS.) How long, as a rule, does an ordinary farm hand who is economical and industrious remain a farm hand?—A. Some of them work a good while. Some of them will save their money and put it on interest; wait until they get a snug little sum and then start for themselves. Others do not wait so long. They go out and rent a farm, thinking they can make a little more than working by the month or year and be their own boss. I knew a young man that started on a farm right after the war. He worked for me 2, 3, or 4 years, and then he bought a farm for himself. He now has nice buildings and a nice farm—one of the best in the neighborhood. I know of several instances of that kind.

Q. (By Mr. CONGER.) Are farm hands, as a rule, generally young men whose ambition is to become proprietors, and who, as a rule, in later life do become owners of farms and work for themselves?—A. A great many of them do; the industrious, saving men do. It depends whether they save or not. A good many men who are good workers do not save money; they spend it as fast as they get it. Men on the farm frequently save more than they do in ordinary walks of life. Industrious, economical men in course of time have farms for themselves.

Q. I had the impression that the average age of the farm hand would be less than workmen in manufactories. For instance, in manufacturing concerns men often continue as employees all their lives, whereas my observation is that a farm hand most frequently becomes a farmer himself in later life.—A. I think a larger proportion of the farm help do that than perhaps other help. There are a great many men who start in on the farm and are good workers and continue as farm hands all their life. They get married and lay up their money as fast as they get it. Late years they have really found, I think—those most observing—that it is better for them to work for a farmer for wages than for themselves. The low prices in products, etc., lead them to this belief.

Q. (By Mr. FARQUHAR.) Does your farm help in Ohio now usually remain there?—A. I think so; I do not think they migrate now; they used to go; they would strike out for Michigan, Indiana, and Iowa, start in, and grow up with the country; they do so very seldom now.

Q. Do you think there are more inducements to remain in Ohio now than there were 35, 40, or 45 years ago, when men went West to take up 160 acres of land?—A. They can not get the 160 acres now.

Q. Are there no inducements to go West now?—A. No; they do not have the Western fever now; they are pretty apt to stay. They sometimes shift about, go from the farm to the railroad, or go to work at something else; there are very few of them, from my observation, that go West now, compared with former times.

Q. (By Mr. RATCHFORD.) In certain seasons of the year is the demand for farm hands greater than at others?—A. Yes.

Q. Are farm hands, during the dull seasons, obliged to seek other avenues of employment, and do they go to the cities and into the mines, etc., during the winter months?—A. A great many young men seek employment in the cities, where there is more company. A man does not like to work by himself; he likes to have associations with others.

Q. But are men obliged to do this as a means of securing employment during the dull seasons of the year?—A. I do not think they go because they are obliged to, but because they like employment in the city, and to have the company of other men, which they can not have on the farm. My experience for years is that it is a difficult matter for us to get the best help to stay on the farm. Transient help in our country is scarce. If a man becomes a day laborer, he finds the demand for his work is greater than he is able to fill, most of the time.

Q. (By Mr. A. L. HARRIS.) Is he master of the situation?—A. Yes.

Q. What is the average number of days of an employee on the farm during the year?—A. A good farmer who has a farm of 160 acres, or even 100 acres, wants help 365 days in the year—that is, every day. A good farmer never gets out of work for his help.

Q. (By Mr. CONGER.) Does he usually use as much help in the winter as in the summer?—A. A man is expected to help take care of the stock in the winter; and there is plenty of work to keep him busy.

Q. (By Mr. A. L. HARRIS.) Is there a general tendency on the part of farm labor to seek other employment; and if so, what is the cause?—A. I think there is quite a tendency on the part of farm labor, bright, intelligent young men, to look for employment elsewhere; they think there is less danger of being lost sight of if they can get into some other kind of employment, and the tendency is to get away from the farm.

Q. As a rule, who does the work on the small farms?—A. On a farm of 40, 60, or 80 acres, if the farmer is an able-bodied young man, he does most of the work himself; that is my observation.

Q. How about his sons?—A. They grow up and work on the farm at home for a while, then, if they desire to remain farmers, they will remain as long as there is plenty of work to do. If there is not enough to occupy them, they go out and seek employment elsewhere.

Q. Is there a tendency on the part of the farm boys when they get a very fair education to get a little restless on the farm?—A. Yes; they want to be doctors, lawyers, merchants—almost anything other than farmers. The farmers are a little to blame for that; they are always talking about hard times; they magnify this matter sometimes. There have been hard times, and a farmer does not always really appreciate good times when they come. A good many farmers do not make any allowances for what they have in the way of good living and the privileges they have on the farm. They figure that what they make on the farm is what they really save after all the matters of living, etc., have been taken out. They do not appreciate the cost of these things if they had to buy them.

Q. You touched upon the remedy that would make the farm more attractive. I wish you would go a little further into that.—A. It is the purpose of our organization to make farm life attractive and give the farmer's family the best social opportunities that are to be afforded anywhere; to stimulate investigation and thought; to let the boys and girls on the farm take up in their associations literary work and learn to discuss all questions of public interest. There is no business in the world that requires more general intelligence than that of farming. Professional work, merchandising, or mechanical work does not compare in breadth with farm work. A farmer has to be a merchant and mechanic, and should know something of law and medicine as well as farming. It is quite necessary to have method and system in his work, and what we are aiming to do is to get the bright young man to know that there is plenty of room on the farm for the exercise of his ability, and there has been a remarkable improvement among the farmers where this work is going on. College graduates are staying on the farm.

Q. (By Mr. FARQUHAR.) Do you have what you call literary circles in your grange and other farm organizations?—A. Many granges meet once a week and have a nice programme—singing, music, recitations, essays, and discussions—a right good literary society. It is also a fraternal body, and one of the main features is to shake hands and be just as happy as you can; to look on the bright side always.

Q. How many miles does one of these granges take in?—A. We like to have organizations in every township of 5 or 7 miles square. In the little State of New Hampshire there are 244 granges. You see how they are fixed there. In many of the larger agricultural States they are not so thickly located. But it is the purpose and work of this organization to help the farmer in any way it can—financially, socially, intellectually, and in deciding great political questions.

Q. (By Mr. A. L. HARRIS.) What, as a rule, is the method of payment on the farm—by the day, month, or year, or is it changed to suit the occasion?—A. It changes to suit the occasion. The farmers pay cash; they do not pay in store orders or ask help to take anything in lieu of money. If the man works by the day, and wants his money at night, it is usually ready for him. If he works by the month, and wants it once a week, Saturday night, they calculate to have it for him. Most of the farmers employing labor make that arrangement. Very few ask for money and do not get it. There are sections, perhaps, where this would not be true. I am speaking of conditions such as we have in Ohio, Indiana, Michigan, and through that country. I do not know so much about conditions of labor in the South.

Q. What is the maximum wage earned upon the farm for a good farm hand in your part of the State?—A. A good farm hand, if he works by the month, will get from \$18 to \$20 and his board and washing. If he works by the year, and gets his board and washing, they will pay him perhaps \$180 to \$200 for the year. A good many farmers let a man board himself.

Q. What is the minimum wage?—A. I think for monthly wages, perhaps the minimum for the 8 months of the year is \$15 and board and washing. If he works by the day, \$1 a day. Sometimes a man will board himself if he has a family nearby, and will then work for \$1 to \$1.25.

Q. What will be the average for the ordinary farm hand?—A. \$16 or \$17, perhaps.

Q. (By Mr. FARQUHAR.) Do wages of farm hands rise with higher market prices of farm products, or fall with shrunken prices of produce?—A. Wages on the farm do not fluctuate with the price of farm products, as a rule, but if products have been low for a series of years, farmers will hire less help or ask the help to accept lower wages as a condition of employment.

Q. (By Mr. A. L. HARRIS.) You spoke of farmers having tenement houses and hiring married men. How far does that practice prevail in your section?—A. There are quite a number of farmers that hire that way. They build tenement houses and the farm hand moves into the house with his family. He works all the year ordinarily. They give him, generally, his house, and he has his garden patch and a cow and a pig, and a few chickens. Sometimes they keep a horse. I have hired several men that way, and their pay ranges from \$210 to \$240 a year, and give them the house and their wood and the other things named. Occasionally a man did not care to milk a cow, and he would not keep one, but would get his milk at the house.

Q. What, as a rule, is the condition of those tenement houses?—A. Usually not large houses, but comfortable, and better than we used to live in when we were young; frame houses, most of them. Very often the tenement house is the house moved off the old site, when a farmer builds a new one, and some of them cost \$700 or \$800, and some of them \$300. A good farmer generally thinks it best to give the help a pretty fair house to live in—they feel better about it.

Q. Does the tenant furnish his house?—A. Yes.

Q. (By Mr. RATCHFORD.) Are there other advantages afforded the tenant, such as cheaper produce, flour, fruit, etc.?—A. The fruit on the farm is usually free; the tenants help themselves; they have all they want during the season when fruit is plenty. If they put up some winter fruit that is salable in the market, they pay the market price for it. Very frequently a man will go to the grocery and buy flour. Of course, the farmer would let him have wheat at the market price. I had a man who would frequently buy up 20 or 25 bushels of wheat and draw flour when he wanted it.

Q. (By Mr. A. L. HARRIS.) Have you any crop sharing in your part of the country?—A. A good deal.

Q. I wish you would state the methods of crop sharing and their effect upon the farmer.—A. I think the average farmer favors renting his land and getting a share out of it rather than paying money. The average man will take a little more interest in the work—a little better care of the crop and the stock, if he is taking care of his own stock, and the tendency is in that direction. I think the help on the farm will very largely, in the future, receive a share of the crop for their pay rather than be hired outright for money. There are several reasons why I think so. There are occasionally men who don't care whether they make money farming or not. They hire for the sake of bossing; they want the work done just as they want it whether it pays or not.

Q. Who furnishes the stock and equipments of the farm when it is run on shares?—A. Customs vary. Occasionally a man furnishes everything. He puts the man on the farm and says, "I will furnish seed, team, and tools, and you do the work for a certain share of the crop." Another plan is for the tenant to furnish half of everything. Occasionally a tenant furnishes his own team and tools and they divide the crop equally. The team is kept on the farm. He has usually, then, a couple of cows for his own use. The owner of the farm has no share of their product. That is one plan I have worked upon. I have two plans. I go into partnership with my man. He furnishes half and I furnish half of everything on the farm. He does all the work, and when anything is sold we divide the money. When he is taking care of his hogs he is taking care of my hogs. We divide up at the end of the year, or when anything is sold. I have another man who has no equipment. I furnish everything, let him do the work, and then we divide a little differently.

Q. How do those two methods compare with cash rent?—A. I would not rent for cash at all.

Q. What effect does it have?—A. It ruins the farm in a few years. Of course, a man might draw a contract so strong and enforce it so rigidly as to maintain the fertility of his land, but ordinarily it could not be done. But when you rent on shares the tenant will usually take good care of the farm; he has to sow the clover seed, to haul out the manure, and if he does not keep the farm up you do not keep him; he loses his job.

Q. Have you any system of loaning money to your tenant?—A. We do not do that. If a man wants to take half interest, and we think he is all right, we will give him a chance to pay for his half in installments, but we do not usually loan money.

Q. Do you regard it as not being a good practice?—A. That is not a good practice in our country; of course, I have done that occasionally.

Q. (By Mr. CONGER.) When the tenant only furnishes the labor what share does he receive?—A. About a third, generally.

Q. Are those shares, the half and the third to the tenant, fixed by custom, or do

they vary?—A. That is about the way it goes with us. In some sections, however, the tenant is required to furnish almost everything—that is, his team and tools—and take half the crop. It depends on the soil a good deal. If the land is very productive the tenant can furnish a little more. Generally the tenant has good pasture land for the stock that he keeps. Almost every man has some different features in his plan.

Q. (By Mr. FARQUHAR.) Do you think the man who works the farm has an advantage when the owner furnishes everything?—A. I think the plan is ordinarily a little better than when he has to furnish half of everything.

Q. (By Mr. RATCHFORD.) Do you believe that a high productiveness of soil increases the ability of the tenant to pay the landlord a proportionately higher share?—A. Yes. If the soil is good, his crops will be better.

Q. Do you believe the landlord is entitled to a proportionately higher share from the tenant where the soil is rich than where it is not rich?—A. If he furnishes him with better land, his capital is more. He offsets his labor against the capital of the landlord in the soil, stock, and tools, all of which have cost somebody a good deal of labor. If a farm will produce 25 bushels of wheat to the acre, and the farm beside it will produce only 20 bushels to the acre, the land that produces 20 bushels is not worth near as much to the renter as that which produces 25 bushels; in other words, it will cost just as much labor to raise 20 bushels as 25. The 5 bushels is all profit. The landlord gets part of it. I know some men who have worked new ground, where the labor was greater and the crop not quite so large, who received two-fifths instead of one-third. The condition of the soil, the markets, the location of the farm, have very much to do with it.

Q. (By Mr. KENNEDY.) When a man gets one-third, as you have mentioned, is that as much as the owner could allow, after the tenant was permitted to raise potatoes and other vegetables?—A. Yes; he also has his garden produce. The landlord hardly ever looks after that. If he lives on the farm, he has all the fruit he wants usually during the growing season. Of course when the winter apples are gathered they are divided, but I never knew a farmer to make any account of the fruit used during the summer season; that is, the apples, etc. If he raises the ordinary garden stuff, enough for the family, the landlord hardly ever pays any attention to that or expects to get any share of it. However, some do. A man who lives in town sometimes makes an arrangement to have some share of that; and if he does, he furnishes the seed for the garden or makes some allowance for it.

Q. (By Mr. A. L. HARRIS.) Have you any foreign immigrants in your section of the country?—A. Very few in my county. One township of the county, which is called German Township, was settled by Germans and French nearly altogether. They were all foreigners originally, but they have lived there for many years, and of course their children are American born. Some Polanders went there to work on railroads, and some few of them have bought farms. In our immediate section the people are mostly native Americans.

Q. What is their percentage of illiteracy compared with the American farmers?—A. The German families that come there are usually pretty well educated; sometimes better than Americans. Of late years the farmers are taking more interest in the schools and send their children to them.

Q. Is there any tendency to colonize?—A. Yes, among the Germans and French there is. They generally all go into that one township. They pay almost any price for land there rather than go outside. A great many belong to the same church and go together. They will not be separated. There is, however, not a great deal of that in our section. It is mostly west and north of us.

Q. Is there any tendency to preserve their foreign customs and language?—A. There is some; yes, sir. Some insist upon having German and French taught in the district schools, and they talk it in their families. But a large majority of them are growing away from that, preferring that their children shall be educated in English, knowing that they are going to make this country their home.

Q. What is the effect of this foreign immigration on agriculture?—A. It has damaged the farmers of the Eastern and Middle States to open these territories in advance of the world's needs.

Q. Are you speaking of the country at large?—A. Oh, yes. We have suffered materially. What has hurt agriculture in New England is the agriculture west of New England. What has made low prices in Ohio for agricultural products, is the fact that these large areas of land have been brought under cultivation in advance of the necessities of the world.

Q. What suggestions have you to make in regard to the regulation of immigration?—A. I have changed my views somewhat upon that. I used to think it was a grand thing to have all this country settled up, but I think the time has come

when we realize that it would have been better for us not to have encouraged immigration. At least there should have been restrictions. I would require that they bring something with them to show that they have been prudent and industrious persons. I would require some educational and moral qualifications. I would be very sure to insist upon the moral qualifications, in order to shut out the dangerous classes that they want to get rid of abroad. Of course I am speaking of it from the standpoint of the interest of our people here. It seems to me that it would have been better for our people to have gone a little slower. I think we were altogether too liberal with our lands. We might better have held them until the world really needed the products of those farms. When I saw the train loads of emigrants going West years ago over these trunk lines, I said to the farmers: "We will sometime hear from these people in the markets of the world."

Q. (By Mr. FARQUHAR.) Are you speaking of the undesirable element in that immigration?—A. Oh, yes; yes. Of course, I would not close the door in the face of good people that come here to become good citizens. The point I wish to make is, that if we had it to do over again it would be better not to make it so much of an object. I would not advertise our free land so extensively; I would not invite and urge them to come, as our people did. I think we made a mistake in giving the railroads the quantity of land we did, and the homestead law was carried to extremes in giving away the public land. A great many people that went there did not get the advantages they hoped for. The large increase in production brought down the prices of agricultural products below the limit of profitable production. There was no profit for them, and it glutted our market to our great loss. Of course this land would have all come under cultivation in time, but it ought to have come naturally. If the settlement of the Northwest had been a natural settlement, a natural pushing on there by the pioneers, as it used to be when this country was developed and settled, there would yet be an acreage of land left there for our children. Now it is all taken up.

Q. Were not the railway companies anxious to have the farms settled in order to give them local traffic, especially along the roads that pushed West to the Pacific coast?—A. Yes, sir; it was good for the railroads, but not so good for farmers of the Middle and Eastern States.

Q. Do you think the disadvantage of the Eastern and Middle State farmer is on an increasing grade or has it come to a stop?—A. I think the reaction has set in. I think a farmer will do better to go East than West now, but there has been a time when it was the other way.

Q. Has the diversification of crops by the Middle State and Eastern farmer given him a wider market for a smaller class of products and a class easier produced, than the Western man can possibly bring into the market?—A. He has had to change his system of farming entirely. This has been an advantage to some of them, depending a good deal upon location. It has been particularly hard on the farmer in the East who is far from some center of population.

Q. (By Mr. KENNEDY.) Was most of the inviting of immigrants you speak of by the foreign steamship companies that profited by immigration?—A. The foreign steamship companies and the railroads. The railroads that had this land to sell of course wanted the homesteads taken up to enhance the value of their land.

Q. Does most of the undesirable immigration that comes to this country remain in the cities, while the really desirable immigration goes to the farms of the Northwest?—A. Largely true, no doubt. The most desirable class usually go to the farms; the undesirable class does not usually go out on the farms; they can not stay on the farm without becoming pretty good people.

Q. (By Mr. FARQUHAR.) Is it impossible to get them on the farm?—A. They are clannish and not satisfied to go on the farm. A good many of them, if they knew how to farm, would go out into the country. Many of them have a very hard life in the mines and elsewhere, and would do much better to go on to the farms.

Q. (By Mr. A. L. HARRIS.) What is the school age of children in your State?—A. From 6 to 21 in the public schools.

Q. What have you say in regard to the sufficiency of the public-school facilities?—A. We are well provided in Ohio with good schools.

Q. About what size are your districts, through the country, as a rule?—A. I think 2 miles square or thereabouts.

Q. What is the character of the schoolhouses?—A. Good schoolhouses; fine schools.

Q. And the teachers?—A. Good teachers and good schools; we are ahead of the East now, as far as the district schools are concerned.

Q. Can you state what per cent of the school population is enrolled in the

schools?—A. I have not the figures to give you the exact per cent, but in the country districts it is a very unusual thing for the children not to attend the district schools. The young children usually go 6 months in a year, and when they get older and can work perhaps they stay out of school in the summer and go in the winter. But of course there are families that do not send their children unless compelled to do so, but they are very scarce, and a man would hardly be permitted to stay in the community now if he would not let his children go to school.

Q. (By Mr. CONGER.) Do you mean for the entire period of the school age you just mentioned, from 6 to 21 years?—No; I mean they start in at 6 and go summer and winter until they get old enough to work. They are hardly ever taken out of the summer school before they are 10 or 12 years old. When a boy gets stout enough, about 13 or 14 years old, he usually helps his father on the farm in the summer.

Q. Until about what age do the boys continue in school during the winter?—A. If they want to get just enough education to enable them to do ordinary work they will quit going at about 16 or 18 years of age. Others will, if they desire an education after they reach that age, generally go to a higher school.

Q. (By Mr. A. L. HARRIS.) Have you a provision in Ohio for a township high school?—A. Yes, sir; I think we have it in some sections; it is not very general in our State.

Q. (By Mr. RATCHFORD.) Do you believe that compulsory education should be enforced in the agricultural districts?—A. I think most of the farmers that have boys have a desire to give them an education. I think they almost always give them all the advantages that are within their reach. If they do not send them away from home and hire their board, they give them all the advantages they can get near-by. Some boys and girls fritter away their time in school and then the farmer thinks they will be better educated if they are put to work. I do not know of any farmer who would not rather encourage his boy to know more, although he might probably ask him to stay home in the busy season in the summer and take the 6 months in the fall or winter.

Q. (By Mr. A. L. HARRIS.) What have you to say in regard to the adaptation of the public-school course in your State to the needs of the agricultural people?—A. I think that the elementary principles of agriculture ought to be taught in all those schools. Of course they would not go into it extensively, but they ought to know something about the soil, how to maintain its fertility, etc., and what kind of farming will pay best in particular localities; all the things that a farmer ought to know to succeed on the farm.

Q. (By Mr. FARQUHAR.) Would you advise including the chemistry of farming in these schools?—A. I do not know that I would very extensively in the district school; I would go into it somewhat, however. Their minds ought to be impressed with the importance of maintaining and not exhausting the fertility of the soil. There are certain kinds of farming which exhaust the soil in a few years, and there are other systems which are not so exhausting. They ought to understand that it is not economy to feed all corn, for it is not a complete ration, and I would like to see such information furnished in county schools. A great many boys who leave the farm would stay and become interested in farming if there was a little elementary instruction in that line. I think every man ought to be taught to earn his living with his hands. Farming is one of the surest methods of getting a living.

Q. Do you think the increased knowledge of the American farmer during the last 30 or 35 years in respect to soils and the feeding of stock has doubled the ability and the capacities of most of them?—A. It has increased it very much. Of course, there has been a great improvement. Farmers now try to avoid the exhausting of soil. They are trying now to restore and maintain the fertility. They are making great progress in that direction. That has been one of the things we have kept constantly before the farmers in our organization.

Q. Has the United States Agricultural Department done an immense amount of good?—A. Undoubtedly it has done much good in increasing agricultural intelligence.

Q. Do the young men usually take to the agricultural college and the experiment station?—A. No; the larger share of the young men that want to get an education do not go to the agricultural and mechanical colleges. They want an education in the hope of engaging in some other work. Of course, it is getting better. The number of farmers' sons that feel that way now is decreasing rapidly, but a great many farmers thought if their boys were to be educated they did not want them to come back to the farm; but there has been a wonderful change in that during late years.

Q. Do you think it would be better to have agricultural education a part of an established college than in a separate college?—A. No; I want the agricultural college by itself; I want it separate and distinct. These attachments to the regular universities are humbugs, as a rule. They get money of the people, appropriated for giving instruction in agricultural and mechanical arts and then teach the classics.

Q. I would like to hear you explain that in a practical way.—A. They want the money. They are greedy for that always, and they think they can get the money and put off the farmer with little return for it. And so far they have been able to do it. I understand that in many States the universities have simply robbed not only the farmers, but the mechanics. I can remember very well when in Ohio our agricultural college had just one professor to give instruction in agriculture. All the rest of the money was going in other directions. There are many colleges in the country now that give very little instruction in agricultural and mechanical arts, but they get the money. The best condition possible for an agricultural college is to be an agricultural and mechanical college, an industrial institution where the sentiment is that it is honorable to work at any honorable employment. That is what you want with the boys who are getting an industrial education. You do not want them to be influenced by anything in the air that would indicate that a preacher or a lawyer is more respectable than a farmer or mechanic or any better. That is my idea of it. There must be a spirit of pride and enthusiasm. Of course there are a good many of these institutions that have got other educational advantages aside from agricultural and mechanical, that are doing very good work. Our organization has made it a point to make the fight on that line, and we have accomplished quite a little. A few years ago there was a bill pending here to give more money to the agricultural colleges. There was no provision that it should be expended in giving instruction in agriculture and the mechanical arts. Our organization went before the committee and said, "You must put into that bill a provision that this money shall be expended only in giving instruction in such branches as pertain to agriculture and the mechanical arts." We had quite a fight over it, but they did it and saved the bill. In some places it is carried out in good faith, and in others it is not.

Q. (By Mr. A. L. HARRIS.) What is the total capital employed in agricultural pursuits?—A. I have the exact figures, but not here. A little over \$15,000,000,000.

Q. What are the comparative earnings of that occupation at present compared, say, with 40 years ago?—A. I think farmers made more 40 years ago on a given amount of money invested in a farm than they would make to-day.

Q. Will you please state the reason for that?—A. The valuations of property were lower then, averaging the country over. In some localities they were higher than they are now, but through Ohio 40 years ago land was not valued as high as it is now. He would have more land and probably for the same amount of money could get more live stock. Labor was much cheaper, and he depended very largely upon the local markets. He was not affected quite so much by the competition of labor all over the world engaged in agricultural pursuits. I think he had more left of real profit out of his investment then than he does now. Of course, there is a good deal of guesswork about this, and I would have to investigate before being too sure of it. You know, a man that was worth \$10,000 was a rich man 40 years ago, or a little more than 40. He was called very well off, and I remember very well when a man worth \$5,000 was considered a rich man in Medina County, where I lived.

Q. What was the difference in the purchasing value of a dollar then and now?—A. A dollar will buy a good deal more now of most things than it would then; of clothing, furniture, and everything of that kind.

Q. (By Mr. CONGER.) Will it buy as much land?—A. No; it will not buy as much land and it will not buy as many cattle. He would not have to invest as much then to make the same amount of money. He would probably realize as much advance on a steer then as he would realize now, and he would have a great deal less capital invested in the steer. His taxes were very much lower.

Q. (By Mr. KENNEDY.) If he would go to town now with \$5 or \$10 would he bring home nearly twice as much sugar, calico, and so on, as he could then?—A. And almost everything. I can remember when farm tools cost, perhaps, twice as much as they cost now. Perhaps a plow might be an exception. Plows are about as high now as they were then but they are better; but take the small tools, hoes and pitchforks, and you can buy just as good for 80 cents now as you could then for \$1.

Q. Would he bring home a better character of plow or cultivator now?—A. Very much, and \$1 will buy more of almost everything of that kind. Sometimes

some of the things we buy to-day do not wear as well as some of the old-fashioned things.

Q. (By Mr. A. L. HARRIS.) What are the earnings of the capital invested in agriculture compared with other lines of investment, such as banking, manufacturing, mercantile business, and railroading?—A. In a general way they are one-third or one-half less, as nearly as I can figure it out. Take all the capital a man has invested in farming and figure the per cent he is getting, and it will, perhaps, range from 2 to 3 per cent. There may be some instances where he would realize a good deal more than that and others where it would not be as large. I do not think the net profit would range much above 3 per cent.

Q. Do you mean after the living is taken out?—A. I mean the net profit, after you had credited the farm with your living and charged for work, etc.; charge all you pay out and credit all you take in. Now, of course, that is my idea; take the country over, 2 or 3 per cent, perhaps, would be somewhere near it.

Q. What have you to say in regard to the taxation of agricultural property as compared with other industries?—A. My impression is that agricultural property pays more than its proportion of the taxes.

Q. Will you state how?—A. In the first place, it is all visible property; you can not hide it. I am speaking of farm property; I am not speaking of those farmers that may have some money invested in stocks, bonds, etc., but I mean the land and the cattle and the tools and the grain. The assessor finds it all; he comes around and gets all of it. He has a long list of questions that it takes an awfully shrewd farmer to dodge in returning the property, and then he has to hold up his hand and swear to it. They do not ask the city fellows to swear; the assessor does not require it. The assessor knows what farm property is worth. If you have a good horse he knows about what it is worth; they do not pretend to put it in at 100 cents on the dollar of its value, what you would take for it. Farm property goes in from 40 to 75 per cent of what the owner would consider it worth to sell; that is the way it goes in for taxation. Do you want me to go on a little? In the first place take the real estate, and you know how it is valued in our State. It is appraised once in 10 years. When a land assessor is to be elected the people in town are pretty sure to get some shrewd fellow who is expected to favor town property. I am speaking of Ohio. They may put the land in at a pretty fair figure and the buildings pretty low on the farms, and then when they come to the town they put in the buildings low where the principal value is in the buildings. And the farm that would rent at a fair rent for say, \$250 a year, will pay more taxes than a business block that rents for \$500. Of course the large corporations and large interests manage to get their valuations down pretty low.

When it comes to personal property, after they get through with the farmer they come to the merchant. The law requires that this property shall be returned at its actual cash value. The merchant says: "The farmer puts in his property at 40 to 60 per cent; he does not give the value, and it is not fair that I should put in my property at full value." The law requires him to put in the monthly average value of his stock; that is the law in Ohio now. The question is, How much shall he return? He averages up all through the year. There was one farmer who sold his farm and went into merchandising, and he took an inventory and divided his inventory by twelve and returned the quotient. He thought that was about the fair way to return it, and that is about the way our mercantile friends return it in Ohio.

Q. (By Mr. FARQUHAR.) Does that valuation stand with the assessor?—A. I think it does generally.

Q. Was that farmer a granger?—A. He was a farmer and he left the grange when he went into merchandising. Of course, he had a different way of getting at it than the other fellows, but the other fellows reached about the same result. The merchant that will carry about \$25,000 worth of stock will advertise it for sale on that basis and returns it for taxes at \$2,500, and lots of them carry \$10,000 stock and return them for \$1,000. I can show you a merchant in an adjoining county that carried \$25,000 of stock and only returned \$1,000. The merchant will say, "It is not right; I know it is not right, but the other fellows are putting it in about that way and we do about as they do." So much for merchandising. Then come to the man who has notes and mortgages and makes his living out of the interest and buying and selling. I don't care whether he is a farmer or who he is. But it is astonishing how poor those people are. When an assessor comes around, they have very little to return for taxation. Then, go to the local banker and it is astonishing how much business he can do on a capital of \$1,000 or \$2,000. Some of the strongest banks in Columbus, if you recollect, Governor Foraker said in his message had their valuation at less than \$2,000. The manufacturers

in Ohio for years made no return on goods that had been carried over. His factories, his buildings, and his warehouses could be full of binders, wagons, and carriages, and not a cent was returned for taxation on that property. If one of them would be sold to a farmer it would be returned and he was taxed on it. That was the law, they were shrewd enough to get that little provision into the law that we grangers struck out a few years ago; and of course it made the amount they returned according to the property they had, very low. Take the State over and I will guarantee that the merchandise of the State of Ohio is not returned for taxation at over 15 per cent of its value; I think that is a proper estimate; while farm property will run from 40 to 50 per cent. Outside of the national banks, where you can get at them, bank property has not returned that much; the men that own notes and mortgages, take the State over, had not returned 15 per cent of them. A great deal of this property seems to be out of the State when the assessor calls. Some fellow takes a mortgage in his own name but does not own it; and it is very hard to find it until after the assessment is over. So that, taking it all in all, the farmer pays more than his proportion, not because he is more honest than other men, but he can not secrete his property. I do not know that he would but he might; there are some farmers, no doubt, that would. We do not ask the merchant what his stock inventoried at the last inventory, but if they would just give us an inventory at the lowest point in the year they would pay a great deal more taxes; they would come somewhere near paying their proportion. And there is a way of getting at these bonds, mortgages, notes, etc., but they do not get at them, and for that reason the farmer pays more than his fair proportion.

Q. (By Mr. KENNEDY.) What per cent do farmers have to pay for money at the local banks?—A. That depends a little upon the locality; they can get it from 5 to 8 per cent I think.

Q. How can they do that without being ruined if they make but 3 per cent on their invested capital?—A. They are very apt to go that way if they borrow too much of it. A man can borrow a little to bridge over and pay it off.

Q. Is there much borrowing done at the banks?—A. No farmer to-day borrows money if he can possibly help it. They used to borrow liberally, and they did not think it was worth while to pay if they saw a place to put the money and make more out of it than the interest; but the experience of the last few years has taught the farmer that he never should borrow money unless he knows whence the money is coming to pay his debt. No farmer worthy of the name of farmer will borrow money unless it is to make some shift. If he has some stuff to ship, perhaps he will borrow the money to ship his stuff and sell it and pay it back. If the farmer sees something he would like and does not have the ready money, he will not borrow it; he does not borrow unless he sees where the money is coming from to pay it back.

Q. (By Mr. A. L. HARRIS.) What effect has the decline in the value of real estate since 1866 had on the valuation for taxation?—A. It has not declined for taxation as much as in actual selling value.

Q. Now, there is a constant decline in the money value of the farm; would the farmer have to pay the tax pretty nearly on the full value of the farm?—A. He gets no rebate from that; the appraisement is for 10 years. He has to pay on the appraiser's value. But all farms have not declined; good farms that have been taken good care of have not declined in value materially.

Q. I have heard it said that farm land has decreased from 50 to 100 per cent. Is that true?—A. That is not so. There may be a few localities where they may have done so.

Q. (By Mr. RATCHFORD.) Is there a board of equalization in every county in Ohio?—A. Yes.

Q. If a man can show that board that he is taxed unjustly, will he get a reduction?—A. If he can show them that his property has been appraised at a higher valuation than the same kind of property of his neighbor he can have that equalized; but he could not receive relief by going before that board and showing that the merchant has returned merchandise at less than his own property is returned. They can equalize land values only once in 10 years. When the township appraisers have done their work the county board takes the matter up and equalizes the valuations in the county between individuals, and then it goes up to the State board of equalization and the State board takes the matter up and equalizes between counties.

Q. (By Mr. FARQUHAR.) Is your county board given the authority of spreading the taxes within its own county lines?—A. They can equalize it between individuals within their territory; they can take it off of one and put it on another.

Q. (By Mr. A. L. HARRIS.) What would be done in case of a building being burned and a new building being erected?—A. The new building is put on, I suppose. If a building is burned it is taken off, I presume.

Q. (By Mr. RATCHFORD.) Is it your observation that the farmer is burdened with taxation compared with the workingman who owns a home in the city?—A. I think farm property is in at a higher per cent of its actual value. Of course, there are exceptions, but I think that as a general rule the town property, the real estate, including the buildings, is put in at a lower rate. In other words, if a farm would sell for \$5,000, property in town that would sell for \$8,000 would pay about the same taxes as the farm would.

Q. Do you think, on the whole, that the farm property is at a disadvantage as compared with all city property in the matter of taxation?—A. I think that in making up the valuation of property the people that live in town watch the matter more closely. Of course, a great many do not have anything to do with it, but there are shrewd men who have a great deal of money invested; and they see that some man is put on to value the property who will, at least, be very fair to their city. They control it.

Q. Is that also true of the country districts?—A. Where it is all in the country they try to get a man who will return it low enough. If it is lower than the neighboring township, it is raised. But generally the same man assesses the property in the town and country, and I suggested the idea, perhaps, that they put the land in as high as it ought to be and the buildings low on the farms—that is, it seemed low—and when you come to the town, where the principal value is in the buildings, they are put in low. This applies to small towns or villages.

Q. (By Mr. FARQUHAR.) Do you mean the assessor is more susceptible to the town influence than to the country?—A. Yes, sir.

Q. Are you so scattered you can not select them?—A. We neglect our duty. At the last valuation, however, we took off a good many millions from the farmers and put them on the cities, and yet we did not get it equalized.

Q. (By Mr. RATCHFORD.) Did you do that through organization?—A. Certainly; no other way in the world.

Q. (By Mr. A. L. HARRIS.) Are the tax methods in Indiana very much like those of Ohio?—A. Indiana is very much like our State.

Q. Are there any other States that are collecting more on the railroads than Ohio?—A. The valuations on the main lines of railways in Indiana are about double what they are in Ohio. The side lines are about the same—that is, the extra track, if they have a double track.

Speaking of taxation: A business block in town that will rent readily for \$500 a year will not pay as much tax as the farm outside that rents for \$250. Of course there are individual exceptions. That is the rule. I am not finding fault with these conditions—simply stating what I regard as facts.

Q. Have you any suggestions to make now as to the unification of tax methods, providing it could be accomplished throughout the States?—A. I think the law should apply everywhere. I think when you go into the details and ask the farmer to return the number of his horses and cattle, and his hogs, and the number of bushels of corn, and everything, when you go to a man who has other kinds of property, he should list it by the piece, just the same—make a full exhibit; and if the farmer is required to swear, he should be. Valuation of property for taxation should depend somewhat upon its productive power. Sometimes there has been a great deal of money invested in a plant, for instance, that has ceased to be valuable; it should be appraised at what it is actually worth; that should be the basis, and every man should pay his fair proportion.

Q. Do you know of any States in the Union that raise almost their entire revenue from corporations—railroads?—A. Pennsylvania's State taxation is all from the railways, I think, or from corporations. There is no direct tax, I think, on land at all in Pennsylvania for State purposes.

Q. Would you suggest that there should be a unification, at least so far as taxation of corporations is concerned?—A. I think it should be uniform, so that they would not dodge from one State to another to escape taxation. People who actually live in Ohio, and own property there, go to New York or some other place a part of the year, where they can get rid of taxation. If there was uniform taxation all over the country they would not do that.

Q. (By Mr. CONGER.) I understood you to state that the largest private banks of Columbus were appraised at from \$1,000 to \$2,000 each. Is that also true of the national banks?—A. No; they get at the stock of the national banks. I would not say here that that amount is returned by those banks now. I do not know whether that is true now or not. I simply referred to the fact being stated in the message of the governor to the legislature some years ago. The banks never denied it, and never forgave him, either.

Q. (By Mr. A. L. HARRIS.) Do you know whether the national banks are assessed at the full value of their capital stock?—A. I do not think they are. I think a few cases were tried in court where they claimed they were paying more than other kinds of property, and the courts decided they could not be made to do so, and their property was returned for taxation at the same value as property around them.

Q. Please state what has been the decline in prices of agricultural products in the last 30 years?—A. I think the prices are somewhat lower than they were 30 years ago, taking the general average. Of course, some things are higher and some lower. I think the general average has declined. I mean by the same measure of value. Thirty years ago we were not on the same basis as we are now.

Q. What has been the decline in the money value of agricultural lands in your section?—A. In my immediate section there has not been very much decline, if any. In some sections of the State there has been quite a marked decline. In the older sections, where they have not kept up their farms, exhausted the fertility, let them run down, and the buildings and fences have run down, there has been quite a marked decline. My part of the State is a new country. The soil is rich and has been drained and improved, and I suppose there has not been very much decline there. Good farming land ranges anywhere from fifty to eighty dollars an acre in that section.

Q. What has been the decline in the productive power of the soil?—A. There has been a marked decline in that. It is in counties where they must use fertilizer to get a crop, and if they do not use fertilizer they do not get crops. They have drawn on the soil until it is largely exhausted.

Q. Where the soil has been exhausted, you think that is one of the causes of the decline of the value of the land?—A. That is one cause. There are other causes, but that is the principal one.

Q. (By Mr. FARQUHAR.) Do you help that by diversification of your crops?—A. Yes; rotation.

Q. And by resting the land or fallowing?—A. We do not fallow in Ohio any more; we fertilize it and keep more stock.

Q. (By Mr. A. L. HARRIS.) What has been the increase of acreage under cultivation in your State in the last 20 years?—A. There has been some increase; not very much in our section.

Q. What has been the increase in the country at large?—A. I do not think that there has been any increase in the Eastern portion. There has been rather a decrease. In the West there has probably been an increase—that is, new lands have been brought under the plow; and you may take some sections in Ohio, through Madison and Ross and the Sciota Valley, where they used to raise a great many cattle, they are plowing more and raising more corn and wheat.

Q. What has been the effect of this increase in acreage of farm land for cultivation on production and on prices?—A. It has very largely increased production and of course has lowered prices. The opening up of this great expanse of country in the West, bringing into competition with the other farms millions of acres that were not cultivated a few years ago, has had a marked effect on prices. The prices of agricultural products depend upon the amount produced. The demand is about the same all the time. If you have a very large production, you get very low prices. A very unusual crop for a series of years makes a farmer poor. For instance, the four largest crops of corn we ever grew in this country were worth \$233,000,000 less than the four smallest crops we grew in the past 20 years. The four largest crops of potatoes were worth \$70,000,000 less than the four smallest crops in 20 years. In other words, if you offer the consumer more than he wants to buy, he fixes the price and fixes it low.

Q. (By Mr. RATCHFORD.) The farmer does not always sustain the loss that people usually believe he does by reason of shortness of crops?—A. No. A medium short crop is usually better for the farmer than a large crop. The individual farmer, if he raises big crops, makes money; but when farmers all over the world get very large crops the price is so low it leaves no profit. Two years ago you could not sell the best apples for 75 cents a barrel; this year you get \$5 a barrel. For a long time the price of corn remained pretty well up, but the continuance of the big crops finally broke it down.

Q. (By Mr. A. L. HARRIS.) What has been the effect of bonanza farming as practiced in the West upon the smaller farms in the East?—A. It does not hurt us a bit. They are the fellows who lose money. It is the men who went up there who had wives and children big enough to pick up potatoes and work all day long who hurt us. It is not the bonanza farmer. Those people are breaking up; they are not going to hurt us any more, if they have ever done it; they do not hurt us now.

Q. (By Mr. CONGER.) Did not the farmers of Ohio in former years raise considerable wheat?—A. They do now; it is one of their main crops.

Q. Is it not the bonanza farming that brought about the very large crops of wheat that have been produced in this country?—A. Of course they have contributed to the large crops. I do not think they have hurt us very much. If all that country up there was in the hands of bonanza farmers, and those other fellows were in Europe, where they were, eating our farm products for us, I think it would be better.

Q. (By Mr. FARQUHAR.) Do you think the consumer should be on the other side of the Atlantic?—A. No; but if he is a consumer over there he won't hurt us so much as the producer here. I think there has been a time, of course, when that bonanza farming has hurt us, but it soon reaches a point where it does not amount to much. They exhaust the soil, and it is expensive to keep it up. The soil is becoming impoverished; they take out the fertility; it is all taken out, and nothing is put back. That has not hurt us except along with the other kind of farming. The vast increase of production has affected prices. That method of farming—tilling the soil—has not injured us more than the ordinary style. We can hold our own with them, I think, pretty well. Of course we grow wheat in Ohio in a rotation of crops. It is not a specially money-making crop. Wheat is all they have up there. Perhaps you have a wrong impression. I did not mean the increased production did not affect the price of wheat. I do not think that style of farming hurts the farmer more than he would be hurt if the land were divided up into smaller farms.

Mr. JONES (president of the National Grange, who was present to give his testimony). There is a difference between bonanza grain growing, which is impracticable, and bonanza stock growing. There are bonanza stock growers who handle sheep, hogs, horses, and cattle, and I think they do injury to the farmers in the Central States. I think this bonanza farming should be defined, in order that Mr. Brigham may not be misunderstood.

A. (Mr. BRIGHAM, resuming.) I do not agree with my friend Jones. I do not think that competing cattle raising is hurting us. I will let him testify as to that. I think when they sum up their losses they will not find much profit. I think we are hurt by the men who control the prices in Chicago.

Q. (By Mr. A. L. HARRIS.) Have you anything further to say in regard to organization of agriculturists?—A. That is a hobby of mine. I think the farmers, recognizing the fact that everything around them was organizing and combining, and attempting in one way and another to control production and prices and regulate their interests in other ways by combining all their influence and power, became satisfied that they must for their own protection organize their forces and make available their power, and that led to the formation of these farmers' organizations. It was a matter that seemed to be forced upon them. Of course, the decline of prices after the war, and other causes, made the farmer a little dissatisfied. They had been getting large prices. Perhaps they were somewhat fictitious, but they recognized the fact that the prices were declining, and they believed their interests required the formation of organizations. They believed the railroads were discriminating and extorting unreasonable prices in many instances. They knew they were discriminating, and they thought the charges were unreasonable sometimes. They organized practically with a view, first, of protecting their financial interests; but they soon thought it necessary for them to go beyond that and look after their social interests and cultivate their intellectual powers, and all that became a part of their work as an organization. They wanted to be in a position so that if legislation was needed to protect an agricultural interest, they could bring their power to bear to get it. If a combination of many manufacturers and business men or merchants was formed to oppress them, to force down the price of what they had to sell, or force up the price of what they had to buy, they wanted to be in a position to meet them. For instance, if the pork packers got together and said, "We won't pay any more than 3 cents for pork," they thought it would be advisable to get together and say, "You can not have our pork for less than 4 cents." Or if the National Cordage Company or some other combination of manufacturers of binder twine got together and advanced prices unreasonably, farmers could protect themselves by refusing to buy at that price.

There was a time when the manufacturers of agricultural implements would not sell anything to the farmers directly. They had to pay two prices for everything they got, because of the expense of selling; farmers did not know anything about the first cost of goods. They organized for the purpose of finding out these things and protecting themselves. They have done a great deal in the way of ascertaining the first cost and securing supplies at first price. They have some-

times protected themselves from unjust combinations to put down prices. Perhaps I can illustrate that in the matter of wool. I was interested in that because I was a woolgrower. Circulars went out all over the country to local buyers, saying: "You paid too much for wool last year; must not pay so much this year; better commence preparing the woolgrower to take 25 cents for his wool." I watched it, and every place I went buyers were talking 25 cents for wool this year. I was master of the State Grange, and put out a circular advising woolgrowers to commence the work of preparing buyers to give 80 cents for wool. I do not know what influence it had, but I know they did not get the wool for 25 cents.

A few years ago Mr. Arbuckle would not allow his coffee to be sold for less than 25 cents a pound. If a man sold it for less he was put on the blacklist, and they would not let him handle it. My attention was called to it, and I at once put out a circular. I had the blacklist containing the name of every man that had sold below the stipulated price, and to whom wholesale dealers were not allowed to sell. I put out the circular giving the facts in the case, and suggested that it might be a good thing to stop buying Arbuckle coffee and buy some other kind or drink something else. Within 10 days the man who gave me the information got notice from the firm that he could have the coffee; that he could buy it wherever he pleased, and sell it as he pleased. I do not know that the circular that went out had anything to do with it; but when a man in a business of that kind understands that there is an organization of farmers that is not going to consume that particular article under the terms on which it is sold it would probably have the effect of waking him up.

Q. (By Mr. FARQUHAR.) Is your organization as active now in these matters as formerly?—A. Yes. They are more active. They are doing more work, but in a different way. We have learned that there are different ways of doing things. Bluff and blow and bluster do not accomplish much. We are very thoroughly discussing the propositions that we undertake to carry through. If we want any reformatory legislation we discuss it thoroughly until we are pretty well satisfied what is right. We think it would be very bad policy for us to ask for anything that is not right and fair to other people. That would be a great mistake. And, whilst we are insistent upon having what belongs to us, we are willing to concede to the other fellow all that belongs to him, and so we are pretty careful. Our organization made a great raid on the middlemen. There was good reason for that. We paid, as I have stated, two prices for farm implements. You could not buy them if your farm was opposite the factory. Could not buy them at all. You would have to go to the agent and pay him 50 per cent more than he paid for them. Those people were taxing us too much. We learned that there was work for us to do. We wanted men to look after those things.

Q. Does the middleman exist now in sales of farm machinery?—A. Oh, yes; they have their agents everywhere.

Q. Is it now done more by salaried men, instead of under the old commission system?—A. A good many of them are salaried, but there is some commission business done. We have arrangements through which we can buy our supplies without buying them that way, if we want them. They have to sell them at a pretty fair price, or we do not buy them.

Q. (By Mr. KENNEDY.) Do you look forward hopefully to the time when there will be such a thorough and perfect organization of the farmers that they will be able to withhold their products if the price offered them is below the cost of production or below a figure that would return them a profit?—A. I do not think there can ever be an organization that will include all the farmers and lead to a perfect unity of action along that line, but I do think the farmers can be organized and educated to a point where they will withhold from the market a staple product when it is below the cost of production. For instance, when wheat ought to bring 75 cents a bushel to return first cost, if it drops to 60 cents, if the farmers should have no wheat to sell at that price, it would soon go to 75 cents. If they would take half the wheat off the market and sell the other half, if they would throw away half, or feed it to the hogs or chickens, they would get more for what they would sell than they would get for the entire crop. When the thing goes to an extreme in that direction, I think the farmers could protect themselves; but I do not think they could ever form an organization that would enable them to fix arbitrary prices on their products, nor do I think it would be a good thing if they could.

Q. (By Mr. A. L. HARRIS.) Do you think the combinations in other industries are forcing the farmer to do that?—A. He may do more and more of that, but I do not think, scattered as they are over a vast territory, that you can ever get them all together. Last year when wheat dropped down they thought wheat

ought to sell for a better price than it was bringing, and wheat was withheld from the market. I can illustrate by a little incident in my own experience. I lived on a farm, as I told you, before I came to Washington. We had our own butter—kept a few Jerseys—and had a little to sell. I used to take it up town myself and sell it, and they paid me 10 cents a pound for it at the time I speak of. Of course, I lost at least 5 cents a pound, so far as real profit was concerned, if not 10 cents. It helped pay the grocery bill, however, and I let the surplus go. There was not enough good butter brought into town to supply the local demand. I knew that. I went up one day with my basket on my arm and handed my grocer the butter. He weighed it out and put up the groceries I wanted. When he commenced to figure up I did not like the figures. I said: "What is the matter here? You ought to owe me, but I owe you." He said: "Butter is only 8 cents a pound." "Only 8 cents a pound?" "Yes; none of us pay more than that." I did not look very good-natured about it. He said: "You are mad now." I replied: "I am as mad as the devil. It is an outrage. You can sell every pound of good butter that comes into this market. There is a local demand for it. These consumers are willing to pay a fair living price. Ten cents a pound is a low price. You have all agreed to pay only 8. Now, sir, I have no more 8-cent butter to sell." I went up to the grange immediately and said to them that we had better not sell any more 8-cent butter. Three or four days afterwards I went to the grocer and he said to me, "Why don't you bring me some more butter?" I told him my cows did not make any 8-cent butter. He told me to bring it up and he would give me 11 cents.

Q. (By Mr. RATCHFORD.) Does the organization of which you have been speaking ever enter into strikes?—A. No.

Q. Do you regard the action of the farmers in combining and holding their pork, wool, butter, and produce, as a species of strike?—A. In one sense it might be. A man strikes, if he strikes because the wages are not satisfactory; if he is not fairly paid he quits work.

Q. Is not that what the farmer is striking for, when he withholds his product?—A. Yes; but if anyone else comes in and sells butter for 8 cents, he lets him sell it. He does not interfere.

Q. (By Mr. KENNEDY.) Might you possibly boycott the man with whom he deals?—A. Yes.

Q. (By Mr. RATCHFORD.) Is refusing to patronize merchants who hold their supplies at an unreasonable price understood as a boycott in the organization which you represent?—A. No; not exactly. Of course, if the dealer charges more than a fair price and we know it, and if we can buy of anybody else cheaper, we do so. If he puts it up too high we get along without it. For instance, when the combination put up binder twine from 10 to 25 cents we concluded we would get along without twine.

Q. (By Mr. FARQUHAR.) What was your substitute?—A. We did not have to substitute; twine came down.

Q. (By Mr. RATCHFORD.) Is your association purely for defensive purposes?—A. We have that feature. We will undertake to protect ourselves from combinations that attempt to force prices below what would be fair or charge more than is fair. If we can do that we will do it, but of course it will simply be a matter of peaceable arrangement with us. We understand that if anybody else comes in we can not help ourselves. That has been one trouble; farmers would accept conditions we would not favor.

Q. (By Mr. KENNEDY.) Have you any fear of the injunction against this boycotting and striking?—A. No.

Q. (By Mr. FARQUHAR.) Is your organization increasing in numbers?—A. Oh, yes.

Q. When was it first organized?—A. It became strong about 1873. It was founded in 1866. The National Grange was organized in Washington with 7 members. It had not much growth until 1872 or 1873.

Q. What is your membership now?—A. I do not know the figures exactly. We have in the country something like 28,000 organizations.

Q. How many States do you cover with your organization?—A. We have local organizations in every State except some of the new States. The organization in some of the States is very weak; in others it is strong. We have gained in membership in the last 10 years probably 100,000.

Q. Have you any political feature in your organization?—A. Oh, yes. We expect to do a good deal politically, but not in a partisan sense. We have representatives from all political parties. All we aim to do as an organization is to reach a man and insist upon his making good use of his political power as a citizen in the proper way. We do not allow our organization to dabble in partisan matters at all; can not do it without violating our rules; but we hope to

secure some political reforms. For instance, we want Senators elected by the direct vote of the people. We think the experience of the last few months has demonstrated that that would be a good thing.

Q. (By Mr. A. L. HARRIS.) Have the results so far been encouraging?—A. Very. The farmers are taking very much more interest in public questions; they understand them better, and are more patriotic than they were years ago on account of this agitation.

Q. What have you to say of the present production of the farm in relation to consumption?—A. I think we are producing in some lines more than is profitable. I think in some lines it would be better to diversify. For instance, we import \$200,000,000 or \$300,000,000 worth of agricultural products every year. Of course, some of it we can not grow here. Some of it we can and ought to grow here. I think it would be better for us to produce some of those things we buy and curtail the production of some things which, because of large production, are selling too low.

Q. (By Mr. KENNEDY.) Do those imports include tropical fruits?—A. Yes, some of the things we can not produce; but sugar is not one of them.

Q. (By Mr. FARQUHAR.) Is Canadian grain included in those products?—A. No, they do not hurt us now; they do not sell us much grain. We sell them grain; oats and barley might come in. The Northwestern States, I think, are growing more barley than they used to.

Q. (By Mr. A. L. HARRIS.) What is the effect of this overproduction upon existing prices?—A. It lowers the price whenever you produce more than the market will readily absorb. For instance, the price of wheat is fixed by the price of wheat in Liverpool. There are incidental things that affect prices; perhaps the gambling in Chicago, or lowering or increasing railroad rates. But the price of wheat is largely regulated by the price at Liverpool, and what it costs to get it there. They want in Liverpool, in addition to what they have in their own country, say, 150,000,000 bushels. If we offer them 100,000,000 bushels we will get a good price for it. If that is all the markets have for sale, that price will fix the price of every bushel in our country. If we offer them 300,000,000 bushels when they want only 150,000,000, they will fix the price and fix it very low. They will put their hands in their pockets and whistle until we get ready to take a low price. They are in no hurry; they can wait; they know we have to sell. That would not matter so much to us if that low price they paid us did not fix the price of every bushel of grain we sell in the United States.

Q. (By Mr. FARQUHAR.) The cereals in this country being 90 per cent of national consumption of the whole product, does the 10 per cent sold in the foreign market regulate the price locally?—A. Yes; that is a fact. Of course, as I stated, there is occasionally an incident that will interfere with it. That is where we are very much interested in this matter. Our farmers ought not to sell one bushel of wheat in Liverpool. We ought to let them have the flour; it ought to be worked up ready to be made into bread. We should keep the bran and shorts at home for the stock, and all fertilizing material should be kept at home.

Q. Would your withholding the American product ultimately develop Argentine, Danubian, and other sources of supply?—A. It might. I want to supply them flour. We do not propose to starve them. We should get all the labor out of it and that fertilizing material before it goes over there, and let them have the flour instead of shipping them the wheat. It would maintain the fertility of our soil, and still they would have their bread. They must have this wheat; that is what frightens them when they find there is a shortage of supply. If they begin to fear that somebody is going to have short rations before the year is over they are anxious to buy; but the farmer who knows that is not anxious to sell. He waits; he says he will take that profit, whatever it is, and, by and by, if his idea is correct, wheat goes up, and the farmer gets the profit instead of the speculator. That is what has helped the farmer out in the last 2 or 3 years; they have gotten millions that ordinarily they would not have gotten.

Q. Are you taking the profits of the wheat pit a good deal and dividing it among yourselves?—A. We simply waited. The indications were that wheat would advance and, instead of rushing it on the market and breaking it down or helping those gamblers to break it down, we waited and got the advance ourselves.

Q. (By Mr. A. L. HARRIS.) In what line would you suggest diversification of agricultural industries?—A. We should feed our grain to our stock, and raise the best kind of stock and put it in the best possible condition before we parted with it. That would consume a large part of our surplus. We would get the profit. When we find we can not grow a certain crop with profit we should perhaps not abandon it entirely, but work gradually into other productions. There is always something the farmer can grow that the world wants and will pay good prices

for. If he offers the world more than it wants of other things it buys them at its own price.

Q. Your department has made a survey of this country and has charts showing the best territory for securing specific products; for instance, sugar beets. Will you state to the commission what the outlook is?—A. There is no question that we can produce in this country all the sugar we want and perhaps have sugar to sell. It will be a good business in certain localities, and it has been pretty fairly demonstrated that the sugar out of it will be clear profit. Build factories and establish around them dairies for the production of butter, cheese, etc., and feed the cows on the pulp of the beet. That business will pay for the growing of the beet; the sugar will be profit. Whether that will be so or not I do not know. If sugar will remain at about 5 or 4½ cents a pound we will in a few years produce all the sugar we want in this country and make a fair profit on it. If these new possessions of ours should give us sugar for 2 cents or 2½ we might not think it profitable to grow beets for sugar. Horses are growing on the ranges and are not worth \$10 a head. Nobody wants them; they can grow horses that are worth \$100 a head. There is a demand in Europe for army horses, for instance. If they grow the kind of horses the market wants and is hunting for, they can make a profit on them. Our idea is to induce the farmers to grow a kind of horse the world wants.

Q. (By Mr. FARQUHAR.) That is to improve the breeds or grades?—A. Yes.

Q. Sowing the best, reaping the best?—A. Yes.

Q. (By Mr. KENNEDY.) Is your organization very strong in the South?—A. No; we are rather weak in the South.

Q. Have you been able to do much toward encouraging the farmers of the South to diversify their crops?—A. Our Department of Agriculture has been working on that line; has been trying to do a great deal. We have some organizations down there; they have our literature; they know what our views are. It is a very hard matter, and it takes some time to get them to change, especially where for a long series of years they have been doing a certain kind of work. It takes longer to change a custom in the South than in other portions of the country where they have not been accustomed for so long a time to one kind of farming. There are a great many reasons why the order is not as strong in the South as in other sections.

Q. (By Mr. A. L. HARRIS.) What would be the effect of the extension of foreign markets to agricultural products?—A. I think it would help us a little if we could hunt up new markets. I think if we could sell our butter and cheese in new markets it would help us, and I will tell you how you can help us yourselves. If you can get the Congress of the United States to make it a crime involving a heavy penalty to sell something for what it is not, putting frauds on the market, and offer to the foreign consumer only genuine cheese and good butter, you can extend our market for those things. As long as they are offered filled cheese and something that is a substitute for butter they are suspicious of all our products of that kind.

Q. (By Mr. FARQUHAR.) Is the Canadian cheese preferred to ours in the foreign market?—A. Yes; because they do not make filled cheese or skimmed-milk cheese.

Q. (By Mr. A. L. HARRIS.) To what extent could our consuls help us?—A. If they were enthusiastic, and knew anything about the business, they could help us. There ought to be in all the foreign countries we trade with men whose special work it is to look after markets for American products.

Q. (By Mr. FARQUHAR.) Do you think, in consideration of the immense exports we have had, that it is remarkable that very little attention is given in the consular service to the farming interests?—A. If they sent a few more farmers over there they would take more interest. A man takes interest in something he knows about. We want a representative that actually represents, a man can not represent anything he don't know anything about. We have one or two attachés connected with some important consular offices over there, and they are looking after the matter. I write them every once in a while asking for information. I have a friend in Germany who writes me regularly, giving me information about agricultural conditions around his point of observation.

Q. (By Mr. A. L. HARRIS.) What would be the effect of a good American merchant marine?—A. I am inclined to think it would be a good thing. Anything that would tend to open up new markets for our finished products would be a good thing for our country. There are countries that do not know anything about what we have to sell that would be willing to pay good prices. There are countries that pay 70 cents a pound for butter, and are glad to get it; that do not know anything about our butter.

Q. How do we reach those countries at present?—A. Our stuff has to go through merchants of other countries now, I suppose.

Q. In shipping from New York how could we lay our products down in a country, say in South America, that we are not in close connection with, by merchant ships making regular runs?—A. It would have to go to Liverpool, and then be reshipped, and if it was better than the English product, it would be sold as an English product, though it was produced in this country.

Q. Would the American producer have to stand the extra freight?—A. Yes. I think there is some good probably coming along that line, but it is a line we are not so familiar with.

Q. To what extent would the agriculturists in this country be benefited by the Nicaragua or other canal in getting farm products of the Mississippi Valley, say, to the Pacific Ocean?—A. I think the farmers on the western shore of the continent would be benefited, and the farmers toward the Gulf of Mexico would perhaps be benefited. Of course the farm pays every cent of the transportation charge. The man that handles it never takes any chances of collecting the transportation from the consumer. He takes it out of the first hands. For instance, in hauling grain to Liverpool from any point in the West, if the rate goes up 5 cents wheat goes down 5 cents in the Western market.

Q. (By Mr. FARQUHAR.) Does such expense lessen the price that goes to the original producer?—A. Yes. When the merchant buys it he figures out all commissions, freight charges, and everything of that kind he must pay, and the balance, after taking out his own profit, goes to the producer.

Q. The cheapening on the producer does not help the consumer?—A. No. The gap is pretty wide between what the consumer pays and what the producer receives. The difference between what I pay for butter here and what I get for butter on the farm is pretty wide.

Q. (By Mr. A. L. HARRIS.) Have transportation rates increased or decreased on agricultural products in the last 30 years?—A. Decreased largely. There is this about it, however: It is claimed, and I was told of it by a man connected with the railway interests for many years and who used to be in Congress, that when there is an enormous crop to go east over the railroads and everything is going to be crowded, they put the price of freight up. They reap the profits by putting up the prices of freight. Five cents a hundred makes a mighty difference to the railroads, and that much difference to the farmers; it puts down their price. Many times a good crop is parted with by the farmer without much profit because of that fact; it costs him more to get it to market.

Q. What effect have low rates had on the farmer in the Middle States?—A. It has deprived him of the advantage of location. For instance, they can charge the farmer who lives at Rochester, N. Y., just as much for putting his product into New York City as they charge the farmer who lives in Colorado, San Francisco, or Kansas. They can not charge more, but can charge just as much, under the interstate commerce law. The through rates are very much lower, of course, than the local rates, and it deprives the man of that advantage of location.

Q. Has that condition helped to develop the new West?—A. Yes; but it is death to the fellows that live between.

Q. Are all farmers clamoring for low rates?—A. Yes.

Q. Do you wish to say anything on the subject of country roads?—A. No; not much. Of course it would be a great advantage if we had good roads. The farmers complain of taxes, and they are, as I said, taxed pretty heavily. I do not think the farmers would complain of the cost of good roads if the cost could be fairly distributed among the taxpayers. They do complain about paying for building roads for the fellow with the bicycle to ride over. The farmer has to pay it anyway; if he does not pay it for building roads, he pays it in his team going through the mud.

Q. (By Mr. BATHFORD.) What escape has the farmer from the payment of excessive rates?—A. It is a pretty hard matter for him to control unless he can get legislation that will fix the maximum rate.

Q. At present has he no escape; is he obliged to ship his grains usually over one road?—A. Whether he does or not, it is the same thing; there is no competition.

Q. Is he obliged to sell to the railroad companies?—A. I think that is sometimes so in the extreme West, where they own the elevators.

Q. Is the Western farmer obliged to sell his produce at the prices offered him, and pay the transportation rates that are demanded for the shipment of it?—A. When they offer him a price they take out the transportation prices, of course; if it is high they take out more than they would if it were low. The farmer west of Chicago, for instance, pays a high rate to get his grain into Chicago, but the man that ships it from Chicago east gets a pretty low rate. They make special contracts and can get it through low. All of the charges come out of the farmer. The many millions that are paid to the people who insure the grain that never grew comes out of him.

Q. Do those who fix rates do it with a thorough knowledge that he has no escape from them?—A. Of course, if he sends it over their road he must pay the price.

Q. Can he send it over any other road usually?—A. The only thing he can do is to reduce the bulk by feeding his grain into stock and shipping the stock, and that costs him less. He can save himself something in that way.

Q. (By Mr. A. L. HARRIS.) What do you know about the combination of railroads and elevator men, especially in the Northwest, in fixing prices, coming under the head of "Combinations to control prices?"—A. Of late years I have not given that matter very much study. I understand that there are combinations. The warehousemen in Chicago have a good deal to do with the expense of getting grain through Chicago. You know you can hardly get grain through to the sea unless it goes through Chicago. Those warehouse charges must be paid. They have the thing fixed so there is hardly any escape under the present system. The whole matter is organized so as to get a good thing out of it as it goes through.

Q. What do you know about the elevators along the lines of some of the railroads of the Northwest paying the same price, while you can not get a higher price from one than from another?—A. I have understood that was the case.

Q. Please state as fully as possible the effect of so-called grain and cotton gambling on prices of farm products.—A. The farmer has the impression that he is injured in the long run by this gambling in certain of his products. When he has a good crop, for instance, they can get the price down, and hold lower than it ought to be. They seem to be able to crush the man who undertakes to come in and put it up. Some people say there can not be a seller without a buyer. That is not so. These men can sell to their own men if they want to. Suppose a man wants to break down the market. He sells a large amount of wheat—wind wheat, as it is called. It does not exist. His own men buy it. It has its effects on the market—breaks it down. They are fixing prices on May and July wheat now, these boards of trade, and it is sometimes pretty hard to get the wheat above the prices they fix. Of course, if it develops that the crop is short; that these men have been mistaken in their calculations, the price gets away from them and goes up, and they lose some money. You take Mr. Leiter, for instance; you know of his recent experience. He can tell you what I can only guess at. I understand he wanted to buy wheat, and he simply meant to make the men who sold him grain deliver the grain. If he had stuck to that he would have been all right. I was reading an article written by a man connected with the business for a long time, and he said no man, no matter how wealthy and strong he was, could stand the strain a long time; that they would finally break him if he undertook to hold the price up. I think, in actual operations, they can hold the price down below what it ought to be easier than the other influences can hold it up to even what it ought to be. We do not want to stop actual speculation in grain—that is, we want the capitalists to buy the grain, all we have to sell, and carry it for us, and realize a reasonable profit; but it seems that the speculative feeling can be satisfied just as well with wind wheat. A fellow goes in and wants to buy wheat. Some fellow who has no wheat sells it to him; takes his chances; gambles; he is satisfied, and goes off the market. The number of buyers that way is reduced down by selling what does not exist at all. I can not see where we are benefited. I think we lose by this gambling. What I mean is by this buying and selling of stuff that men do not own or control, and never expect to own or control. I do not think we would suffer at all by the buying of wheat in advance of its time for delivery; but the more I think about it the more I am satisfied that we, in the long run, suffer by what is called "gambling" in these products. I know they make a great many rules and regulations that are injurious to us. As I hinted a moment ago, the men that deal and do business there have to pay taxes and insurance and warehouse charges on all this grain that was never raised. They have to pay for storing it the same as if it were there. They have to pay that storage charge to warehousemen. It amounts to millions of dollars annually. I do not think I am mistaken about that, because the president of the board complained of that in a letter he wrote. They had some trouble over it. On all this grain that never was handled—never came there—never could have been burned up because it did not exist, all those charges had to be carried. I think sooner or later this reaches back to the producer. He has it to pay. I can not see any advantage from it. Take oats, for instance; they do not gamble in oats as they do in wheat. Oats are commanding a fair price.

Q. How about corn?—A. They do not gamble in corn as they do in wheat; not so much.

Q. And barley?—A. Do not gamble in barley.

Q. Please define what you term gambling.—A. What I term gambling is this: Here are men on the board of trade; that is their business. They pay a large amount for the privilege of being on the floor to do business. Suppose you were

one and I the other. You sell wheat and I buy; that is, you offer to sell me 1,000,000 bushels of wheat. I agree to buy it. I must put up, when I buy that, a certain amount of money as a margin to cover the fluctuations; if that wheat goes down I must put up more money or abandon it; if it goes up the man who sold it must make it good; that is, he must make up the loss. That is what I call gambling. If you expect to give me the actual grain and do so, that is not gambling.

Q. (By Mr. CONGER.) Do they settle on the market price without regard to the wheat?—A. Yes.

Q. (By Mr. FARQUHAR.) If it is called, do you settle on the market price?—A. Yes; except that the charges have to be paid. We have to pay the charges for doing this business. He is interested in doing everything he can, of course, to put down the price. I am interested in keeping it up. It is a sort of see-saw among them. I can not see any good that comes out of that. I think the rules and regulations they make to carry on business in that way are very detrimental to the actual trade in this country, yet it is pretty hard to frame a law that will prevent this gambling and yet allow the business to go on in a legitimate way.

Q. Is it not done in all the markets of the world?—A. I do not think it is.

Q. In Liverpool?—A. I think it is.

Q. In London?—A. I do not know about that. Probably so.

Q. Does not a great deal depend upon the judgment of buyers as to seasonal changes and short crops?—A. Yes; anything that affects the actual production has its effect on the market.

Q. Is the grain dealer in the same position as the merchant who is taking a horoscope of the markets, studying the supply and demand?—A. If he actually bought the stuff and sold it, as a merchant does, it would be all right. We do not object to that.

Q. Would you say that the gambling exists in the nonholding of the product?—A. The injury comes in, I think, from the selling. Suppose we have 100,000,000 bushels to sell, and we have 500,000,000 bushels, and the word goes abroad that so much is sold. I suppose this knowledge can be used to affect the markets abroad. I do not know just what its effect is; it is hard to tell.

Q. Are you aware that in the Western States they have passed laws to suppress that sort of gambling in the wheat pits?—A. Yes.

Q. In Illinois?—A. Yes.

Q. And that the rules and regulations of the local boards are stronger than the legislature itself?—A. Yes.

Q. Is there no remedy?—A. As long as the people will submit to the violation of law by these people, of course there will not be much remedy.

Q. (By Mr. A. L. HARRIS.) Is it not possible to have it defined as gambling, and make it a crime?—A. Yes. The difficulty comes in framing the law so that it will not interfere with legitimate business and yet stop the gambling. Those fellows who had that fight understand that. Our organization made a great fight at that time. We were here backing it up; making a great fight with the others. They said if this law passes wheat will go down at once 10 cents a bushel in so many days. They made strong statements. It did not become a law, but wheat went down and kept going down. If the law had passed at that time and wheat had gone down, as it would have gone anyway, on account of the large surplus in the market and large crops, of course these people would have said, "See what you have done for yourselves; advocated a measure that has proved detrimental to you." So there is always a little danger in that kind of legislation, because there are agencies and influences that even the law can not regulate.

Q. Do you object to legitimate future sales?—A. Not at all; we want them to do that; it helps the farmer out. He does not have to build granaries to store the wheat himself. What we object to is the selling of stuff we do not have.

Q. Is it possible to frame a law defining "options" and "puts" and "calls"?—A. Yes; but you and I know that it is almost impossible to get a law through Congress or the legislature without having some amendments slipped in here and there that interfere, perhaps, with the free working of the law.

Q. Is it true that all reform legislation has to meet these difficulties?—A. Yes, it has to have a trial; we have to learn by experience.

Q. And you are not discouraged?—A. Oh, not at all.

Q. Where do you think such legislation should start—with the States, declaring dealing in options a crime, or with the National Government, under a tax authority, or the regulation of commerce between the States?—A. I think United States law would be the law. I do not think a State law would reach it, because the farmer out West suffers just as much as a farmer who lives in Illinois or Indiana.

Q. Can the United States declare a transaction of that kind within a State a

crime?—A. I do not know how far they can go in that matter. They might get it in under commerce between the States. This is a matter that affects all the States. It is not a State matter.

Q. (By Mr. FARQUHAR.) Has all the remedial legislation you have had come through taxation?—A. All legislation of that kind.

Q. Could you have an oleomargarine law without taxation?—A. No.

Q. Could you have an adulteration law or a law regulating filled cheese without taxation?—A. I presume that is the way of getting at it.

Q. Does it depend on the transportation at all?—A. Not at all.

Q. Has your organization ever seriously taken up this fight on grain gambling?—A. Oh, yes.

Q. Within a year or two?—A. Not since the Hatch bill. You can not do anything in this matter effectively until you have in Congress somebody who is willing to take up the fight and carry it on there in season and out of season, every day in the week, night and day. Be ready and fighting; that is the way Wilbur got the filled-cheese bill through.

Q. (By Mr. A. L. HARRIS.) I understand the report the committee made to the House on that bill laid more stress on the taxation clause of the Constitution than any other, and the regulating of commerce between the States came on rather from an argumentative point of view. Did it seem that the committee was not fully decided as to their power?—A. There was a great diversity of opinion; and some men with stronger interests were represented; sometimes it is really a difficult matter to tell how to do a thing and not do more harm than good.

Q. (By Mr. FARQUHAR.) Have you found that the legitimate grain men of the States have been favorable to your proposition?—A. Yes; many of their representatives were here advocating the measure. In explanation of the standing of the legitimate dealers, I understand that they objected to what they called "puts" and "calls" on the curbstone outside. They wanted that stopped, but they did not want the buying and selling of futures stopped as they did it on the board of trade under the regulations, and the fact is the same men who did it on the board of trade went outside and indulged in "puts" and "calls."

It might be well to say that their predictions did not prove true. They claimed that it would be beneficial; that we would be the gainers if the bill was defeated; the price would be better—it would go up and be maintained. That did not prove true. Prices went down and down right along; they never recovered for a long time afterwards. There may have been other causes. I do not say their dealings there had anything to do with that.

Q. (By Mr. A. L. HARRIS.) Have you any objections, if I want to sell my next year's crop, to my selling or engaging to sell it?—A. Not a bit, if you want to contract for it.

Q. What have you to say of legal regulation of trusts and corporations and combinations and other forms of monopoly?—A. Legislation thus far has not been very successful in dealing with these matters, but it seems to me there should be some regulation of these corporations; they ought to be kept within certain limits. A corporation has a certain power which the individual does not have; that is, they can combine elements of power, capital, intelligence, and all that; and when they are granted a charter to do business we think they ought to be required in the charter or by law to do a legitimate, straightforward business without interfering with other interests.

Q. Where should that legislation be enacted?—A. I do not know; perhaps that ought to be both State and national legislation.

Q. Does the corporation get its charter from the State?—A. Yes.

Q. How can the National Government control it unless it is an interstate corporation? Can it control it more than it can an individual?—A. I do not think it can, unless it becomes in some sense an interstate matter.

Q. Have you noticed recently a disposition to form what we call trusts?—A. Yes, there has been a marked development of trusts recently.

Q. What have you to suggest as a remedy for that tendency?—A. I do not know just how to deal with the question in detail, but think our legislatures and national Congress ought to be strong enough to protect the individual against the abuses of any combination or corporation.

Q. Is the present trend of trusts different from what it was a few years ago? Instead of combining corporations, are they now taking out new charters in certain States?—A. They may be doing that, changing from one State to another.

Q. Are all recent charters taken in the State of New Jersey owing to the fact that the New Jersey law rather invites them to come there?—A. I presume that is the case; they would not go there unless it is to their advantage. When our legislatures get at the matter in earnest and determine to remedy the evils, I think they will do it.

Q. What laws would you suggest throughout the States in this connection?—
A. The first thing is to get at the meat of the matter and study the effect of these trusts. Many of them make the claim that the public does not suffer; they combine for the purpose of reducing expenses, and do not intend to put up prices; but I am a little afraid when they get their full power, when they can control absolutely, they will be oppressive.

Q. What has been the result of the operation of the existing antitrust laws?—
A. I do not think these laws have been very effective. It is a very hard matter to get a law through the national Congress when the men who make the laws are interested in these trusts.

Q. You spoke about the interstate commerce law on long and short hauls. Has the interstate commerce law been effective?—A. I think it has done good. There is no doubt about that. They have investigated matters, and in a number of cases I know of have interfered to the benefit of the parties shipping.

Q. Would you advise an extension of that law?—A. I would give them more power. I would give them the power when they find a wrong to right it, if possible to do so.

Q. Can you suggest an amendment to the oleomargarine laws?—A. I would suggest an increase in the tax on oleomargarine sold in imitation of butter. If the general public know and are warned of the fact that it is oleomargarine when it is placed before them, and they want it, that is all right. No one has any right to object, but a large per cent of the people think they are eating butter.

Q. What is the operation of the existing pure-food laws in the States generally?—A. Where they are enforced by efficient officers they are doing good; they have not destroyed all the sale of impure food. It is still going on, but it has been some protection to the consumers and producers. A man whose duty it is to enforce the law is under strong temptations, and it is not always enforced as it ought to be.

Q. What have you to say on the advisability of Federal legislation on that subject?—A. I think there should be such legislation, because under the decision of the courts an unbroken package can come into the State, and no one can interfere with the sale of it. I think some interstate legislation, some national legislation, would be advisable. A great mass of the people, both producers and consumers, want to know what they eat.

Q. Would you advise in favor of a separate department to deal with this subject?—A. I do not know why it can not be made a part of one of the existing departments.

Q. Would it naturally be a part of the Department of Agriculture?—A. I think that would be a very good place to put it. The Treasury Department would be a good place, only the Treasury Department officials are so accustomed to seeing money come in they hate to see money offered them and not take it. If a man violates the law and offers a certain sum of money if they will not prosecute it is a great temptation to take the money and let him go.

Q. Is the operation of the Federal and State laws to prevent diseases among domestic animals satisfactory?—A. They are doing grand work. I presume they need some additional legislation; but I think the laws are quite effective in that regard.

Q. Would it be desirable if all the States had such laws upon their statute books?—A. Where they are having trouble I think it would be.

Q. Do you desire to say anything on the question of free rural mail delivery?—
A. We are all in favor of that. We think there should be an extension of the postal system. The country greatly needs the improvement. The men who live in the country are entitled to all the advantages of those who live elsewhere; and if it is possible to give them that service, it would be a greater advantage to them than to people in smaller towns. It would be a matter of great economy to the farmers. While it would cost the Post-Office Department something, it would be a great economy to the people. For instance, one man can serve 100 families in his circuit every day, which would save all of those families from going into town after mail. They would read more, I think, and it would increase the number of letters and the circulation of periodicals and papers, which would pay a large part of the expense. It would be a great saving of time and expense, when you consider one man could do what a great many men have to do.

Q. What do you think of the propriety of establishing postal savings banks?—
A. I do not know how that would operate. We are rather in favor of it, but to work it out in detail and have it operate successfully, no plan has yet been devised for this country. The only objection made to it is that it takes all the money out of the country and sends it away. Just what the Government would do with that money is a question.

Q. Do you think there would be a conjection of money in some places?—A. Yes; that is one objection.

Q. (By Mr. FARQUHAR.) How would the United States get any interest on that money?—A. Unless there could be some arrangement by which the man who deposits money can draw a little interest and the man who wants to borrow that money could pay for the use of it, it would not seem to be very helpful.

Q. Do you know any means by which the United States can get interest on such money?—A. That is a difficult matter.

Q. (By Mr. CONGER.) I have heard it suggested that the deposits in postal savings banks might be utilized by the Government in the erection of buildings for post offices, where the Government is now paying rent. Has that been discussed in your grange?—A. General Stone could use the money in building good roads.

Q. (By Mr. A. L. HARRIS.) If there is anything you desire to say in regard to anything we have not taken up, you are at privilege to enlighten us.—A. A vigorous effort was made to pass through Congress an appropriation for the purpose of impounding the head waters of the Missouri and great western rivers, building reservoirs and canals for the purpose of irrigating the arid land up there. It passed the Senate and was knocked out in the House in the conference committee. That is a matter I think of great interest to our farmers and to all people. What affects farmers affects everybody in one way or another. The time will come when that land will be needed. We farmers feel that it is not needed now for agricultural purposes, and we know that this scheme was just an entering wedge—it was just a few thousands now, which means hundreds of millions before they get through with it. When they commence agitating the matter of building reservoirs up there, the interested parties said they did not want the Government to build the dams; all they wanted the Government to do was to survey the country and locate these reservoirs. They wanted it to be a private enterprise, and they worked on that theory for some time; but now they have come to the point where they say, "If the Government does not expect to build these reservoirs, what did they go to the expense of making these surveys for?" I attended their convention last year, and for the first time they came out strongly on the ground that the Government was to build these reservoirs. The argument made, and the ground upon which they asked it, was that it would practically prevent the river from flooding the lower country in that way, and on that ground some supported it; I think our Senator did. That is a humbug, in my judgment. If the reservoirs were built, and dams constructed, they would hold the water until full and then the flooding would continue. The best engineer in the convention admitted that there was not anything in that; that it was talked for effect; that after the reservoirs were filled the water would go down just the same, and flood the country below. The claim was made that they wanted land for the landless, and homes for the poor. If that measure had been enacted and those dams were constructed—reservoirs, canals, etc.—we would find that all that land would be owned by syndicates, and the men who tilled it would get only a bare living. The men who controlled the land would be made rich, and the rest of us would "pay the fiddler." The time will come, perhaps, when this land will be needed; perhaps not in our time, and I think it is well for us to wait until that time comes. I am satisfied that ninety-nine thousand out of every hundred thousand of the farmers east of the Mississippi River are opposed to this. I do not know that this comes in the scope of your investigation; but it is one of the things that is advocated; one that ought to receive attention, and ought to wait until it is needed for cultivation. Then it ought to be controlled by the Government so that men who farm it will get the benefit and not some syndicate. Our organization is watching this. You will find on record in our association our protest against expenditures of that kind at the present time.

WASHINGTON, D. C., March 14, 1899.

TESTIMONY OF MR. AARON JONES,

Master of the National Grange of the Patrons of Husbandry.

The commission met at 10 a. m., March 14, 1899, Mr. Farquhar presiding. Mr. Aaron Jones, of South Bend, Ind., master of the National Grange of the Patrons of Husbandry, appeared and testified. Mr. Jones is also a member of the State Board of Agriculture of Indiana and master of the Indiana State Grange.

Q. (By Mr. FARQUHAR.) How many years have you been connected with the National Grange?—A. Twenty-six years.

Q. From its foundation?—A. No; the order is 32 years old.

Q. Please state the business of the grange, its membership, and the sections of the country it covers.—A. The fundamental purpose of the order of Patrons of Husbandry is the elevation and improvement of the agricultural classes from a social, intellectual, and moral standpoint, and to improve the condition of farmers financially. One of the great purposes of the founders of the order was to unite the farmers of all sections of the country in one fraternity. It was brought into existence soon after the war, to harmonize the different sections of our country and to prevent sectional strife. In this regard the order has had marked success. Its achievements in this respect are second to no organization that I know of. A better feeling has and does now obtain, through its influence, between the extremes of our country, North and South, East and West, than could possibly have obtained had there been no such order. It has shown that agriculturists must either stand together in all sections of the country or go down together. You can not make a law that will affect injuriously one portion of our country and its agricultural interests and not another portion; that we understand thoroughly.

Along our educational line, the order has improved the public-school system in country districts in every State of the Union, without any exception. It is making a strong effort now, with very reasonable probability of success, to introduce into our public-school system the study of agricultural science. We believe that the elevation or improvement and advancement, socially, intellectually, and financially, of the farmers of this country has to come through an intellectual standard. We are thoroughly convinced of that fact. No combination can be made so strong as the combination that comes through intellectual convictions of right. From a social standpoint the order has been of inestimable value to the agricultural classes. The very nature of the business of farming causes too much isolation. The farmers do not come into contact with each other and with other people enough. The order has a tendency to elevate them out of this condition, bringing a sociability into farm life that it has never known before. It creates a better feeling and better sentiment, harmonizes the people of the locality in which the grange is established, and factional difficulties between neighbors are removed. Lawsuits and difficulties in court are often obviated by the system of arbitration in the order and the friendly interchange of opinion. It is in that direction that the order has been of incalculable advantage.

I venture the assertion, and I believe it can be sustained, that to-day there would have been a much larger decrease of value of country real estate had it not been for the advance of intelligence and better society in the country brought about by the organization of the Patrons of Husbandry. We recognize two values to farms. There is the value of its income-producing qualities as a means of subsistence, and its value as a home—a place in which to live, to rear a family. If we can bring before the American people the great advantages of a home in the country and the desirability of rearing a family amid country surroundings, we will advance the price of real estate in the market, through the home value, at least 10 per cent above what it is to-day. In this regard I believe that the order of Patrons of Husbandry ought to have the encouragement of the National Government. It ought to have the encouragement of every good citizen of the Republic because it is building up a higher and better citizenship. As you stated, the majority of this board are men that came from country homes. Such is the case everywhere; the men that control and manage the Government in a large degree came from country homes. You elevate that condition and the chances are we will have still better men; a higher appreciation for honesty and purity of citizenship will be established in this Republic.

[A copy of the declaration of purposes of the Patrons of Husbandry was here introduced by Mr. Jones and placed on file.]

Q. (By Mr. FARQUHAR.) What have you to say as to the numbers in your order and its geographical divisions?—A. There are no geographical divisions. It has members in nearly all States, or in a large majority of them. We have organized between 27,000 and 28,000 granges in the United States. The individual membership of the grange never can run below 13. When it falls below 13 the charter is suspended and the grange does not exist. In some portions of our country the membership is as high as 600. The largest number in any one local or subordinate grange is 607.

Q. What are the various bodies composing your organization?—A. We have our subordinate grange—that is the basis of our organization upon which the whole superstructure rests, as does the Government upon the citizenship of the Republic. Then we have the county grange, where matters affecting the county interests are discussed. In the local grange they come together from distances

of from 10 to 20 miles. We have the State grange, which is composed of representatives of the subordinate and Pomona, or county, granges. They meet in annual conference and take into view all the agricultural interests in that particular State. We have the national grange, which is composed of the masters (and their wives) of State granges. They take into consideration the broad questions affecting all the States. We make prominent the improvement of our roads and homes. "I can take you into portions of our beautiful country, and after I have shown you the indications you can point out the homes of the patrons of husbandry by the additional beautification of their homes and surroundings and the magnificent shade trees they have planted for the comfort of their families and of their stock. Where the grange has been properly understood there is no friction nor objection on the part of business men, professional men, or manufacturers. Mistakes were made, and still are made. The order is strictly nonpartisan.

Q. Do you think this organization is stronger in its educational features than any other?—A. Yes. We have a lecturer whose business it is to instruct the different members of our order and get them to take part in its work. There is not one in twenty who does not become interested before they are members of our order for a single year. And after the men and women have been in the grange for one year, those who take part in this educational feature are fully 95 per cent.

Q. Do the themes you discuss relate solely to agriculture?—A. They relate to agriculture, domestic and political economy, and the duties devolving on us as individuals and citizens of the Republic.

Q. Is there an equal participation by the women in speaking, writing essays, and discussing home matters?—A. It has been my pleasure since I have been master of the National Grange to visit about twenty-five States. While in those States I have attended their subordinate, Pomona, and other meetings, and it is a great gratification to give evidence here that the majority of the attendants are of the gentler sex. They have regarded the grange as the organization specially friendly to them. Our wives and daughters need this sociability ten times more than the farmers and the sons do, and the grange furnishes it.

Q. Is it the moral element you cultivate to build up the American family?—A. Temperance is inculcated, industry fostered, and economy practiced. There is a strict observance of the usages of refined society and a moral feature that covers all. When women become members of the order and they see the improvement of conditions they become its warmest friends and most enthusiastic supporters. The building of homes where culture, refinement, devotion, and love for each other characterize each member, truly is a noble mission. A lady in Colorado said to me: "It is in the grange that I can be of more good to my locality and to my children than in any other department I have ever worked, because there is a moral atmosphere that surrounds the child that has a strong effect upon its future."

The order of Patrons of Husbandry speaks not as a partisan, because its members affiliate with the various parties. We do seek certain legislation that will be just to us and fair to all other classes. We take up these questions with great deliberation; we discuss them in our subordinate, county, State, and national grange. Then we try to secure that legislation along just and equitable lines. Our legislative committee felt profoundly gratified when this nonpartisan commission, as we understand it, was created. You are getting the facts relating to the needs and necessities of the industrial interests of this country and will make recommendations to Congress and the legislatures of the several States of this Union. We believe this is the best movement that has ever been inaugurated in this country to secure proper and just legislation to all the people. Facts have been wanted, and it has been our earnest desire that such a commission should be established. We are pleased to be called before you that we may, if possible, secure your cooperation in the enactment of such laws as, in our judgment, and we hope in your judgment after you have secured all the facts, will fill the agricultural needs of our time. We know and fully appreciate that the farmer can not be advanced beyond his just deserts without the injury of others, and the injury of others is reflected on the farmer. We understand that proposition, and hence we are conservative. Men of various opinions politically, we come as citizens hoping for the time when through the elevation of partisan politics every man will guide his action with a view to its effect upon the citizenship of the country, and not merely upon his party. We have legislative committees in every State of the Union that are seeking State legislation along the lines I have mentioned. Through our organization we can distribute facts to the people and make apparent the great importance of your work, and we hope that this commission will be one of permanent duration. I do not know what your plan is, but the commission ought

to be perpetual. There is no question about that, because you are in the way of getting the right kind of legislation. We believe that transportation to-day is one of the great questions affecting the various industrial interests of our country. It affects and touches every man in the country. Statistics show that 60 per cent of the freight upon our railway lines, our steamships on our lakes, and in the coastwise trade are the products of the farm. Equitable rates, just to the railroads and other transportation companies and just to the consumer and the producer, is a very important desideratum. We believe that a commission—if it be the Interstate Commerce Commission well and good—should have this whole matter in charge, and say and have the power to enforce that which is equitable between the shipper and the transportation companies.

As a farmer in Indiana I raise some wheat. If I have a few thousand bushels of wheat to send to New York and the matter was left entirely with me I would not make the cost of transportation too high—I would be sure of that. The probabilities are that my selfishness would bring it below what ought to be paid. If you leave it entirely to the transportation company the same selfishness obtains on that side as upon ours. If it is not fair to leave it to us it is not quite fair to leave it to them. We ought to have this special noninterested commission to fix the price. We think there ought to be legislation along that line; and we are profoundly impressed with the idea that if this commission in their investigations of these subjects should reach that conclusion the American public would approve their decision almost unanimously without partisan division, because in our judgment that would secure justice and equity between all the interests; and when you have a basis of equity you have subserved the best interests of the entire country.

The grange believes a great injustice has been done the farmers through the importation of shoddy into this country and the displacement of our wools. That has injured our market, and a wrong has been perpetrated upon the consumer as well as producers of wool by the manufacture and sale of cloth composed largely of shoddy. We believe that the men that pay the taxes in this country have a right to protection from imposition through the shoddy that is being put into goods. We have no objection to such cloth being sold, but we do not want it sold for a pure-wool article.

There is another question which, perhaps, is the most important. We need legislation restraining and controlling the growing disposition and grasping power of trusts in this country. We believe the liberty of the people is jeopardized by the growing power in this direction; we believe that the actual values of our property are in jeopardy through these combinations. If this commission should make no recommendation other than one to meet this evil through national and State laws it would have been the means of accomplishing the grandest achievement that has ever been reached by legislative bodies in this country. We can not imagine a better place where such laws should emanate than from a body of men like yourselves: because we know that men in Congress and in the legislatures who are elected by partisan influence and partisan control must necessarily be largely influenced by party interests. We hope to be able to make others see that this is a commission that has risen above partisan bias and seeks only the best good of the citizens of the Republic, and hence the laws that you would recommend could not be biased, or parties divide upon them from a partisan standpoint. Hence we have great expectations, and we have had confidence in the results that this commission is to bring about.

Q. (By Mr. RATCHFORD.) Do you feel that the value of your labor is also jeopardized by these trusts?—A. Yes; it is. We can not draw any distinction between labor and capital. Labor is capital, and capital is labor condensed and stored away. We believe the true interests of capital must be the true interests of labor. I do not believe you can separate them, if they are properly understood.

We also want a widening of the markets for the farmers. We feel that the great power of this Government and very large sums of money have been expended to widen the market for our manufacturing industries in foreign countries. We believe there should be no discrimination and that the same energies and efforts ought to be put forward by the Government for advancing the markets of agriculture in all foreign countries. Men in the consular service ought to be sent abroad with the view of ascertaining what the market requires in the various countries, the probable demand of this country for importation and the probable supplies it might have for export, so as to advise this country. Farmers are placed at a disadvantage, compared with the commercial interests of the country, because they are slower in learning the demand of the world for the products they have in hand than are the commercial interests. We believe it is within the legitimate province of the Government to protect all its citizens alike, and we believe that

no man should be appointed in the consular service who is not imbued with the importance of agriculture and the sale of agricultural products equally with manufactured goods. Our schoolteachers are examined to see if they are qualified to teach what we want. When we send a man abroad to look after our interests, we think he ought to be qualified for the position he holds, and that would advance and enlarge our markets for the products of the farm. We believe it is within the province of this Government to see that when any discrimination in any of the laws of foreign countries are made against the interests of the agriculture of the United States, this Government should protect us by proper methods.

Q. (By Mr. CONGER.) Do you think that the widening of the foreign market for manufactured products is of no benefit to the farmer?—A. In some lines it is a very serious damage to the farmer.

Q. Do you desire a widened market for farm products?—A. Yes.

Q. If we enlarge the foreign market for a given line of manufactured products, say, 50 per cent, so that where 200 men have been employed in this country, 300 will be at work, would that additional 100 men create an enlarged market for the products of the farmer?—A. That would widen our home demand. Yes; we are decidedly in favor of that. We do not want to curtail our manufactures a particle; no, not that. In fact, if we could get all the men in our own country making goods, so as to eat up all we can produce, it would be still better. It is a benefit, but it is only a relative benefit that does not come in the same degree that it does to the manufacturer. If they could also enlarge our market in an equal proportion, it would be an advantage to us equal to the advantage of the manufacturer. Our market is of equal advantage to manufacturers that the manufacturers' is to us, because, if we are more prosperous we can buy more manufactured products, and that tends to make a larger demand for the products of factories.

Q. (By Mr. A. L. HARRIS.) What are the particular lines of manufacturing in this country that injure the farmer?—A. That is the point. We send our best-made agricultural implements in large quantities to the cheap land and labor countries of the world, which are in direct competition with us in the markets of the world for the products that we produce. If we send one hundred harvesting machines to operate in the Argentine Republic, upon lands that stand at a valuation of only \$1 to \$5 an acre, and can produce substantially the same number of bushels of wheat as our land, and those machines can be operated by labor that costs no more than one-tenth of what our labor costs, and then the product of those farms meets our product in Liverpool and London, there is a competition which is injuring the farmers of the United States. There is not enough compensation or advantage coming back to us by the additional number of men employed in those factories, the feeding of which will not equal the loss that comes to us through the excess of production that is brought about by this improved machinery in Argentina, India, and Russia.

Q. (By Mr. CONGER.) Would that apply to the manufacture of steel rails?—A. Nothing of that kind. But I want it understood we do not object if the same push is used to get a market for agricultural products. That is an incident that can not be escaped; they do push their manufactured goods there; they push their plows; they push their reapers into those countries, and help the manufacturers to get a market, and they do not help us.

We favor the election of United States Senators by popular vote. I do not think any man needs any argument in favor of that after the experience of the last winter. It seems as though all legislation is stagnated in a great many States in which United States Senators are to be elected, and we would be wonderfully pleased to see the Constitution changed so as to get United States Senators nearer the people. The Patrons of Husbandry insist on amending the Constitution so as to require the election of United States Senators by popular vote.

Q. If agricultural machinery were not sold to Argentina and other agricultural countries by American manufacturers, would not the same machines be sold by European countries?—A. Yes; but not as good ones.

Q. Do they not make as good ones?—A. No; we make the best machines the world has ever produced. The European manufacturers are far behind us.

Q. (By Mr. FARQUHAR.) What other legislation do you favor?—A. We believe there is a growing tendency throughout the United States—in the Federal, State, and county services—to keep the rates of salaried men higher than they should be. We believe that the salaries of men should be commensurate, or in a degree commensurate, with the same class of talent and ability in private life, and should be in relation to the cost of living, and we believe that there ought to be a revision of salaries of county, State, and national officials. We believe, as has been argued, that the purchasing value of a dollar goes very much further toward a man's living than it did formerly; therefore the same salary, measured by the products that he uses to live, has been largely increased if the salary remains the

same. I remember when the salaries of Congressmen of the United States were advanced from \$3,000 to \$5,000. The argument was made that the cost of living had materially increased, and therefore justice demanded there should be an increase in salary. Now the reverse conditions have come why should not the same argument be applied? This would reduce the taxes upon the people. The burden of taxes now is of serious moment, and is affecting the people of this country. We are burdened with an unjust proportion of them, hence we think they ought to be reduced. An equitable adjustment of salaries would materially reduce the cost of county, State, and National Government. If this commission should make recommendations in favor of this reduction of salaries, it would not perhaps cause all these changes to be made, but public attention would be called to this matter, and I think it would eventually result in the readjustment of salaries.

Q. Have you taken into your consideration of this question the insecurity of positions under the Government?—A. We do not mean they should be graded to the same level as other salaries, but we believe they are now too high and should be reduced. We believe the extravagant style of living indulged in by public officers has an injurious effect on the public mind and should be discouraged.

Q. Do you think the remedy would be secured by endeavoring to get 8 hours work out of Government officers throughout the country and to do away with sinecures?—A. That would help and should also be applied.

Q. Do you think that one-third of the officials of this country are totally useless in the country?—A. I am not familiar with that. We increased the officers in our State 4,000. We got along without them before. The basis of salaries ought to be high enough to command the best talent of the country. We should pay a man well for his service, and then exact that service of him, and compel him to render honest service. If you favor the action I have indicated we can cooperate with you and create a feeling among the people—the voters, and the taxpayers along these lines—so as to reach Congressmen and members of legislatures everywhere.

Q. (By Mr. A. L. HARRIS.) Please refer to our plan of inquiry, Part I, on the subject of "Labor employed," and reply to such topics as you care to touch upon.—A. My observation is that there is about the same amount of labor employed as formerly. I did discover in every State that the farmer was so shaping his farm management as to employ continuously a certain amount of labor, so as furnish the laborer work all the time. In every place I visited the farmer was trying to make the employment of his help as continuous as it would be in the factory, and there is a general disposition to furnish homes for the labor, and to employ men who will live upon the farm.

The effect of improved machinery has not been to reduce the number of laborers so much as it has been to decrease the onerous work, lessen the labor, make it lighter, and very much more agreeable. Skilled labor is the kind wanted on the farm. If we could get skilled labor the demand would be much greater.

Q. (By Mr. CONGER.) What, in your opinion, is the condition of the laborers on the farm now compared with 20 or 40 years ago?—A. It is better in every way; in every conceivable way. They live better, their families enjoy life better; they have less hours of labor, and a great deal more freedom and privileges than they ever had before.

Q. What privileges do they enjoy?—A. The use of horses and buggies, the keeping of stock, the use of land for garden purposes, houses to live in, fuel, etc. The hours of labor are greatly decreased. I know of no exception to that rule. The tendency of agricultural labor to seek other employment arises more from the want of sociability than from any other one thing, in my judgment. I believe the wage rate that is being paid to-day for ordinary labor will allow the average man to save more money in a year and enjoy more comforts of life on the farm than can be done elsewhere by the same class of labor.

Q. (By Mr. FARQUHAR.) How does the amount of drinking among farm hands to-day compare with the usage 40 years ago?—A. My judgment is, there is less drinking to-day among the farm help than there was 40 years ago.

Q. What is the reason for that?—A. Higher intelligence, better opportunities for enjoyment, and a higher respect for a man's family.

Q. Is there the same crowding in the village cross-road saloon and the noisy demonstration of the early days?—A. To my intense gratification that is dying out in nearly all parts of the country. Only here and there does that old-fashioned custom of getting together and exchanging stories at night and taking a drink exist. It will in a short time be a thing of the past. I attribute that largely to the grange furnishing a counter place for these people to come together and enjoy and improve themselves.

Q. Is the farmer of to-day discontented with his lot?—A. The period of discontent is passing away, because the broader range of thought; the closer and better information that farmers have of the perplexities and the environments of other occupations and trades makes him better satisfied with his position. He knows that his lot is not so much harder than that of others. That is one of the things we have tried to inculcate in the farmer through our order. We have tried to show him that he must give credit to that home in which he lives; that he has for his table a far superior quality of food than the man who buys in the markets; that his buggies and carriages for his pleasure are worth money, and credit should be given to the farm for them. When they take into account those things, they see they have a value and that they cost the professional and business man money. Add these and many other items that could be mentioned to the account of the income of the farm, and they are better satisfied. The cash system is universal on the farm. There is a great tendency for cooperation between owners and the labor that operates the land. There is a universal sentiment that a basis of cooperation ought to be established. There are two plans that we are considering with a great deal of favor. The plan Colonel Brigham spoke of yesterday, of dividing crops, is one; and that, perhaps, is the one more generally in use. But there is another plan that is largely in use in our State and a great many Western States that I visited, and that is to fix an agreed value upon the property, and a tenant goes on it upon a fixed basis of rental. They agree upon a low rental and a low per cent. That has a good effect upon the tenant's mind, because if a tenant says "If you give me a share of the crop I don't know whether you are getting too much or too little." He is not satisfied; but if you have agreed upon a basis on which he is perfectly willing to give you 3 or 4 per cent for the use of the land he goes on and operates the farm, and you have cooperation of labor and capital; after the payment of rental and wages agreed the balance of the proceeds is equally divided. That system has been very successful where applied, and a great satisfaction has come from it, as you have agreed upon two important factors; one as to the per cent to charge for use of the money invested in land and what a man's labor is worth, both of which come out before you divide profits, and the man feels a little better. He feels a little more important. He is upon an equal footing with the proprietor of the land. Of course, if you get profits, that makes a larger percentage on your land, and the laborer gets more for his labor.

Q. Has the question of usury very frequently come before the Grangers?—A. Yes; the Grange has grown wonderfully on that line. The Grange has lifted people up, and the members believe that money is like other property—the rate of interest is fixed by the supply and demand. In our State we have a good deal of foreign labor. The question is as to the literacy and illiteracy of those people as compared with ours. The majority of foreigners that come in our country are well educated—fully as well as the same number of Americans.

Q. (By Mr. A. L. HARRIS.) What are their nationalities?—A. They are Swedes and Germans. They have a tendency to colonize, and wherever a German settlement or a Swedish settlement takes hold you will find an advance in the price of property.

Q. (By Mr. CONGER.) Do they usually become desirable citizens?—A. Invariably.

Q. (By Mr. FARQUHAR.) Do the Hollanders along the western shore of Lake Michigan stick together?—A. Yes; they take possession of the low lands, that others do not regard as valuable, and are making the best kind of farms.

Q. (By Mr. CONGER.) Are foreign languages and customs usually retained among the Hollanders in western Michigan?—A. Yes; to a large degree.

Q. Do they retain the language in the second generation; fail to become proficient in English?—A. Yes; usually.

Q. Do they educate their children in their own language or in English?—A. In English. We find it is impossible to compete with the Polish people in the markets. They are good farmers, and very industrious. These Polanders will have all their children employed at something. They keep up parochial schools. Very few send their children to the public schools. I suppose there are 750 Polish children in St. Joseph County.

Q. (By Mr. RATCHFORD.) Do you speak of a parochial school as a school for a particular religious training, or for teaching their own language?—A. It is a school for both. The elementary principles of an ordinary education are taught in all those parochial schools; the Catholic religion is insisted upon. We are becoming intensely interested on the question of taxation. We believe that we are paying more than our just share of the taxes. When the schedules were fixed years and years ago in our State and other States, the great bulk of personal property belonged to farmers. Then they fixed a schedule of a number of questions, which practically made an inventory of all his property. The other industries of

our country do not have to do that. They ask the merchant the amount of merchandise he has on hand in one line, and he states a given amount. The assessor has no possible way of verifying that statement, except in a general way; and it is true also of manufacturers. We believe that the farmers are just as honest as those engaged in other business, and we would like to see an effort made in every State to have tax laws uniform, making every man who owns property give substantially an inventory of his property, stating valuations. We believe there should be a change upon that basis. Either all should inventory their property or none. We find that the State boards of equalization in almost every instance have personal knowledge of the valuation of land, but no personal knowledge as to values of the different properties in cities of the country. Because of that I think great injustice is done the farmer, because upon a State board of review or equalization the farmers are often without representation and the boards are usually composed of a majority of men engaged in other pursuits. There is another injustice that comes to the farmer. I believe in our State we have \$1,200,000,000 worth of assessable property. Of this amount there is about \$539,000,000 of farm property, land, and improvements in the State, and the balance is composed of all other property. Of personal property there is about \$125,000,000. The railroad property and corporations have a little over \$154,000,000. So that, as compared with the other class of property, and disregarding railroad property, we have a higher valuation than all in the balance of the State. As a matter of fact we are of the opinion that the other property is worth at least 50 per cent more than ours if put upon the market to sell. Colonel Brigham stated yesterday that he knew from his personal knowledge that property based upon a rental value was assessed about the same rate as it would be in the country with half the rental value. That is nearly true in our State; I think it is pretty generally true in most of the States. I believe it ought to be the law.

Q. (By Mr. CONGER.) Would the higher rate of municipal tax for street improvements, etc., as compared with the township tax, in a measure equalize the difference in the general taxes?—A. If there is not a compensating advantage for municipal tax, there is no justification in making it. You can not tax people for a sewer or pavement unless there is a compensation coming directly to them.

Q. How are the railroads taxed in your State?—A. They are taxed upon valuation of the property as other property is taxed, except that the valuation is fixed by the State board of review and not by local assessors.

Q. How is the rate determined?—A. That is not done by the assessor, but by the State board of equalization. That is done to make it general. The rate is fixed as are all other rates. The State makes the rate for each county; then the State auditor sends to each county the number of miles of road or track in said county.

Q. How long has the present system existed in Indiana?—A. This system of taxation has always been in vogue. The system of finding valuations has been in vogue about 10 years, but the system of taxation has never been changed.

Q. Did you about 10 years ago evolve a new system of fixing the value?—A. Yes.

Q. Did the inauguration of that system increase the tax of railroads?—A. Yes; from \$66,206,000 to \$161,039,000. The matter was carried into the Supreme Court, and the decision was rendered about a year ago compelling the roads to pay upon the higher valuation. The present valuation is not regarded as at a higher ratio than other property is assessed.

Q. (By Mr. A. L. HARRIS.) In reaching that valuation, does your board take into consideration the visible property?—A. Yes; they don't consider the stock. There is no corporation in our State that is assessed by the stock; it is the visible property.

Q. If one road is profitable and another is not profitable, does that make any difference?—A. Yes. It is the value of the road; what it will sell for.

Q. (By Mr. CONGER.) Does the board of assessors have authority to take into consideration the value of the stock and the capitalization of the road in fixing the value per mile?—A. Yes.

Q. Do they take into consideration the market value of the stock?—A. Yes. That is one of the means used in finding the value of the road per mile.

Q. Do they take into consideration the earnings of the railroad?—A. Yes.

Q. (By Mr. FARQUHAR.) In Indiana is everything the railroad owns scheduled for taxation, even if it be to the value of \$5?—A. Yes. Even the tools that the track men have are all listed and put down; that is right. There is no injustice between these classes if the railroad property is assessed at as high a rate as farm property.

Q. (By Mr. A. L. HARRIS.) What do you do in your State with the class of property the Pullman Palace Car Company uses?—A. We have various rates on

cars, according to value and the line they run over, and then we charge them the same rates pro rata. That is the only equitable basis we could devise and I think it is a fair one. We took the telephone and the telegraph lines. Under the new law their assessments were largely increased.

Q. Do you tax every pole they put up?—A. The number and quality of the poles and the number and quality of the wire are taken into account in fixing the amount of assessment per mile.

Q. Would you take into consideration the length of time the poles had been standing?—A. Yes. We consider the life of the pole to be a certain number of years, and that the value of the pole would decrease as the years go by, and we take into account the various kinds of wire that they use, and that is a very material thing.

Q. Do you consider your system of taxing this kind of property such that you would recommend it to other States?—A. So far as those two classes are concerned, it operates well in our State.

Q. (By Mr. FARQUHAR.) What is the general opinion among the railroads that are taxed, with respect to this system of taxation?—A. I do not think they are very much in love with it. They are getting to like it better than they did. My opinion is that if you make a fair valuation of property, you will unearth a great deal of property that is now hidden. There is no question about that. When a man has property and sees inequalities of taxation, he feels himself justified in making some little secretions of property. That is one of the causes. The prejudice that prompts the idea that a man who has a \$10,000 note shall be assessed for \$10,000, but that the very moment that he trades it for a house it shall be assessed at \$5,000, or if he should buy \$10,000 worth of paid-up life insurance that has a fixed surrender value at all times, it is not assessed at all, does not meet a responsive acquiescence in by the man who owns that \$10,000 note. I believe that if all property would be equally assessed or fairly assessed there would be much less property hidden and much more property would be listed for taxation. The laws as we have them now are not always carried out.

Q. Would a fair assessment lower the taxes of the farmer?—A. Taxes would be lowered one-third if all property was fairly assessed—if all property were compelled to pay its just proportion of taxes.

Q. (By Mr. CONGER.) What suggestions have you to offer for the unification of tax methods?—A. In the first place, I should make the suggestion that the assessment law should be uniform—either all shall furnish an itemized inventory of property or none. It matters not in what kind of property one's possessions should be, it should all be on a uniform basis. The law now requires property to be assessed at its actual cash value. The interpretation of the law in different States differs as it does in different parts of the same State. The interpretation of the law in the State of Indiana means about 66 per cent; the interpretation in Ohio is about 40 to 50 per cent. I recollect very well a case at Toledo. One of the national banks was assessed 100 per cent. They carried the case up and got a decision that they should not be assessed over 40 per cent. I think it might be provided in the law that all classes of property shall be upon the same ratio. I think that should be in the law. For instance, in Chicago property is assessed at a much lower rate than the farm property of Illinois.

Q. (By Mr. RATCHFORD.) Do you favor the single tax on land?—A. I am in favor of assessing values upon every kind of property, improvements as well as land. I do not believe in the single tax at all.

Q. Do you believe that railway property should be taxed according to its value per mile, or on its gross or net earnings?—A. I think it should be assessed upon its value per mile.

Q. Its value determined by its business?—A. Determined by what it will sell for—determined as you would any other value.

Q. Is it a fact that the selling price is determined by the business of the road?—A. That may be, but the buyer reaches that point. I do not believe in making two standards of value. I am decidedly opposed to making one standard of the earning value and another of the selling value, because there is a liability of much inequality and dissatisfaction growing out of it. A man wants to sell a piece of property that does not return as much income as another piece of property; that makes the property less valuable; it sells for less money, and hence should be appraised for less. He can own any kind of property, but let every dollar of the property, whether it be in the corporate limits of a city or town or in the country, one kind of property or another, bear an equal and just share of the public burden, because it is protected by the laws of the State the same as any other property. I do not mean that country property should bear any part of municipal taxes.

Q. Do you believe property should be valued for taxation exactly at the price it will sell for?—A. I don't say it should be valued at the price it would sell for, but it should be on a basis of equity with other property, whether the valuation is at its full selling price or based upon percentage, a percentage of that price. The fact of it is, it would make no difference. As the interpretation of the assessors has been upon the selling value, it has never been enforced anywhere.

Q. Do you believe in taxing the incomes of men who have no visible property but who have large incomes?—A. Yes; I would favor an income tax.

Q. (By Mr. CONGER.) What kind of income tax do you favor?—A. A graded one.

Q. (By Mr. FARQUHAR.) Do you think it would be possible to make an equitable income tax in the United States?—A. Possibly not; but it might be made as equitable as any other tax.

Q. (By Mr. RATCHFORD.) What are your views on the subject of taxation of inheritances?—A. I am opposed to that. I do not believe an inheritance tax is the proper thing. If a man has paid his taxes fairly to the time of his death, there is no reason why we should take from his children a proportion of the property he leaves.

Q. (By Mr. CONGER.) Are you of the opinion that a majority of the men worth from \$50,000 to greater amounts usually pay their full share of the taxes?—A. They may or they may not. They may have paid a good deal more. I believe I can name a number of farmers who are worth \$50,000, and if they had their just deserts the State would pay them the unjust amounts collected from them, instead of taking money from their children. Therefore, it would be an injustice to that class of men.

Q. (By Mr. FARQUHAR.) When you come to the concrete of the whole question, do all taxes come from wages?—A. Yes; labor pays everything.

Q. Is that the general law that governs all civilized mankind?—A. It comes back to that.

Q. Are not the millionaires and multimillionaires taxed equally with the workingman and the farmer in the ramifications where their wealth and capital are invested?—A. I think not. National securities are not taxable, as are the municipal securities of our country, which are very large. I am of the opinion that a large proportion of these municipal securities are not taxed because you can not find them. As a rule that kind of property is not found by the assessor, and the men who own the bonds do not pay their just proportion of the taxes.

Q. Is capital, whether of savings banks or not, that is loaned on first and second mortgages in Indiana taxed?—A. It should be.

Q. Are the savings banks chartered by the State?—A. Yes.

Q. (By Mr. KENNEDY.) When you say you favor a uniform income tax, do you mean that the income of all people should be taxed?—A. I can see no reason why one man's income should not be taxed equally with that of another, except small incomes, which should be exempt.

Q. Would some men's incomes bear any taxation?—A. No; those with very small incomes need it all to support their families. Some men's incomes arise entirely from rents of property, which property is already taxed, while another man's income arises entirely from his profession. In that case the one really has to pay two taxes, one on the property and one on an income.

Q. Do you think that the cost of an average living should be eliminated before a man's income is taxed, if we are to have an income tax?—A. Yes.

Q. Could a track man working on a railroad at \$3 a day afford to pay an income tax?—A. No.

Q. Is your national organization on record in favor of a graduated income tax?—A. Yes.

Q. (By Mr. A. L. HARRIS.) We will proceed to No. 31 of the syllabus: "The decline in money value of agricultural lands in the older States—causes and extent of."—A. There are two causes for the decline. One is the decline in absolute intrinsic value, because the fertility has gone out of the land through bad management. Another cause is the unnatural development of this country. There is an unfair competition upon the agricultural worker in the unnatural development of our Western frontier. The pushing through of the Northern Pacific Railroad, the giving away of this land, the discriminating charges that have been made by the railroads, carrying the products of those cheap lands to the East for less money than they were carried from the older Central and Eastern States, has caused a serious and depressing effect. In the eighties it was no uncommon thing to carry wheat from Dakota to New York for from 10 to 15 cents a hundred less than it was carried from the Central States. That had a serious and depressing effect on our land, and accounts for much of the shrinkage of values in the older States. The development of the cheap land and labor countries, and the shipping abroad and

the use of our fine agricultural machinery in those cheap land and labor countries is another cause that has depressed agriculture in the United States. I regard bonanza farming as having some effect—the same effect, upon ordinary farming that the large manufacturing establishments are having upon the smaller factories of the country: Especially is this true in stock raising. If that same land now used for bonanza farming were handled by small farmers it would make a competition still more difficult for us to meet.

Q. (By Mr. RATCHFORD.) Why would the competition be greater if the bonanza farms were divided?—A. Simply from the fact that the same number of acres in smaller tracts, managed by the owner, will produce more than any of the bonanza managers are able to do, and hence we would have a larger quantity.

Q. Would the methods of production be the same as they are now if those farms were split up?—A. I presume not.

Q. Would that not tend to counteract the present difficulty?—A. The tendency of that would be to relieve one particular crop, perhaps, but while you relieve that you make a pressure upon the others which would equalize it and amount to the same thing.

Q. If those farms were divided into ordinary sizes and farmed by as many farmers, could the steam plows and other improved devices of agriculture be used as at present?—A. Not to that extent, but when the bonanza farm is divided into 80-acre tracts each is worked by the farmer himself. The bonanza farmer has to hire men to do his work. Many a man runs a farm and says he can not hire a man to do the work, but that he can do it himself, because he must make a living. And that makes a competition that is harder to meet. If you have all hired men, your theory of reasoning would be correct; the small farmer does his own work.

Q. Is it true that where manufacturing is carried on upon a large scale the expense has always been lessened?—A. That is true of manufacturing, because you can bring that to a system, but there are factors in farming that make it more difficult to bring under the rules that apply to manufacturing industries. On the small farm you get the advantage of intense application and personal interest. I will say further that if one-quarter of the tillable soil of this country could be converted into forest, that the remaining three-fourths would produce more than the whole at present. I do not think we have developed to-day over 50 per cent of the productive qualities of our soil.

Q. (By Mr. KENNEDY.) Do you think the farmers in Ohio and Pennsylvania have any right to complain of the competition that comes to them from the farmers, with 160 acres of land, in the Dakotas or Kansas?—A. He has no right to complain of the farmers, but he has a right to complain of the system by which it was brought about. I will admit that I was one of those in favor of that; I thought at the time it was a good thing to do. I was in favor of the appropriation to push forward the Northern Pacific Railroad, and I favored the homestead law, but I now see we made a mistake. It brought upon us a competition that is ruinous to us in the Central States. The same argument applies to the great irrigation system proposed to be taken up by our Government. Three or 4 years ago I was in New Hampshire, and while we were sitting in the hotel a gentleman introduced that subject. He said he would favor that sort of thing and that it was a great thing because it would relieve and develop that country and make it a garden spot; it would relieve the plethora in our cities; relieve the manufacturing districts of the surplus labor and so on, and they could grow crops there continuously, rain or no rain. "Well," I said to him, "I do not want to get into this discussion, but you have a printing establishment across there?" "Yes." "You employ a good many men?" "Yes." "Suppose the Government sets up one right beside you, and puts it in there and pays the expense. Do you think that is a fair competition between you and them?" He said, "No, it would ruin me." "That is just what you propose to do in the West. Is that a fair competition? You propose to let them raise crops, rain or no rain. That is the principle underlying this Government irrigation scheme, and so far as my influence can extend I shall try and do everything in my power to prevent this Government building up an unhealthy competition to help somebody else and increase the value of their private property at the expense of the farmers.

Q. (By Mr. FARQUHAR.) Do you prefer a more natural development?—A. We like a natural development.

Q. (By Mr. KENNEDY.) Did the Senators from the East who opposed Governmental aid in irrigating the arid tracts of the West have any sympathy from organizations of farmers in defeating the efforts of the Western Senators to secure such aid?—A. Yes; they had our sympathy. The lines would be drawn on men who propose to put in that unhealthy competition, whether we are Democrats or Republicans. Referring to No. 39 of the syllabus, "Diversification of agricul-

tural industries," we favor that to the largest and fullest extent. We favor it on the ground of the markets and on the ground of maintaining the fertility of the soil.

Q. What is the attitude of the farmers of the United States toward the question of national expansion?—A. The attitude of the farmers on this proposition is one of investigation and study. The farmers do not like to take a position until fully informed. They are a little slow in reaching a conclusion, and they want to know all the facts and conditions, advantages and disadvantages, that grow out of the matter before they make up their minds. The case is in the hands of the jury, and they are not yet ready to make a report. That would be my judgment. The question of good roads is of great importance to-day. If you build good roads all over the country, every dollar that could be wisely and judiciously expended for that purpose would return to the owners of the farms and the people of this country 200 per cent, at the lowest. It is the most important thing I know of; it would aid in giving us free rural mail delivery; it would promote sociability in the country; it would give us the facilities by which we could reach the markets at any time, so there would be none of those fluctuations and variations because of the stoppage of transit from the farms to the markets. It will prevent and largely stop the storage of the farmer's product in the elevators. Storing their product in these elevators and warehouses is a very unwise thing for farmers to do, and it largely comes from the fact that when they want to sell they can not get to the markets. If the farmers of this country would build their own storage houses and keep their products on their own ground, it would disarm the gamblers in the markets of New York and Chicago and all over this country. Good roads would help us along that line.

Q. (By Mr. FARQUHAR.) Do you think the farmer ought to have an opportunity of putting his product into the market 10 months instead of 2 or 3?—A. Yes, 12 months in a year. A good manufacturer always furnishes storage for the product of his factory until consumptive demand requires it. The good business man furnishes storage capacity for his goods until consumptive demand requires it. There was in 1895 123,000,000 to 128,000,000 of bushels of wheat stored in public elevators for sale to Europe. This had the effect of depressing prices. The same amount of wheat in farmers' granaries on their farms would not have had so great an effect. This would relieve us of the large expense for insurance and storage, which the farmer has to pay. A man buys grain to carry until August and May. There is a storage account and insurance account that must be paid, and it is taken out of the price of the product. It does not cost half so much to insure property on the farm as in the city.

Q. (By Mr. KENNEDY.) Do you favor the collection of tolls on roads?—A. No; make them free as air. We believe that all combinations to arbitrarily control prices should be put down by law. We believe they are wrong. We believe they are injurious and against public policy. Cornering the market, which is done frequently, is injurious to the entire public, and very injurious to the farmers, and it gives rise to gambling in grain. We believe there ought to be a law to prevent gambling in grain. We have a system of public elevators in this country. The controllers and lessees of those elevators claim the right of buying and storing their own grain in elevators controlled by themselves. It has been charged they mix higher with lower grades. This is another injury to the value of all better grades of grain. We believe there ought to be a law to prevent this practice. I believe there is a case in the Supreme Court from Chicago on this point.

Referring to No. 49 of the syllabus: I insist that pure food is absolutely essential for our markets. When I was in Wisconsin last fall one traveling salesman informed me he had sold 10,000 barrels of so-called maple sirup, and that the factory where it was made had no connection with maple trees, thus displacing the sale of 10,000 or more barrels of pure maple sirup, and also destroying the demand on account of these adulterated compounds. It shuts off the market for our maple sirups, and thereby lessens the income of our farms. And the same thing is true in regard to vinegar. The value of our orchard products is materially lessened by acid vinegars. So all along the line, the market for the pure article of the farmer's products is materially reduced by the sale of these adulterated articles, and we ought to have protection for our markets. In 1890, when we shipped our cheese to England, we sold it for as much as Canadians could sell theirs, but after the introduction of the filled cheese in this country and the want of proper inspection here and the close inspection that was had in Canada, Canadians could sell cheese for 2 or 3 cents a pound more in the English market than we could, simply on account of adulterations of cheese in this country. Hog lard, being adulterated with the oil of cotton seed, very materially injures the product in that line. This is the point we want to make. We are entitled especially for

that kind of protection that will protect the markets that we have got. We build up a demand for our product only to be destroyed by adulterated articles put in place of them. It is a fraud that the laws of this country should punish severely. The health of the people is seriously imperiled by the poisonous substances that often enter into these adulterations. The consumer is entitled to get what he buys and pays for.

Q. (By Mr. A. L. HARRIS.) What national pure-food legislation do you favor?—A. We favor the bill that was before Congress last year—the Faulkner bill. We think that covers the ground so far as national legislation is concerned. It should be supplemented by State legislation.

Q. What State has the best law on the subject of pure food?—A. I have not examined the laws of all the States and therefore could not say which has the best laws. But in the interest of honesty, in the interest of the health of the people, the demand for effective legislation is imperative, and we will look to this commission to recommend such laws, Federal and State, as will effectually prevent the sale of adulterated foods as pure foods.

WASHINGTON, D. C., March 14, 1899.

TESTIMONY OF MR. N. J. BACHELDER,

Master of the State Grange, Patrons of Husbandry, of New Hampshire.

The commission met at 10 a. m., March 14, 1899, Mr. Farquhar presiding. Mr. N. J. Bachelder, Concord, N. H., master of the State Grange, Patrons of Husbandry, of New Hampshire, testified at 2 p. m. The topical plan of inquiry relating to agriculture was followed during the examination.

Q. (By Mr. FARQUHAR.) Please state your official position in the order you represent, your general experience, and whether you are a practical farmer.—A. I have been master of the State Grange for 7 years; secretary of the State board of agriculture for 12 years, and a member of the executive committee of the National Grange for 8 years. I am a practical farmer.

It seems rather unnecessary for me, coming from a section that is not specially known for its agriculture, to take any active part in this discussion. I am connected with an organization, as has been previously stated, where there is no sectionalism—no North, no South, no East, no West—and although some things that have been asked for by my associates on the committee, and some of the conditions they have described are not applicable directly to New England, I am sure I am just as earnest as they in making the requests they make. This is one of the leading principles that is taught in the organization which we represent.

Q. (By Mr. A. L. HARRIS.) Were you a member of the legislative committee of the National Grange?—A. I am a member of the legislative committee of the National Grange, and appear here in that capacity.

Q. Please take up the plan of inquiry and reply to such questions as you desire to answer.—A. The farmers of New England are dependent upon local markets for the sale of their products, and any legislation or any action that would tend to develop those markets would tend to the prosperity of the New England farmer. The farm products that we send outside of New England for sale are very limited, and consist principally of fruit and potatoes and something in the dairy line. In order to have an intelligent understanding of the conditions there, perhaps it might not be out of place for me to refer to the subject of the abandoned farms, that has attracted considerable attention throughout the country. There has existed a very indefinite idea in the minds of many people as to the conditions which we are trying to change. The letters that we have received have indicated that many people suppose there are large tracts of land that are offered by the State; that the people had abandoned them, and the titles had reverted to the States. Such is not the fact. The abandoned farms about which this discussion has arisen are farms that are owned by individuals. They have been abandoned in the sense that they have ceased to be occupied, and the causes that have led to that have been several. Chief among them is the development of the West, and the taking of our young men from these farms to aid in the development of the Western country. Then there has been a desire for more social enjoyment than has been available on the farms, and young people have left the farms to go to the cities and villages where they could have better social facilities. The farms which we have advertised and to which we have called attention are farms upon

which are buildings fairly suitable for occupancy, but which have become vacant. I can speak quite accurately upon this matter, for it was my privilege to draft the first bill which became a law in New Hampshire 10 years ago, in the beginning of this movement, and which was afterwards adopted in modified form in four of the other five New England States. A canvass of the State of New Hampshire, and I think about the same proportion exists in the other New England States, revealed the fact that we had about 1,000 farms upon which were buildings suitable for occupancy, but without occupants. This is in a State of 32,000 farms. I think the same relative condition existed in other New England States. This does not include lands which have been more completely abandoned, upon which no buildings exist. We have certain sections upon the tops of hills and on the sides of mountains, remote from railroads and not workable by farm machinery, where there were farms, once occupied by thrifty, successful, contented farmers. Many of those places have not only become abandoned, but the buildings have decayed. They are growing up to wood and timber, and no use is made of them except for pasturage. That class of land is not included in the 1,000 farms which I named as having suitable buildings. The causes which have brought about the abandonment of those lands I believe to be the changed condition of the times, and under the present circumstances they could no longer be made profitable for cultivation. When the land was new, although the soil was thin, it possessed considerable fertility and afforded a satisfactory living to the people who occupied these farms, but in later days we are not satisfied with the living that satisfied people 50 years ago. The demand from the West took the energetic, active, intelligent boys and girls away, and when the old people died the farms were left, and buildings went to decay; they had served their purpose in their time, but could no longer be made valuable for agriculture. They were not adapted to the use of agricultural machinery, and consequently could be of no use except for growing wood and timber. I presume this has no bearing upon the work of your commission, but being a subject about which so much newspaper comment has been made, I have been induced to make this statement.

Q. (By Mr. CONGER.) Are the 1,000 farms you refer to being utilized for the cultivation of crops, for grazing, or other purposes?—A. They are utilized for grazing; the fruit growing on them is gathered, and in some instances grass is cut for hay. During the past 10 years 75 per cent of those farms in New Hampshire have been taken up and are now occupied. This movement was inaugurated by the State, believing it to be for the interest of the State to have the farms occupied, because if a farm is unoccupied it decreases in value each year; if occupied, it would probably hold its own in value, and the crops it would produce would not materially affect the local market, upon which we depend. These farms have been taken up by two classes of people; one class that came there for farming, and the other that has purchased them for summer homes. The latter class is composed of people from cities and villages in various sections of the country. I can name a single township, a township without a village, with nothing but farming land, that during the last 10 years has doubled its assessed value from the sale of farms for this purpose. When these farms are taken up to be used as summer homes the owners will frequently spend \$3,000, \$4,000, or \$5,000, in addition to the purchase price, in improvements, and, instead of coming in competition with the farmers in the production of crops, they make a market for their products. Not very long ago I made an investigation of the result in 10 townships where this movement was the most noticeable, and I found that every one of those townships in the past 10 years had increased in the assessed valuation of its real estate. Ten townships, of about the same agricultural facilities naturally but with no summer business, had decreased in assessed valuation during that time, showing that this movement had materially advanced the valuation of the property in those sections.

Q. (By Mr. A. L. HARRIS.) How do you maintain the fertility of the farms you are occupying and using for agricultural purposes?—A. The fertility of some of our farms has been exhausted by the selling of crops, but the intelligent, progressive farmers of the State practice a system of farming that maintains the fertility. The farms located near the cities and large villages are more productive to-day than they ever were in the past, but that is not true of farms in general. They are not generally so productive as they were 40 or 50 years ago.

Q. Do you use barnyard or commercial fertilizer, or both?—A. We recommend both. Farmers are buying chemical manures, and mixing the nitrogen, phosphoric acid, and potash themselves.

Q. Do you experiment upon your soil to know what it needs?—A. That is the principle upon which we work and is what we advocate.

Q. Are the rudiments of chemistry sufficient for that purpose?—A. It would

require a skilled chemist to make an analysis of the soil, but the process which we recommend, and which is practiced, is experimentation by growing crops upon the soil with different elements of fertility applied, and if the nitrogen gives better results than phosphoric acid, or potash better than nitrogen, it is an indication what element of fertility that soil requires.

Q. What are your hopes of the future for the production of your soil under skilled treatment?—A. We think the better class of farms will improve. The farms that are best located, nearest the markets and that have the most summer-boarding business, will increase in productiveness. Any legislation that will give us an increased and more active local market will benefit our farmers. We have sought to supplement the market we have in cities and villages by developing the summer-boarding business and by encouraging wealthy people to buy our farms.

Q. Have you any truck farming?—A. To some extent, but the market for it is confined mainly to the cities within New Hampshire.

Q. What prices do your local products bring in your local market?—A. The price of those articles that are not produced in sufficient quantities to supply the demand is regulated by the price of the portion brought in to complete the supply. The price of those articles of which there is a surplus is less than the price in the market where the surplus is sold.

Q. Is it the native American who has redeemed these abandoned farms, or is it the foreign immigrant that is helping you to redeem them?—A. I think it is generally the native American, although some foreign element has come in.

Q. (By Mr. CONGER.) What is the nationality of those who have taken up these farms for purely agricultural purposes?—A. Generally, Americans.

Q. Where do they come from?—A. They come from all sections of New England, and, to some extent, from different sections of the country. They frequently are people who were formerly residents of New England, who have been to the West and returned to their homes among the New England hills, where they were born and for which they never lost their regard. In some instances people come from cities to take up these farms, who have not previously been engaged in farming.

Q. (By Mr. A. L. HARRIS.) Have you anything to say in regard to the condition of farm labor in New England?—A. I think the condition of farm labor is better than at any previous time.

Q. What is the money value of farm labor?—A. The most of the farm labor is employed by the year. It is not practicable to depend upon transient labor, and the farmers have made their operation such that they can employ labor by the year; in winter time, in cutting wood and timber, taking care of the stock, and of the dairy. The price is about \$25 a month.

Q. (By Mr. KENNEDY.) Who holds the title to the abandoned farms?—A. Usually people in New Hampshire.

Q. Do they keep the taxes up?—A. They keep the taxes up.

Q. What are the prices of those lands?—A. They vary according to their distance from a railroad and their scenery; many of those places are located on the hillsides where they are very desirable by city people for summer homes, and in these instances, the fertility of the soil has very little to do with fixing the price.

Q. Are the houses on these farms habitable, as a rule?—A. Yes.

Q. Are the farms sold at a low rate?—A. At a low rate.

Q. As cheap as Government lands in the West, \$1.25 an acre?—A. Land which is not tillable, probably could be bought at that price, but tillable land would command a greater price than that.

Q. Is an abandoned farm considered tillable at present?—A. Some portions of these farms are tillable. These farms differ from the farms in the West, inasmuch as a farm of 120 acres might contain 40 acres of tillable land and the balance pasture and wood land, so that when we speak of a farm by its acreage it is no indication of its value for agricultural purposes.

Q. (By Mr. A. L. HARRIS.) Are these abandoned farms purchased by the persons who build the cottages, or are the cottages built by the original owners of the land, and rented?—A. The cottages and houses are built by parties who purchase the farms.

Q. Does the man who owns the lands and builds the cottage generally occupy it?—A. The man who purchases the land and builds the cottage generally occupies it himself. We have summer hotels in the State that will in the aggregate accommodate 80,000 people. Those people who do not purchase farms usually stop at those places.

Q. (By Mr. FARQUHAR.) So that these farms are occupied without much advance of agriculture in your State?—A. Not much advance in agricultural productions.

Q. Can you state the reasons that caused your New England farms to be abandoned?—A. I think the principal cause was the opportunity that was opened up

in the development of the West for our young, energetic men to go there and better themselves by the opportunity that was given for extensive farming, and better promise of large financial success than upon the farms in New England.

Q. Did you, in New England, have a good fighting chance in the markets before the great agricultural development west of the Mississippi and Missouri?—A. I think we had a better chance in staple agricultural products than now.

Q. Did you have a large market in Boston and at the same time an export market there for a time?—A. Yes.

Q. About what time did the abandonment of the New England farms begin?—A. I should say it began about 50 years ago. There is no abandonment of farms going on now; it has been checked; the tendency is the other way. People are coming back into these country towns, and are better contented and better satisfied with what they are doing than they have ever been before. I do not mean by that they are making any more money, but they are getting a better living—they have better horses, better carriages, wear better clothes, go to the city oftener. This is largely the result of the work of the grange. There is no territory of equal area in the world that has a more thorough farmers' organization than we have in New Hampshire, and the educational and social work that organization is doing there is accomplishing wonderful results in increasing the intelligence of the farmer, and causing him to appreciate advantages around him that he did not see before.

Q. What is the relative taxation of farm property in New England compared with other kinds of property?—A. I have not the exact figures to give the commission, but my opinion is that it is higher than the taxation upon city and village property. I believe that many of our farms remain upon the tax list at the rate fixed years ago, before the deterioration in fertility and before they were reduced in value, and they are paying tax on a larger assessment than they would sell for.

Q. (By Mr. A. L. HARRIS.) How often do you fix valuations?—A. Our valuation is fixed by a board of assessors in the town. They go around annually, on the 1st of April, and make the assessments. We have a State board of equalization, which regulates the rates of assessment between towns and cities, but does not regulate rate of assessment between individuals. That has to be fixed in the local board that makes the first assessment.

Q. (By Mr. FARQUHAR.) Are the owners of these abandoned farms living in New Hampshire now?—A. They are generally living in New Hampshire.

Q. Are they usually well off?—A. Some have retired with a competency.

Q. Is there much nonresident ownership of farm lands there?—A. Not very much. The farms upon which there are no buildings have usually been sold to some farmer owning adjoining land and used to help out pasturage.

Q. How about mortgages in your State?—A. We have some.

Q. On farm property?—A. Yes.

Q. By whom are they held?—A. They are held by individuals and savings banks.

Q. (By Mr. A. L. HARRIS.) What is the school age of children in New Hampshire?—A. They are required to attend school at least 12 weeks a year, from 5 to 14 years of age.

Q. How long may they attend school?—A. I think there is no limit. They may attend as long as they desire; usually till 16 or 18 years of age.

Q. What have you to say in regard to the sufficiency of your public-school facilities, as to houses, teachers, and the size of your districts?—A. They are not what they should be.

Q. What are the public-school facilities in New Hampshire?—A. I think our school facilities in the country towns are not what they should be in the matter of schoolhouses or in the efficiency of schools, but we are gaining in this respect; we are improving, and we point with pride to the schoolhouses in some of the towns, and believe that through a movement that has just been inaugurated our organization will aid the rural sections of the State in educational facilities more than in any other way. We believe in teaching the principles of agriculture in the country schools. Not that we believe in showing a boy how to plow and hoe and plant and cultivate, but that we believe the principles of agriculture can be used for mind development in the country schools to a reasonable extent.

Q. Is your public-school course sufficient for the needs of your people?—A. It is not in all instances.

Q. In what ways do you consider it deficient?—A. It is deficient in the matter of proper supervision, and also deficient in the length of school year.

Q. Should the technical education of the farmer be pursued beyond what he can ordinarily get in the common school, or do you think a sufficient education

can be obtained in the public school?—A. Oh, no. He should go beyond what can be had in a country school. He should go to the agricultural college.

Q. Have you an agricultural college?—A. We have an agricultural college in each of the New England States.

Q. Are those colleges devoted wholly to the teaching of agriculture and mechanic arts?—A. In the State of New Hampshire it is devoted to teaching agriculture and mechanic arts. I think it is devoted to that in all the New England States. The suggestion that I would make is, that agriculture is not made prominent enough in those institutions compared with the mechanic arts department. I believe that when a boy goes to one of those colleges and studies agriculture he should be made to feel that he is taking the leading course in the institution, and the influence in those institutions should be stronger toward the agricultural departments than it was intended when the colleges were established.

Q. To what extent are the mechanic arts taught, to qualify one for mechanical or factory work?—A. I understand that the mechanic arts department does qualify people for that kind of work.

Q. Have you any special chairs in your agricultural college for the different mechanic arts, such as the making of textile fabrics, the production of good dairy products, or things along that line?—A. Our institution is not classified to that extent. We have different courses in engineering, and we have agricultural courses. But what I would like to see in our New England agricultural colleges is an influence that would attract boys to study agriculture and return to the farms, and exert an influence in rural towns that in a few years would elevate the whole business of agriculture to a higher plane.

Q. What becomes of your farmer boys after they go through the course in your agricultural college?—A. Some of them return to the farm, but generally they do not.

Q. Why is that?—A. These agricultural colleges, so called, were established at a time when there was very little interest among the people in agricultural education, and when there were not many people qualified to instruct in agriculture. There were not many text-books in agriculture, and under those circumstances they drifted into the mechanic arts line more than into the agricultural line. Having been developed in that direction it is difficult to develop great enthusiasm in agricultural instruction in these institutions.

Q. Does your agricultural college teach the classics as well as agriculture?—A. I think not.

Q. Then it does not go to the extent of the university?—A. It does not.

Q. Where is your college located?—A. Our college is located at Durham. I would not like to have it understood that I am making these recommendations based upon our college in particular, but upon our agricultural colleges in New England as I know them.

Q. What is the attendance at your agricultural college?—A. About 100.

Q. What facilities has that college in a financial way and for taking care of the students?—A. Our college has an income of about \$50,000 a year.

Q. Is a part of that raised from State taxation?—A. About \$10,000 from the State.

Q. Was the money raised from an original land grant?—A. And from subsequent appropriations made by Congress and the State legislature.

Q. Is that money devoted to agriculture and mechanic arts?—A. Yes.

Q. Have you given the subject of trusts any consideration?—A. I have not given it sufficient consideration to be able to add anything of interest to what has been said by Mr. Jones and Colonel Brigham. I indorse what they have said about trusts.

Q. Did you ever, previous to the passage of the interstate-commerce law, have to pay more for a short haul than you paid for a long haul?—A. Yes; we had some trouble in that respect, and desire to have the law amended and the commission given power to remedy evils, which they are not able to do now.

Q. Have you any suggestions to make as to the oleomargarine law?—A. I desire to request the enactment of the bill that was introduced into Congress at the last session, imposing a tax of 10 cents a pound on oleomargarine that is colored in imitation of butter, and I desire to indorse that principle and ask for its enactment.

Q. (By Mr. FARQUHAR.) Is that intended to tax it out of existence?—A. It might have that effect.

Q. Is it a fact that in the manufacture of oleomargarine the farmer has added to his producing power by the fact that the bull can also make butter?—A. We are willing that oleomargarine shall be made and used, if it can be used for what it is.

Q. Are you aware that it goes all over the world and brings millions into this country?—A. Yes; but I do not understand that it increases its real value as an article of food, however, when it is colored to imitate butter.

Q. Do the creameries of this country use oleomargarine in their mixtures now?—A. I suppose there is some creamery butter in nearly all oleomargarine.

Q. Does your organization see a way to prevent these creameries from mixing oleomargarine with their butter and in that way avoiding the coloring?—A. I would be in favor of legislation that would require anything that is not made from pure, unadulterated milk and cream to be marked so that whoever buys and uses it will know what he is using.

Q. (By Mr. RATCHFORD.) Would the contention of your organization be satisfied by labeling this adulterated food, showing what it is, rather than by fixing the price of it by law?—A. We are not satisfied, because the person who eats it has no idea what label may have been upon it. The person that buys it and serves it in a hotel to 300 or 400 guests may know what he is buying, but he imposes upon his guests and practically says, "This is butter."

Q. Is the contention of the farmer for fixing prices by law for any given article—butter, for instance—more justifiable than the contention of the miner would be in endeavoring to fix a price for gas, oil, electricity, and other substitutes for coal?—A. We do not want to fix the price by law. My position is that any legislation that will require this oleomargarine to be sold and used with the knowledge that it is oleomargarine and is not butter is all right, but any law that does not accomplish that would not be right. I do not wish to be understood as stating the position of the National Grange, for I do not think it has taken action on this particular point; but I am speaking for myself and for the Grange and farmers of New Hampshire. I say we are not satisfied simply in having it marked, because it does not prevent it being served and used as pure butter. We have a law in our State, and this law is also in force in several other States, that any hotel or boarding house that serves oleomargarine, colored to imitate butter to its guests shall notify the guests of the fact that oleomargarine is served.

Q. (By Mr. CONGER.) Is that law effective?—A. Within a month I have made thirty-two prosecutions under that law and got an indictment in every case.

Q. How many convictions?—A. All of them. They all paid their fine.

Q. (By Mr. FARQUHAR.) What is the penalty?—A. The fine is \$25.

Q. (By Mr. A. L. HARRIS.) If you had that color law you desire would it save you from all prosecutions, because the instant the oleomargarine is put on the table the guests would know it?—A. They would see it was oleomargarine, and the person who bought it would buy it for a good deal less money than he pays now.

Q. (By Mr. CONGER.) Do you think it would be fair to prohibit the manufacturer of oleomargarine from coloring it yellow and not prohibit the manufacturer of butter from coloring his product yellow during the winter time when it frequently is not that color?—A. Yellow is the natural color of butter.

Q. At all times of the year?—A. At all times of the year, with the exception that in some instances the shade of yellow is not so deep as in others. Yellow is the natural color of butter, and it is not the natural color of oleomargarine.

Q. Is it the custom of butter makers in the winter time to color their butter, and should not that also be prohibited?—A. I will answer in the words which have just been used. The coloring of butter is to intensify the color of yellow in the butter, but not to add yellow. In oleomargarine the coloring does not intensify any color that previously existed, but it is for the purpose of having it appear something which it is not and to deceive the public.

Q. When oleomargarine or butterine is displayed for what it is, would you contend that the coloring is for the purpose of a fraud?—A. Not in the matter of the sale.

Q. What is the coloring for, when it is sold for just what it is?—A. It is done to conceal, to deceive the person who eats it; it is to make it take the place of something else; if it was not so it would not be done.

WASHINGTON, D. C., June 19, 1899.

TESTIMONY OF MR. JAMES BARRETT,

Farmer, Augusta, Ga.

The commission met at 11.55 a. m., Vice-Chairman Phillips presiding. Mr. James Barrett, vice-president Georgia State Agricultural Society, being duly sworn, testified. The topical plan of inquiry on agriculture was followed.

Q. (By Representative LIVINGSTON.) Will you please tell the commission the general condition of agriculture in your section?—A. So far as the condition of agriculture in the section of the State where I live is concerned, it is decidedly worse than it has ever been.

Q. Is the agricultural labor, or persons employed, increasing or decreasing in Georgia and the South?—A. Increasing.

Q. From what source does this increase come—class of people?—A. From the increase of births; very little immigration.

Q. Natural increase in population?—A. Natural increase in population.

Q. Please take the syllabus, step by step, and make your own statement in regard to it.

The WITNESS. The natural increase in the population in what we call the cotton States is about all we have, I think. I do not think the immigration to the South amounts to anything. The cause of that nonimmigration to the South is the cheapness of labor. The comparative condition of those engaged in agriculture I think is much worse than it has ever been. The chief product of the soil has been produced at a loss for 2 years, at unremunerative prices; that is, cotton.

"Transient labor in busy seasons"—the labor is becoming more transient; in other words, they shift from plantation to plantation.

"Hours of labor in different agricultural pursuits"—the hours of wage labor are about 9 hours to 9 hours and 20 minutes on the average through the year, taking winter and summer. The average number of days employed in the year for wage labor—all are workdays, except when the weather does not permit or sickness. Now, for day labor it is very irregular; I do not suppose it averages one-half of the year. The white labor of the State is drifting to the cities and seeking other employment; the negro labor, from necessity, is confined locally to the farm, as there is a disposition all over the South, I think a great deal, to exclude the negro from mechanical pursuits, just as I found in the State of Ohio when I was out there.

We pay daily, weekly, and monthly wages, but generally when we hire labor by the month on the farm, we pay only half, and the other at the termination of the period for which they are hired. We do not hire labor by the year; we hire it about 7 months, up to cotton-picking time, and then the cotton is picked by the pound, so much per hundred; it ranges from 30 to 40 cents, some as low as 25 cents; the average figure is about 50 to 60 cents per day. We pay for labor by the month; for the best, \$6 and what we call rations, which cost about 35 cents a week. In that we include his house and his garden or the privilege of keeping pigs, chickens, if he is a thrifty negro, or whatever he surrounds himself with. I have had no experience in white labor; in farming pursuits it has all been with colored labor.

Q. Do you mean to say the laborer does not have house, land, or anything of that kind?—A. Nothing of that kind. The wage laborer has a plot of land, therefore he can cultivate acres of land for himself, doing that on his holiday—I mean Saturday; he has generally half of every Saturday—and work it together with his wife and children. He pays nothing for his rent, his household, or the rations for himself, individually; he buys rations for his family. His wife and children do the preliminary picking of the cotton crop. The maximum wages, as I said, are \$6 per month and the minimum about \$2. Some farmers pay by orders on the store, dividing the profit with the storekeeper in some cases. I always pay the money.

Tenement houses are furnished with the rent of the land. Land in my section rents from \$1.25 to as high as \$5 an acre. It depends upon the location and quality of the land.

Q. Having said nothing at all about that class of labor, you would better explain that. What is the tenant?—A. The tenant is the one who runs the land for you, and is commonly called a cropper, owning his own mule, renting him on credit or out of his own pocket, usually—credit in the country store.

Q. What are the terms?—A. If he pays in cotton (I always think it fair to make it a money valuation myself), it runs from about 500 pounds for a one-mule farm to 1,000 pounds for a two-mule farm, and from 500 pounds to 1,000.

Q. That is rent?—A. That is rent. And the landlord has first lien on that rent.
Q. What privileges has that tenant?—A. House free, garden patches, and wood. And we have another system where they work on shares.

Q. Explain that.—A. The farmer furnishes the land, mule, and the feed of the mule, and the tenant's house; the tenant furnishes the labor, feeds himself, then divides the expenses of the blacksmith, or the repairs, and half the guano, and they divide the crop equally between them, share and share alike. The farmer puts his mule, the feed of the mule, and land against the labor and feed of the labor. Those are the systems pursued in our section of the country.

Q. (By Senator MALLORY.) You said that the rent of the land was from \$1.25 to \$5 an acre. Is that where you rent land without taking any of the product at all in compensation?—A. I take the money; it is money valuation, just like you rent a house for money.

Q. You value the land rented for \$1.25?—A. Yes; and he has nothing more to do with it. The land I get \$5 an acre for is worth \$100 an acre; about 5 per cent without the tax. The land we get \$1.25 for, which is located right close to the village, is worth about \$8 or \$10 an acre. That is the open land. Now the wooded land and the waste land, which is included in that valuation of \$10 in the aggregate, does not rent at all, except the tenant has the right to fuel off from it.

Q. The tenant, or cropper, as you call him, pays no rent at all?—A. The cropper pays no rent at all.

Q. (By Representative LIVINGSTON.) In making a statement please give the custom of the State and the country rather than a particular locality.—A. You are well aware of the Wild Grass section in Georgia. It is nearly all white labor, and they do their own work and own their own land. In north Georgia, in the mountains, the principal tenants are white labor; and that is the custom all over the State with the cropper—equal division. The tenant is a renter; but the cropper system is pursued in the mountains of Georgia, as well as in the Black Belt in Cherokee County; they pay the same way; divide the crop.

Q. "Loans to tenants, liens on growing or prospective crops; extent of; effect of."—A. That is the worst part of it. If you go into a country store, asking them to help you, the profit charged is not less than 50 per cent, and sometimes 100. To illustrate, they buy a bushel of corn for 50 cents, and they sell it on time for \$1; they pay 5 cents a pound for meat, and sell it at 10 cents a pound; and that average time is only 4 months, not 12. If you go to a cotton factor in Augusta or Savannah, or anywhere else, that is the system of loaning. The tenant, or one-horse farmer, goes to the cotton factor and says he wants \$100, and the cotton factor says, "Yes; you can get it at 8 per cent." But that does not tell the tale. He takes an obligation from that one-horse farmer that he will send him 10 bales of cotton and pay him a commission of \$1.50 a bale. Well, if the acts of the King's enemy or the acts of God should prevent him from making that 10 bales of cotton he has got to pay that \$15. He pays that whether he makes it or not. I do not believe it is legal payment, but if he does not pay it he does not get any more advances. When you count that up, it is about 23 per cent; that does not include insurance or transportation, or anything else. In the town where I live the rate on a bale of cotton is 15 cents a hundred, and 75 cents a bale for 30 miles, a pretty stiff rate.

Q. (By Senator MALLORY.) What town is that?—A. Waynesboro, near Augusta. To be accurate, it is just 32 miles, and it is 75 cents.

Q. How are these merchants who advance to croppers and farmers protected?—A. Generally by taking the landlord with them—a lien on the crop. Generally he sizes up what the crop will be.

Q. Suppose it is the landlord himself, do they not then make him give a lien?—A. When they make the landlord waive his lien, that is the same as the landlord giving the lien, because the tenant himself may make enough to pay it. The law in Georgia gives the landlord the first lien on all crops, and gives the second lien to the man who advances the supplies. Now, to make it doubly secure, he gets the landlord to waive his lien notes; then he has a lien for the supplies, and he has the whole thing.

Q. Do the landholders ever waive that lien without accepting rents?—A. Yes, very often without accepting rents, in our section.

Q. (By Representative LIVINGSTON.) You mean to say get nothing?—A. That they get nothing if the merchant sizes up what the negro can make, and he generally does. Now, I will give you another illustration of that. We will take the renter who rents right square out for the money. The landlord takes that note to one of our local county banks and asks that bank to discount it; he indorses the tenant's note. It is largely now the landowner who wants a little money. He goes into the bank: "Yes, we will do it for you, but we will take off 10 per cent." If it is \$100 they give you \$90 back, and the note is due the 1st of October,

which is 8 months, and if you multiply that by four you get the percentage that they charge there. I will tell you what is the cause of all this, in my humble opinion. It is the national-bank act outlawing real estate as a security. When the war ended we had nothing in the world left for security but land, and we had nothing to put up; and we were then plundered and pilfered as much as they pleased, to get something to support this large population thrown on us without a thing in the world, and it has been so ever since, and the remedy is to give land the dignity of security.

Q. You mean to say that you want the national banks to loan money on real estate as collateral?—A. Yes.

Q. And that the farmers have nothing but that?—A. Nothing but that.

Q. They are shut up to this system to get advances?—A. Yes.

Q. And otherwise they give loans on something they have not got?—A. I understand that. We are shut up to the lien system. It is a wrong system.

Q. And the man who furnishes guano or corn or flour must be secured in some way, so you have a system in Georgia of securing for advances by giving what they call crop liens?—A. Yes; crop liens.

Q. And those crop liens are made in what season of the year?—A. Those crop liens commence about the 1st of January and end about the 1st of September, when the cotton begins to be picked.

Q. You mean to say farmers are shut up to that system because robbed of the credit land ought to give them?—A. Yes; I do say that, positively; the land ought to be their credit.

Q. Is that the cause of the State banks in Georgia decreasing?—A. No; the State banks, before the war, increased; the land was the highest security we had, as it is in Europe to-day; lands are the highest security known there, but we are smarter financiers than the Europeans.

Q. (By Mr. PHILLIPS.) If lands had been put up as security in that early date, when there was comparatively no money—A. (Interrupting.) We had plenty of bank capital then; my town had three more at that time than now.

Q. The question is, would these lands have been private? Would they not have been sold for security, perhaps, and the condition have been worse?—A. No; I do not think so. In my county, Burke, the largest agricultural county in Georgia, we have scarcely a man there—I have lived there 29 years—who has a large farm who has not been taken up on an interest account and sold out and absorbed by the merchant. You can not legislate to protect fools. The more you let fools alone the better off you will be. Just let the farmer to-day be untrammelled. He wants no protection whatever, but wants no legislation against his interests. That is his idea about it. Give him reasonable transportation for his goods to the market, and reasonable rates of interest, and the cotton farmer can take care of himself.

Q. (By Representative LIVINGSTON.) If the farmer of the South could use his land as a credit, would it lower the rate of interest?—A. Yes.

Q. About how much?—A. I think it would be about the legal rate of interest in Georgia.

Q. About 7 per cent?—A. About 7 per cent. We were speaking of the rates of interest Wednesday. I have covered entirely this land association, the result of that Corbin Banking Company, and others; I do not specify them any more than any other. The rule is, if a man wanted \$10,000, he apparently got it at 8 per cent interest, but here comes in a big commission—20 per cent commission for indorsing that loan—and when he got the money actually in his hands he got \$7,000; so he paid 8 per cent on \$10,000 for 5 years, or as long as the loan lasted, and got \$7,000 in the beginning. The result was he was sold out.

Q. Did that system of loaning and borrowing money prevail for a long time in the South or not?—A. Almost universally.

Q. It does not now much?—A. Largely now. The store-keeping business is more dominant than it ever was.

Q. Explain why it was, instead of going to Augusta and Atlanta to borrow money on his real estate, a farmer had to go to the Boston Company, Corbin Banking Company, or some other company to get money.—A. Because the national-bank act outlawed his security.

Q. Is the landed property of the South the only property outlawed by the national-bank act?—A. I do not know of anything else, especially at this time. I think mules, or something of that sort—they would not take personalty.

Q. How about railroad bonds, State bonds, and county bonds?—A. Yes; mighty glad to get them; railroad stock, factory stock, or any other kind of stock that I know of. I think some of our national banks in Georgia have a very good recollection of the Central Railroad stocks.

Q. (By Senator MALLORY.) Does not real estate really hold substantial, stable value, better than many things accepted by national banks?—A. Yes, decidedly. Real estate really fluctuates less than anything I know of. I will give you an illustration: I have known of one factory stock that sold for \$10; to-day you can secure that factory stock at 65.

Q. (By Representative LIVINGSTON.) Do I understand you to say that the misfortunes of the planters of the South, and the laborers therefore connected with them, largely come out of this banking system?—A. I do think so; yes. I do not see any difference between a national bank and a State bank, except the difference in currency. I think that national banks have done more to injure agricultural interests of the South than any legislation ever enacted by the Federal Government.

Q. How about grading and classing the cotton; who has that to do?—A. The merchant classifies it, if the seller is ignorant, to suit himself. If the seller is intelligent, he generally classifies it correctly.

Q. You mean to say, then, in the first place, the farmer, the landlord, the tenant, the cropper, or the laborer, if they have any advances made to them, are all in the hands of the money lender?—A. Almost invariably, with a few exceptions. There are some men who are not.

Q. We are talking about the general rule.—A. Yes.

Q. To begin with, they are all in the hands of the money lender?—A. Yes.

Q. When the crops are raised they are all mortgaged?—A. Nine-tenths of them.

Q. It is delivered to the factor, or to the merchant, or whoever holds that lien, under that mortgage at a given date, as he gets it out?—A. They are all due, but he pays along when he gets it out.

Q. Due on the 1st of October?—A. Yes; 1st or 15th.

Q. Does not that have a tendency to depress the price of cotton?—A. No question, if you rush into a new market more than it can consume. If you run a crop of watermelons to New York it will depress the price. It is the same thing in cotton.

Q. You say, then, that the employer of labor is at a disadvantage in that all cotton of the South is due on the market at a given time?—A. Yes.

Q. And Liverpool has nothing to do with it, but seems to do it?—A. That is true; it has a tendency to depress prices.

Q. There is the whole crop of cotton of the entire South—six, eight, or ten millions of bales—put on the market in 10 or 15 days?—A. Yes.

Q. What is the usual answer when the merchant is asked to advance the price of cotton along about that time? Does he say he has plenty of money but no money to buy cotton?—A. They generally say they have plenty or, very often, no. I know one thing of my own knowledge; they did not have any money to pay for cotton, but they bought it, nevertheless, about the time it came along.

Q. Is cotton cheapest the 10th or 15th of October?—A. Generally lower than almost any time. I think last year or this year—crop of 1898 or 1899—averaged the farmer in our section a fraction over 4 cents on the farm.

Q. What, in your opinion, does cotton cost the farmer to raise it?—A. You can raise cotton at the present price at \$3 labor, but at \$6 labor it is a loss. It costs over 6 cents a pound to make it.

Q. You mean \$6 a month?—A. Six dollars a month; it takes to run a mule on a cotton plantation two and a half hands to the plow; in other words, five hands to two plows. You can not cut them in two, but that is the average. In other words, it would take two good hands and a half-grown child to make a crop for one mule.

Q. The mule does the plowing.—A. The mule does the plowing, the negro does the hoeing and picking; together their work will make a cotton crop in my section. That labor costs us \$6 a month, and rations \$2.50 for one plow, and it is a very good farmer, white or black, that will make 10 bales of cotton to the plow and gather it. At a fraction over 4 cents—a standard bale of cotton is 500 pounds—10 bales of cotton at \$20 a bale is \$200, and you have given \$250 on that for labor without anything else. That is the condition that we are in to-day. We do not count his interest account, nor the wear and tear of his mule. The general estimate of the wear and tear of a mule on a cotton farm is about \$25 a year; it may be a little exorbitant, but we will even put it at \$15. Generally, when he goes four years through the hands of the negro, it is pretty near to \$100 he costs.

Q. (By Mr. KENNEDY.) If that condition now confronts you will it not force you to raise other crops or try to make money in another way?—A. I have tried on cotton; I have diversified, and I have not made any money by diversification.

Q. (By Mr. FARQUHAR.) What is the character of your market?—A. I run a truck farm. I grow green peas and everything I know of. I have raised horses,

cows, and hogs, and I have diversified it for the last 3 years, and have not been able to make a dollar; but I have been able to keep my land from being mortgaged—that is, 1,500 acres.

Q. Is the Augusta price regulated at all by the prices of New York or elsewhere?—A. Liverpool controls the prices.

Q. I mean diversified products of the farm?—A. No; New York does not control that. It is generally the people at home. My experience is confined to cotton. The nearer you sell anything at home the better off you are. The closer you sell a bale of cotton to your gin house the better off you are. Then there is another thing that comes up that we farmers have to pay that we do not get anything for, and that is the bagging and ties; it is absolute loss. The average cost of bagging and ties in our section with merchants is about 85 cents; the absolute cost is about 60. The absolute tare of a cotton bale is 24½ pounds, according to the test of the mills in Augusta, and Mr. Alexander says he hopes to get it down to 24 pounds. The tare in Liverpool is 30 pounds, which is 6 pounds taken from us. Any process that will get rid of bagging and ties will be another great benefit to the farmer.

Q. (By Senator MALLORY.) Have you had any experience at all with this new method?—A. Round bale?

Q. Round bale, and also the small bale?—A. 24 by 54? That is the biggest humbug of all; that does not remedy the evil at all. Let us take that 24 by 54. You do not get rid of bagging, you do not get rid of tie, and you do not get rid of compressing. The ordinary bale of cotton has only a density of 12½ pounds, and the 24 by 54 has 22½ pounds.

Q. I think it is 12 by 36. I am not accurate on the size, but the density of the bale is 47 pounds. The tare on the Lowry bale is only 1 per cent.—A. The tare of the square bale—it is hullabaloo, this square bale of cotton—that, too, is compressed. Then another thing that farmers have to pay for is what is called country damage. God knows there is no country damage on a bale of cotton when it leaves the country ginhouse.

Q. How much is deducted for that?—A. We estimate, in Liverpool, \$500,000 for the entire crop.

Q. How about the round bales?—A. I am greatly in favor of the round bales, after investigating them, with one exception—it is dry, with everything tight. In other words, a man does not own his press; he only pays rent to use it, and guarantees, whether he uses it or not, to pay a royalty on it for 17 years, and for the patent arrangement \$100 for 17 years.

Q. (By Representative LIVINGSTON.) Will you explain what a round bale is?—A. There are two systems of round bales. One we call the batting system; it takes cotton as it comes out of the ginhouse from the condenser, comes up the batting form, and passes through two presses, iron rolls, and rolls the bale in that way. That is the American bale. The Lowry bale is fed into a hopper on top of slots that revolve around it, and passes over little slots and spokes, the spiral system, just like a screw. The packing is done by hydraulic press underneath, and as it passes through this spiral winding it straightens the fiber. The other bale injures the fiber.

Q. What is the standard weight?—A. The round bale is 250 pounds, and two of them make a standard bale; and they are covered.

Q. And by that you get rid of the ties?—A. That is bound by four wires. In this spiral-packed bale there is a hole, and you run a wire through the hole and around on the outside, and when you cut those wires it just opens like a screw—exactly like an old-fashioned wooden screw. There is no unwinding at all. The American bale has to be unwound to get out. The Lowry bale, in my humble judgment, is the best.

Q. What is the present cost of a bale, as ready for market?—A. The absolute cost is about 62 cents—the bagging and ties; ginning is \$1, and packing would come to \$1.

Q. (By Mr. FARQUHAR.) How is it with the Lowry and the other one?—A. The ginning and packing of the old Lowry bale is \$2; about \$2.20.

Q. (By Senator MALLORY.) Is there a saving in that over the other?—A. Oh, yes.

Q. The Lowry is half the size of the standard bale?—A. I am basing everything on the 500-pound standard bale. Two bales together cost 40 cents, which would be \$2.40, including bagging and ties. There is 50 cents each on the round bales, royalty; then the ginner gets his dollar; then the bagging and ties are 20 cents less than the gunny-bagging bale. It is 41 cents to compress a square bale, and the round bale is already compressed; that is the only saving. You do not lose

24 pounds tare at 6 cents, which would be \$1.44 a bale, and the amount charged for tare would end there. Then they can not pilfer the bale either. There is no 15-pound pilferage, as Mr. Hester puts it.

Q. Why, can they not steal it?—A. No; they can not do it. That is another advantage of the Lowry bale. You can not false pack or mix pack; the farmer can not play the rascal there.

Q. (By Mr. FARQUHAR.) That is, introduce foreign substances?—A. You can not do it. It will show at the inspection.

Q. You can do that with the American bale?—A. You can false pack the American square bale. The round bale—Lowry bale—saves 45 cents a hundred—0.0044 per cent.

Q. (By Senator MALLORY.) Is the Lowry an English patent?—A. It is by a Boston man—American; I think he is a naturalized Irishman.

Q. They rent the machine?—A. It costs \$1,000 to build the presses. They sell them to the farmer or ginner for \$500, and every bale has a tax on it of 50 cents or \$1 for a 500-pound bale. If that ginner does not use that press afterwards he is bound to pay \$100 royalty, whether he uses it or not, for 17 years, and there is the wrong part of it. The other one is worse still; I have not had time to read on it—the American bale; I have just hastily looked over it. There is one danger in the cotton baling, and that is another trust; another trust in Texas has had a great deal of trouble with the American bale. The Texas legislature has been legislating against it.

Q. (By Mr. FARQUHAR.) Is that trust created by patent?—A. Yes.

Q. That is the father of it?—A. The railroads are the "mammy and daddy" of trusts. They are like the hen that lays the egg without the rooster.

Q. (By Mr. KENNEDY.) One would gather from your testimony that the farmers through Georgia are in a pitiable condition, and yet it is generally considered that Georgia is a prosperous State.—A. Well, our tax returns last year show a decrease.

Q. According to your testimony you lose money making cotton. Do you make it up in any other way?—A. I told you how I settled in Burke County.

Q. What is it that makes Georgia a prosperous State?—A. Georgia is not a prosperous State. The tax returns have decreased in the last year or two, and the tax has increased, unfortunately.

Q. Do you make up for this loss in cotton with your peaches and watermelons?—A. The watermelon industry in Georgia has been absolutely destroyed by freights. No man can raise watermelons profitably in Georgia to-day. My county used to be one of the largest watermelon-growing counties.

Q. (By Senator MALLORY.) Does that apply to other products?—A. We can not ship products to New York from where I live. The railroads beat us out.

Q. (By Mr. FARQUHAR.) How many miles are you from Augusta?—A. About 32 miles.

Q. Is freight on that 32 miles equal to water transportation from Augusta to New York?—A. I do not think it is. I am not positive about it. It is 90 cents a bale on 500-pound bales of cotton.

Q. (By Senator MALLORY.) Thirty-two miles?—A. Yes. Now I will give you an illustration: On the Southern road, or South Carolina road, running from Augusta to Charleston, the freight on a bale of cotton to Langley Cotton Mills, 7 miles was 25 cents. Since the Southern road absorbed the South Carolina road they charge 9 cents per 100, 45 cents per bale, as against 25. There is one of your trusts; you say there are no trusts in railroads. While I am on this railroad question: I was talking with Mr. Scott of the Georgia Railroad in regard to the round bale. I said; "What are you going to do? What is the tonnage of the round bale?" "Well," he says, "I would be perfectly willing to reduce rates from competing points, but from noncompeting points I can not reduce rates. I can put in, with this round bale, 60,000 pounds of cotton, and, with the square bale, 20,000 pounds.

Q. (By Representative LIVINGSTON.) Into what?—A. Into a box car. That is Mr. Scott's own statement, no longer than Thursday afternoon.

Q. (By Mr. FARQUHAR.) Do you think the road you are speaking of now has enough tonnage to reduce rates? Do you know anything about the dividends of the road?—A. That is the question. The Louisville and Nashville road pays a rental of \$800,000, and it pays dividend earnings of 11 per cent to its owners. I think they could reduce it on that. To be just to the road, I want to state nothing but the truth. I do not want to do any concern an injustice. The road does not earn all the rental, but they have to pay nearly the equivalent to it in improvements and the rental.

Q. (By Senator MALLORY.) Since they bought it?—A. Since they leased it.

Q. Put on improvements, you say?—A. I think it is capitalized at something like \$7,000,000.

Q. You say improvements, do you mean by that, distinct from repairs?—A. Improved shops, improved depots, improved everything, improved rails.

Q. Do you know actually what that particular road is making now on the capitalization?—A. Well, they consider it in Augusta a good 7 per cent investment outside of the bank, and the bank makes a little over 1 per cent, making it a 7 per cent investment. They guarantee that stock when they lease it; they guarantee it at 11 per cent, 10 per cent, the bank making a little over 1 per cent.

Q. The railroad pays stockholders now 10 per cent?—A. Well, they do not make it; I think their deficit is about \$80,000 to \$100,000 a year.

Q. (By Representative LIVINGSTON.) Mr. Farquhar asked you if you thought they would lose if they reduced rates.—A. On the capitalization?

Q. You think the road loses \$100,000 to \$150,000 a year? If so, they are not in good shape to reduce rates?—A. If they can reduce from competing points they can reduce it from local points.

Q. That is not the question.—A. If they do it on the one hand, they ought to do it on the other. It is a 7 per cent road anyhow. The Louisville and Nashville road is using it simply to break down competition and it makes up what it loses in that competition.

Q. (By Mr. KENNEDY.) Can you state what is the cost of shipping a bale of cotton to Liverpool, and then the cost of getting a bale to the seaboard from your place?—A. I think from Augusta to Savannah it is \$1.30 a bale, or a little over.

Q. And then 3,000 miles to Liverpool, how much?—A. I think it is about one quarter of a penny a pound. It may be more than that. I would not be positive. It may be about \$2 or \$2.50 a bale, or one-quarter of a penny.

Q. Double the cost of getting it to Savannah?—A. Yes; but when you add my freight on to that, and then freight to Savannah, it is about equal to 90 cents, which, added to \$1.50, makes it about equal, laying 10 cents off.

Q. (By Representative LIVINGSTON.) Take up the question of immigration as it affects the farm. Is there anything of that down South?—A. We will never have immigration as long as the negro is there; in the Black Belt I mean.

Q. (By Senator MALLORY.) You stated that the cause for the absence of immigration is the cheapness of labor. Is that the only cause?—A. I think that is the real cause. Nobody but the negro and the Chinaman can live on what we pay the negro.

Q. Is there nothing in the social status of the field labor there; would the white man work alongside of the negro in the field?—A. That would not be necessary for white labor.

Q. I am speaking of black people?—A. Well, almost all labor is negro. The way we do in my country we work separately from the negro.

Q. (By Representative LIVINGSTON.) What inducement has the European labor to go South and work where the black negro is?—A. None whatever, for the simple fact that he can not live as cheaply, unless it is the Chinaman. You must recollect that the Italian or Chinaman can not do that work for less than the negro. Then they have not social relations.

Q. (By Senator MALLORY.) That is what I wanted to get at.—A. If they came in colonies they would have social relations, but if they come individually they do not.

Q. (By Mr. RATCHFORD.) Has the establishment of mills in Georgia brought any immigration there?—A. I think, without exception, a very few. The exception would absolutely prove the rule. It is all white Southern labor in our cotton mills; I know it is so around Augusta; we have no Canadian labor. I know they started a mill recently to make fine goods. All our labor was very awkward at it; they had to be taught; they are running them now; they are a great deal better. At one time it was agitated to bring Canadian labor and put it in that mill; they had to abandon it; they did not bring it; I do not know why.

Q. (By Mr. FARQUHAR.) Are they getting along without any new labor?—A. Yes.

Q. Have they had success down there in making fine fabrics?—A. No.

Q. It is an experiment?—A. Yes. It has been a failure so far; but the mill people are learning. They make no money and lose no money. They are swapping one dollar for a new one. I was talking with the president the other day; he said he saw his way clear to make money on the finer class of goods. Oh, there is no doubt about the people learning it here. If the Anglo-Saxon can learn it in England he can learn it in America. I do not see any distinction in the Anglo-Saxon.

Q. (By Mr. KENNEDY.) Is it not a rule, generally, that they are not Anglo-Saxons who work in these mills?—A. In Georgia they are all natives. We are getting rid of Northern superintendents very rapidly.

Q. (By Representative LIVINGSTON.) Are cotton factories making money down South?—A. Yes; they do, but they reduce wages.

Q. What advantage did the low price of cotton give the Southern manufacturer—difference between freights?—A. You see in a bale of cotton there is 75 pounds loss in the manufacture. They save that 75 pounds loss and the difference in freight, too. In other words, you take a bale of cotton and there is only 425 pounds of cotton in it, the 75 pounds is in the by-product, bagging, tare, seed, sand, and dirt. I think our labor is somewhat cheaper than theirs, and we work our labor in the mills in Georgia 11 hours and in New England they work 10.

Q. You have the additional advantage of light and longer hours?—A. Light and longer hours—4 per cent, you might say.

Q. Do they have any advantage in the waste; for instance, a bale of cotton of the same class of cotton spun in Augusta—do you know what the difference in loss is on account of the climate, and so on, outside of what you have already stated?—A. No; I think generally about 15 per cent on what they call 3-yard goods. On finer goods the loss is greater. In muslins they require more care in getting out the fiber. The whole secret in cotton manufacture is in the carding room, and all starts to be carded in the carding room first.

Q. What is the State of Georgia or the South doing to educate the agricultural labor—anything?—A. We have no textile school. We have a technical school. They are starting to build one in Augusta now.

Q. I asked you what you were doing to educate the agricultural labor?—A. They all have the same advantages, white and black, with the common-school system; and we spend several millions of dollars a year equally between the races. I do not think there is any distinction in the money question between the white and the black, except there is no mixture of schools like you said you had in Ohio, Mr. Harris.

Q. The schools are kept separate?—A. Yes.

Q. But the teachers and support are all paid from the common fund?—A. I think that the teachers and the expenses are all paid from the common fund. The negroes can have white teachers or they can have negro teachers; that is left to their predilections—their own choice.

Q. (By Mr. FARQUHAR.) Within the last 10 years, what has been the proportion of increase of your appropriations for schools and school facilities in the State of Georgia?—A. I think it has been nearly double.

Q. Are there complaints made of lack of facilities in your State?—A. No; I do not hear of any. Sometimes there is some little complaint that the school term is not long enough, but that arises largely from the poverty of the people being unable to stand any more taxation. I think the State of Georgia is bearing all the taxation on that line that it is possible for it to bear with the depressed condition of agriculture.

Q. Are the schools provided for by other than the general tax in your State?—A. General taxation.

Q. Are there special license fees or anything else that enters into the support of your schools?—A. The county tax and the State tax and the railroad appropriations; and there are some schools that have donations from outsiders, both negro and white schools. For instance, Atlanta College, and Lucy Haney Institute in my town. In Augusta they have, of course, that donation more than the white. Then we have another school that has been given a donation—Payne Institute. I think Mr. Payne, who founded that school, was from Missouri. That is a high school.

Q. What is the school age of children in Georgia?—A. I think they take them into the public schools at about 6; require them to be 6.

Q. Six to 18, is it?—A. Yes.

Q. What per cent of from 6 to 18 are enrolled? Do they go to school generally, or not?—A. I think in the cities they generally go; I think in the country they do not. I think the percentage—take the statistics of 1890—of illiteracy in Georgia was 16 per cent among the whites and 67 per cent among the negroes. Strange to say—I am ashamed to admit it before this commission—the census of 1890 showed my own city was the most illiterate in the United States.

Q. (By Senator MALLORY.) That includes the whites as well as the blacks?—A. That includes all. I have my opinion of the cause of it. I do not know as it is well for me to say.

Q. (By Mr. FARQUHAR.) What is your opinion as to the cause of it?—A. Well, I think it is too much politics in the schools.

Q. What is your town?—A. Augusta. I think politics is about as bad a thing for education as railroads are for fostering the trusts.

Q. (By Representative LIVINGSTON.) What remedies would you suggest to the commission to be incorporated into law by the States or by the General Government to better the condition of the farmers and laborers of the South?—A. The first is to abolish the outlawing of realty. Let realty be a good collateral security. The second is Governmental ownership of railroads.

Q. Anything else?—A. Have the Government let national banks run their own affairs instead of protecting them by taxing other people for issuing notes and circulation. Let the national banks hew to the line and take care of themselves.

Q. (By Mr. FARQUHAR.) Do you not think that there is another large question that concerns the whole agricultural world—taxation?—A. Yes.

Q. Do you not think that enters in more than some of these questions you have mentioned?—A. How are you going to help taxation with a deficit? Taxation is government in its last analysis.

Q. Has it not been the complaint of the Georgia farmer that he is taxed more than the manufacturer and owner of personal property?—A. Yes.

Q. Will you give the commission your views on this taxation that rests on the farmer, on his agricultural lands, and his personal property?—A. On the first proposition, how are you going to reduce taxation—the first proposition our Supreme Court sat down upon; thought they were wiser than Moses. Moses put on an income tax. An income tax is the fairest and most just and equitable tax that can be levied. If one has an income he is able to pay it, and if he has not an income he does not have to pay it. Under Moses's law, if he did not make 10 bushels of corn he need not pay 1 bushel.

Q. You do not seem to catch my meaning. Does the Georgia farmer bear a disproportionate rate of taxation, compared to other classes in Georgia?—A. Yes, and Ohio the same way, if you want that down. Mr. Chase said that it had been puzzling statesmen for thousands of years how to tax capital, and you have no solution of it yet, and he did not, either.

Q. Providing it came to this commission to find a remedy and introduce the remedy into the State of Georgia, in respect to the taxation of agricultural lands, what in your opinion ought it to be?—A. An income tax in the State.

Q. (By Representative LIVINGSTON.) Mr. Farquhar asked you this plain question, If the real estate of Georgia is not made to bear the great burden of taxation?—A. Yes, it is.

Q. Your idea is that notes and accounts pay no taxes?—A. Nor gold watches.

Q. And that bonds and stocks are hid out more or less, and all those things are hid out. Does the money that handles the entire cotton trade of Georgia pay any taxes?—A. No, it does not.

Q. Do you know what the number of tons is?—A. I think it is nearly a million; I am not positive, but I have some recollection that that is about the amount.

Q. Can you give the commission any information as to how that comes into Georgia and then gets out?—A. The notes do not pay. They take the notes in Georgia and sell them out into another State. That is the way they hide it out. The notes are taken after the tax return; that is the way.

Q. And they are disposed of before the collection day comes along?—A. Taken after the 1st of April.

Q. Come in between?—A. Come in along after the tax returns and tax collections.

Q. Is there not a great deal of other business done there the same way?—A. Lots of it. The solution of that is, that if a note or an account has not the stamp of the tax collector on it that the tax has been paid on it, that it can not be sued on in a court of justice.

Q. The money that handles the cotton in Georgia begins to come in and move it out at what time?—A. About the 1st of September; if it is an early crop, about the last of August.

Q. When is the cotton all sold and gone?—A. They commence collecting their notes in November, as a general thing, and get through then. The tax collector comes in the 1st of March.

Q. The 1st of March all the money and notes have gone out?—A. I do not think the State of Georgia gets a single cent of tax on cotton notes.

Q. (By Mr. FARQUHAR.) Or cotton money?—A. Or cotton money, either, and I do not think it gets any money on any other kind of notes scarcely, or very little.

Q. (By Mr. RATCHFORD.) The witness has stated that the farmer of Ohio and Georgia in particular bears the burden of taxation.—A. Yes, I do.

Q. Do you know whether there is any other State in which that is not equally true, or nearly so?—A. That is true. If you take the broad proposition, I will quote your statesman, Mr. Chase, that labor pays all the taxes.

Q. Labor pays all the taxes, but the question at issue now is whether the farmer pays more.—A. The source of wealth is land and soil, and if Adam Smith is right in his political economy, all wealth is what is taken out of the country in one year.

Q. Is the farmer paying more taxes, in proportion to his ownership of this wealth, than the mechanic, the miner who owns a little home?—A. No, I do not think they pay any more than the mechanic or the miner.

Q. You do not believe they pay more in proportion?—A. But they pay a great deal more than the capitalist.

Q. That, perhaps, is generally true in all the States.—A. All the States. They do not pay any more than the miner or anything more than the cotton planter or anybody else that owns a home.

Q. (By Representative LIVINGSTON.) Then, to better the condition of the Southern people, the farmer and the laborer, you would recommend that this commission suggest to the legislatures the equalization of taxation?—A. The equalization of taxation.

Q. On all values?—A. On full values and outlawed notes that have not paid the taxes.

Q. And then you recommend that the national banking act be so amended that a man can borrow money on his real property as well as his factory stock?—A. Let the owners of property be capable of creating a debt on it, and break up all this collection of debts; take all the trammels off the property possible.

Q. Any other recommendations that you have to make that would better the condition of things down there?—A. I have no prejudice against railroads, none in the world—railroads with legitimate competition; I would like to see more of them; but combinations that prevent legitimate competition I am opposed to.

Q. Does not the State of Georgia tax railroads, every line, every wire, and every pole?—A. You never had a tax on railroads until you had the Toombs constitution. They are taxed now, but not at their value.

Q. Are they not taxable in any county in which they go?—A. Yes, that is the Glenn law.

Q. The Georgia Railroad pays no taxes to the State.—A. That was their charter. They are paying their chartered rates, but under the constitution we can not tax them.

Q. But outside of that all railroads are taxed.—A. Up to that, none of them paid. General Toombs made that so they had to pay. I have not any prejudice against legitimate competition, but I must say I have very considerable prejudice against any combine that means to take advantage of the people.

Q. You make a distinction between a corporation and a combine, do you?—A. Yes; a corporation is different.

Q. What is the difference?—A. A corporation operated singly is not so objectionable, but when they combine together to operate together they are very objectionable.

Q. When you speak of railroad combinations, you mean corporations coming together to destroy competition?—A. Those two parallel lines, the South Carolina and Georgia and the Charlotte and Columbia, I think.

Q. Can that be done in Georgia under our constitution?—A. It is like Mr. Lockwood said about the Pennsylvania Central—they do it. Did not the Central Railroad lease the Georgia Railroad, paralleling lines?

Q. The constitution of Georgia prohibits it.—A. The executive officers of the State did not enforce the law, and you know who the executive officers were. The Georgia road is controlled by a noncompeting line; gone out of the hands of the Central.

Q. (By Mr. FARQUHAR.) Have you any suggestions to make of a remedy in the matter of these store and crop liens? Does any other way seem to promise a better outcome both for the owner of the land and for the crop owner?—A. I never did believe you could give a mortgage on something you did not have, and that is the rottenness of crop liens. That is why I am anxious and hope to live to see the day that the national banking law will be repealed—outlawing real estate as a security. Then we will not have any liens. The abolishment of the State crop liens that we had several years ago—one in South Carolina—also greatly benefited the farmers. Then they took the lien from the very beginning; now the law says they can take it if the crop is planted. There ought not to be any lien at all; it ought to be wiped out.

Q. Does the lien down there keep the land owner and the cropper in debt continuously?—A. If he waives his right, it does continuously.

Q. Is it a cause of poverty down there?—A. Yes; it is very dangerous. Thirty years ago, when I moved to Burke County, I served as deputy clerk of the court of that county. That was immediately after the war; there were hardly any mortgages, but considerable crop liens; and it went on until the State instituted

this present system. Then there were a good many prosperous negro farmers and a good many prosperous white farmers, but this system of high percentage and mortgaging their crops has absolutely wiped them all out in Burke County—almost without exception.

Q. (By Senator MALLORY.) Can you state the relative area of land devoted to the cultivation of cotton and that devoted to the cultivation of corn and other grain?—A. I know what it is in the South—all the Southern States—about the cotton area, but I do not know whether I could specify accurately for Georgia without looking at the year book. The general rule is to plant about 20 acres of cotton in our county, and 15 of corn, and 5 of other crops. That is about the proportion.

Q. Are the conditions you speak of with reference to cotton also the same with reference to corn and other grains?—A. Corn on the farm in our State is hardly a commercial article.

Q. It is used at home?—A. It is used at home. If you go to a man to borrow any money on that corn, he will say, "Get out of here; I do not want any."

Q. I mean with reference to the sharing of the crop?—A. In working on shares, we take half the grain and half the corn—share and share alike. We generally do not divide the potatoes; we generally let the share cropper have his potatoes; do not bother with them; some take them, but I never did—sweet potatoes.

Q. (By Representative LIVINGSTON.) Have the prices of land gone up or down in the last year?—A. I think it has gone down. Values have decreased.

Q. Is not the standard of the price of land the standard of the price of cotton? Is not that the old rule?—A. I think that is the rule; yes.

Q. As cotton advances land advances?—A. As cotton goes down land goes down. There has been a gradual decline; that has been about the difference; it is gradually going down, down, down. To give you an illustration, I know a plantation for which, 30 years ago, I would have been willing to give \$10 an acre I can buy it to-day for \$3.

Q. That is not owing to their decrease in production?—A. It is owing to the decrease in price. It is just like a stock that does not pay any profit; it is not worth anything; the land does not pay any profit; it does not amount to anything. Take Mr. Harris's State; that land, I think, when I investigated it—this was in 1880—was worth \$47.50 an acre; that year our lands in Georgia were only worth \$2.50 per acre.

Q. (By Mr. A. L. HARRIS.) As a rule, is not the value of the land measured by the production of the farms?—A. That is true; the price of land is regulated just the same as the price of factory stock.

Q. You can raise stock in Georgia?—A. Yes; I can raise a horse there as cheaply as I can raise a cow.

Q. You can raise a mule in Georgia?—A. Yes; just as cheaply as I can raise a cow; and I do it, and have been doing it for 30 years.

Q. You can raise hogs?—A. Just as well as you can in Ohio.

Q. You can raise wheat?—A. No. I think wheat is a very poor crop.

Q. How much is a horse worth?—A. The lowest one I sold was \$60 and the highest one I ever sold was \$200.

Q. I see the average value of your Georgia horses is higher than in Ohio.—A. Maybe they are better.

Q. How much is a mule worth?—A. An average mule will bring from \$100 to \$125.

Q. Is there a profit on a mule?—A. I think a mule can be raised cheaper than a horse, and they stand more rough usage.

Q. You can raise cattle?—A. Yes.

Q. You can raise some sheep?—A. I do not know whether my people could be converted to it. They can raise cattle cheaper than you can in the West. We have a by-product that we used to throw away that is a great deal more valuable for feed; that is cotton-seed meal from the cotton seed hulls.

Q. Can you not raise stock cheaper, really, there than you could in Ohio on account of our long winters?—A. Yes.

Q. (By Mr. FARQUHAR.) That makes a saving in the winter feed?—A. Yes.

Q. (By Mr. A. L. HARRIS.) You do raise a large amount of stock in Georgia?—A. Yes, we do in some sections, a very large amount, and we raise a good many hogs.

Q. Now, the query in my mind was in regard to your agricultural condition, when the very crops and stock that we grow in Ohio are valued higher, really, in Georgia than in Ohio, and we are in a prosperous condition, and why you are in this unprosperous condition? That is something that I can not understand.—A. I think the great cause is this outlawing of our land by the banks, and leaving us absolutely stripped of any collateral security at the end of the war, which did

not leave you stripped of any; and again, we have not the four millions of pensions poured into our State every year—that is another reason; and I do not think that the South will ever be prosperous under black labor.

Q. Does all of your paper go through the banks?—A. Oh, no; it goes to the curbstone broker, mostly.

Q. Can you not under your law establish local banks? Does your law forbid it?—A. No.

Q. I am speaking of banks of deposit.—A. Deposit and exchange; we can establish those.

Q. Do you have those in your county?—A. Yes; we have two, and they are the ones that charge about 40 per cent interest.

Q. Does the law forbid organizing more?—A. No; you can have as many as you please.

Q. If it is oppressive will they not organize more?—A. Before they put this other one there, the interest was really 50 per cent, but they have reduced it down now to about 40.

Q. What I was trying to get at was how the national-banking system was such a heavy load on you when you can organize banks of deposit and exchange that will do all the business that the national banks will do, except issue?—A. Very often these little State banks exhaust their capital and they have to go to the North to their correspondents, which are generally national banks in New York, to borrow money, and they have to put up this collateral security, and when they put the land in there, they do not want it. That is the matter. They can not rediscount such paper as that at the North, even with the indorsements.

Q. Do you not think that diversification of agricultural industry would be a great relief to your State?—A. Yes.

Q. How long have you been at it?—A. I have been at it 5 years now, in that diversified industry.

Q. You are beginning to sell the crops you have raised?—A. I sell horses, cows, hogs, Irish potatoes, sweet potatoes, cabbages, carrots, turnips, beets, and everything else, and raise rice, too.

Q. Can Georgia to-day raise cotton as cheaply as Texas?—A. Yes; with hired labor she can raise it just as cheaply as Texas, but she can not compete with the white labor of Texas with her labor.

Q. Is her soil as productive as Texas's soil?—A. No.

Q. Is it raised with white labor?—A. No; I was in Texas. I went out to look after that. I went right to the Brazos River, where the soil is as deep as this room, and I asked a cousin of mine what that land could make, and he said: "I have made as high as 3 bales to the acre on it." "How much corn?" He said: "75 bushels." I said to him, "Cousin Jim, that is not what I want to get at. How much do you average in 5 years? That is the way to test crops. One experiment does not always prove the experiment." And he said: "I average about three-quarters of a bale, and I average about 25 bushels of corn to the acre." Now, I said: "Jim, what do you pay your labor?" We were paying then, in Georgia, \$10. He said: "We pay \$18 dollars a month for labor." I said: "What do you pay for picking?" "We pay \$1 a hundred." We paid 50 cents. I say that with hired labor I do not believe Texas can raise cotton any cheaper than we can in Georgia; and no one can make money at the higher labor.

Q. (By Representative LIVINGSTON.) In addition to that, they do not use guano in Texas and we do. Now, what does that fertilizer cost in Georgia to the acre?—A. About \$2.25, but does not the difference in the price of labor make up for that? Is not their labor higher than ours, and does not that make a difference? We were getting about 12 cents a pound at that time, and then the difference in the labor of Texas and Georgia. Then here is another condition: we do not have the disasters in Georgia as generally as they do in Texas. Our crops are more certain. This last year and the year before that Texas had a good many disasters. The bulk of the cotton of Texas is made by white labor.

Q. (By Mr. A. L. HARRIS.) Does supply and demand have any effect upon the price of cotton?—A. I am one of the fools who do not believe in the law of supply and demand. I know some people who believe in it, but I say I am one of the fools who do not. I do not believe that God Almighty ever made a mistake, and he never made too much for any people if they were all employed.

Q. What is the production of cotton in the United States?—A. We do not know what this year's is going to be; last year's crop was eleven million two hundred and some thousand bales.

Q. What is the production of the world?—A. Now, that is a question. There is a great deal of doubt about what is the production in China. I have heard that the Chinese crop was estimated as high as 12,000,000 bales.

Q. What is the demand in bales per year?—A. I never paid much attention to

this eastern crop, because the American crop is gradually putting that out in the European market, and even sweeping the Chinese cotton out of its own market. Mr. Alexander's statement on that is simply that the fiber of the Chinese cotton is not strong enough to stand the spinning machinery; it would stand the old spinning wheel and the old loom, but it will not stand the modern spinning machinery.

Q. What is the consumption of cotton in the United States?—A. Something over 3,000,000 bales. The South consumed about 1,200,000 bales, I think.

Q. What is the consumption of cotton in the world?—A. I do not know exactly. We never could get at China with her 400,000,000 people.

Q. In other words, what has become of the difference between the 11,000,000 bales and the amount of the whole production? Where does that go to?—A. It goes into the equilibrium of the difference in production. A short crop this year and a long crop next year fills in the hole, just like your wheat crop. It goes abroad and here too.

Q. Do you not think now when we raise wheat at the North and you raise cotton at the South that we are raising too much?—A. No; I do not. I do not think you ever raised a bushel too much or we a pound too much. Do you think the Almighty ever made a mistake?

Q. (By Mr. FARQUHAR.) The Almighty is not before the commission?—A. Oh, I know that.

Q. (By Mr. A. L. HARRIS.) As long as there is a large crop do you not expect to take a smaller price for it?—A. No; I will quote Mr. Chase again, "It is the money that fluctuates, especially the paper money."

Q. When there is a failure of the crop in some other part of the world, then do you not expect a higher price?—A. The biggest crop we ever had, the crop of 1890, brought us the most money. That was the largest crop and it brought us more money than we ever did make.

Q. I am speaking of the production of the world.—A. I must be candid with you, I am not familiar with the production of the world because we can not get at it, and nobody else knows what China makes. If China did not make any cotton we would not begin to make enough cotton to do China, because the people of China wear cotton goods almost entirely.

Q. What effect, in your opinion, has gambling in cotton upon the prices of cotton?—A. I do not think it amounts to a hill of beans.

Q. And operating in stocks?—A. The only thing that can put up prices and put them down is the combine. I think this war on the bucket shops is all nonsense.

Q. (By Representative LIVINGSTON.) The State of Georgia makes a little over 1,000,000 bales of cotton; she sells that at 5 cents; that is a certain amount of money that comes to the credit of the farmers of Georgia for that cotton crop?—A. Yes.

Q. Now, if that cotton were put through the cotton press and manufactured inside the limits of Georgia, if you take that 1,000,000 bales and put it in Savannah manufactured, what would it sell for manufactured? I am not talking about labor and freights, or anything.—A. I think it would bring at least 50 per cent more.

Q. A bale of cotton weighing 500 pounds sold in its raw condition in Savannah at 4 cents would bring \$20; now suppose you stop that in Augusta and put it into cloth, and then sell the cloth; what would it bring?—A. It would bring about \$15 a bale more, at a rough calculation; nearly double.

Q. Now is not that one of the great losses of the South?—A. Oh, yes; where we can convert our raw material the profit is a very great thing.

Q. Is it not true that the man who sells raw material in this country or anywhere, that the profits are made from the manufacture instead of out of that raw material?—A. Yes.

Q. Now, if we should manufacture our cotton, would that help us?—A. It would help us enormously if we could convert the cotton into manufactured goods. That is self-evident.

Q. Can you take the labor of the South and diversify successfully? Can they use the improved implements and can they attend to the shipping, and are they adapted for that kind of general work that would be necessary in diversified agriculture—the negroes?—A. No; they can not use them except to break them up. We have tried the sulky plows. I have seen all kinds of farming all over the State and I am quite an amateur trucker, and I have never seen a good negro farmer nor a good negro farm in my life, if he is left alone entirely to himself, and I would travel to see one; I would like to travel to see him, like I did once to see Elliott when he presided over the South Carolina legislature. I heard

that he was a smart man, and I went to see if he was. I never knew of a good negro farmer.

Q. You do not mean to say that the negro is not a good cotton laborer?—A. I say left to himself he is not.

Q. He is a good cotton laborer?—A. He is a good cotton laborer under the direction of a white man.

Q. Would not that man be a good stock raiser or a good truck raiser?—A. No; I do not believe he would.

Q. Why not?—A. In the first place he is naturally brutal, and in the second place he will not water stock unless you keep right after him, and water is as necessary to stock as corn, and I believe in Georgia to-day there are more cattle that die from want of water than from want of corn and fodder.

Q. (By Mr. A. L. HARRIS.) I want to get back to this mule question.—A. I do not believe you can beat us on mule raising. We have good pasturage, and Mr. Wing, who is from your State, and by the by a very competent man, I think the most competent they have at the experiment station, contends that we have better milk and butter South than Ohio.

Q. Do you raise all the mules in Georgia that you use?—A. No. I am raising mules and also hogs. The hog and the negro go together.

Q. Where do your mules come from?—A. Mostly from Kentucky and Tennessee; some from Indiana and some from Missouri.

Q. Ohio sends a good many down South; I do not know where they go to?—A. We buy nearly all of our stock in Georgia from the St. Louis market.

Q. Is not your country well adapted to the promotion of dairy industries?—A. Quoting Mr. Wing—as I said, I do not know anybody more competent than I have ever come in contact with, more thorough and more reliable; I am glad to pay tribute to him—he says that there is no country he has ever been in that is superior to Georgia for cows, milk, and butter. He says that 9 months in the year we have pasturage, and that this Bermuda grass is equal to any grass he has ever seen in Ohio or anywhere else for dairy purposes.

WASHINGTON, D. C., June 20, 1899.

TESTIMONY OF MR. J. POPE BROWN,

President of the Georgia State Agricultural Society.

The commission met at 11 a. m., Vice-Chairman Phillips presiding. Mr. Phillips introduced Mr. J. Pope Brown, president of the Georgia State Agricultural Society, Hawkinsville, Ga., who, being first duly sworn, testified as follows (the topical plan of inquiry on agriculture being followed):

Q. (By Representative LIVINGSTON.) I will say that Mr. Brown is president of the Georgia State Agricultural Society. His home is in Hawkinsville, Ga., which is in the southwestern part of the State. Mr. Brown is a planter and nothing but a planter and has no other interests.

The WITNESS: None other, sir.

Q. What is the condition of agriculture in the South, especially in Georgia, where you are better acquainted?—A. Well, I do not think it is prosperous.

Q. Has there been an increase or decrease in number employed in agricultural labor in the South during the past 35 years?—A. I think there is more labor employed now in agriculture than there was then.

Q. You mean to say there is a regular, constant increase in agricultural labor in the South?—A. It seems to be so.

Q. What source does that come from?—A. That comes from the increased population. Some people are of the opinion that negroes—our main labor, especially in our section of the South—are not increasing, but I think that is a very great mistake.

Q. Statistics of the State show the contrary.—A. Show that they are increasing; but I do not think statistics get them all. I think there are more than statistics show.

Q. There has been no increase to amount to anything from outside sources in the way of immigration—Italians, or Chinese, or Japanese, or Irish, or any other source, has there?—A. No.

Q. They do not go South?—A. No; they do not come South; they do not come in our section.

Q. What is the condition of the labor?—A. A few days ago, while I was in the city of Atlanta, I was talking with a newspaper man, and I remarked that there were more people to-day in Georgia barefooted, hungry, and begging than I had seen since the war.

Q. You mean to say that they have not so many of the comforts and less of the luxuries of life and absolute necessities of life?—A. That is my observation.

Q. Will you state the condition of the landholders, those who employ labor?—A. I think the landholders have lost ground very materially in the last few years, and I think we are in a more precarious condition than the public generally understands, from the fact that now and then a certain individual that we have all thought was doing well and out of debt, getting along smoothly, has almost been compelled to succumb to the depression of the last two or three years. I heard no longer than a day or two ago of a gentleman who farms on an extensive scale; everybody thought he was doing well; he made the remark that he was doing well to pay the interest on what he owed.

Q. Which class of farmers are doing better, the extensive or the small farmers?—A. The small farmer is doing better, especially the small farmer who does his own work, and makes something to eat at home and stays at home and eats it. They are the only people that are able to stand the pressure, and they do not have many luxuries. They have the necessities which they can raise at home, which is their only salvation, but when it comes to carpets on the floor, organs, pianos, and carriages for the people to ride in, they do not have them.

Q. You think the financial salvation of those small farmers by this time is largely dependent upon the simple fact that they have cultivated the soil with their own hands; that is, the husband, wife, and children have done the farming?—A. Yes.

Q. And steered clear of hired labor of any kind?—A. Yes. I have right in my neighborhood an old negro who bought a piece of land 15 years ago, and he paid for it very promptly; he bought 250 acres. He told me just the other day that he was afraid he was going to lose it. I know a good many cases like that. He bought and paid for it with his own labor.

Q. Recognizing the fact that the South was once the most prosperous agricultural section in the world, what has led up to this condition, both of the landholder and the labor?—A. That has been a question that has given a great deal of concern to the best thought of the country, and I have given it a great deal of thought myself, but I have never been able to answer it to my own mind satisfactorily.

Q. There may be a varied lot of causes. You can cover them all.—A. If you will allow me just a little latitude, I may say that away back 15 years ago, during Mr. Grady's lifetime, the question was discussed by the editor of the Atlanta Constitution. He asked General Gordon to call an interstate convention of the farmers of the Southern States. General Gordon called that convention to inquire into the depression of agriculture, and the cause for it and the remedy for it; and I recall that Mr. Grady made a speech on that occasion in which he stated that it was not the soil nor the climate. Well, that gave something to think about; and right on that line there was a gentleman from Mississippi that made a speech. The tariff then was considered a great "bugaboo," and he made a great speech on the tariff. We had had a great deal to say about the tariff; that was the cause of a great many of our ills. He went on to say there was not any tariff on Western bacon; was not any tariff on Western tools, no tariff on hoe handles nor plow stocks, and that we were buying away from home, and ought to be making at home. There was no tariff on what we bought from the West, and we ought to be making that at home; nor on the corn, and a great many things he mentioned that we were buying. When he got through I thought maybe the tariff was not such a great big trouble for the farmer; that it was not in the soil or climate, as Mr. Grady said, and then if it was not in the soil and climate, and this old gentleman had kind of knocked the tariff "bugaboo" in the head—what was it? While the tariff might be too high, I do not think that alone, or in itself, has cut any great figure in the depression of agriculture in our country. One of the greatest troubles has been in the methods which we have pursued as farmers, and in the plan which we adopted in the beginning, of all cotton. That was by necessity, almost. You can not go into all of that. We were poor, had nothing to go on, had no collateral, and we just had to plant the crop that would bring money right away. We did not have time to wait.

Q. And one that the banks and everybody else would take?—A. Yes. For instance, if a man went into a supply store and wanted to buy mules, fertilizer, and provisions, the merchant said to him right away, "How much cotton are you going to plant?" and he got a mortgage on the cotton crop. They do not con-

sider a mortgage on the mules, and they do not consider a mortgage on the land worth anything; nothing was worth anything except cotton. Therefore they were forced in the beginning to plant cotton, and it was a long time before they could get out of it. They thought it was an easy way to make a good living. When the fellow would come up at the end of the year with 6 short bales of cotton and a mule, the cotton farmer would say to him, "Why did you not make more cotton? Here is a man that got 10 bales." He went back home and put in to make 10 bales, and at the end of the year he had 10 bales, and when he came up to the farmer the latter said, "Why did you not make more? Here is a man that made 12 bales, and here is another fellow who made 15 bales." He went back and tried to beat that, and then "the most unkindest cut of all" was when they told him, "You fool, you have made too much; you have overdone the thing." And he was doing what they told him to do all the time. We got in that fix and we did not know what to do. I was one of those fellows. I made as much cotton to the mule, I reckon, as any man in Georgia, and I went on the idea if a man could make two bales of cotton where one grew before he was a benefactor—changed cotton to grass. I discovered after a while it did not seem to be working that way; it seemed we made too much of it. The trouble about it was we started out making it at 20 cents, and then it went to 15, and then to 10, and when we learned how to make it at 10 it went to 8, and when we thought we had learned to make it at 8 it went to 6, and when we had learned how to make it at 6 it went to 4. The people of Georgia would not be planting it except they hope to get a better price for it than the now prevailing market. I will say right on that line that you can not buy a cotton crop to-day from the farmers of Georgia for 7 cents a pound, although they see quotations here on the market. They have a lingering hope that it may be 8 cents, and some of them think it may be 10. No, sir; you can not buy it for 7 cents a pound. They have that idea; they hope that it will be better; that they will get a better price it. Having gotten in that rut of planting cotton, and depending upon the cotton for money, it is very hard on all of us.

Q. If a man diversified from cotton into any other agricultural product or products, must he have 12 months' absolute cash to start it?—A. Yes; he must; independent of this advance to him. A few years ago, when cotton went down pretty low, we had a few instances of men stating, "Now we will quit cotton." Well, at the end of the year they were probably fixed for it. They had corn, potatoes, and everything to eat that they wanted at home and a good many of these things to sell, but there was no market, no market.

Q. And they would not take them on debts?—A. No; we can not sell corn and wheat and oats and pork in competition with the West. Our country is not particularly adapted to wheat nor to stock raising nor the production of food crops, and, in my opinion, it is a place only where diversified agriculture will succeed; you have got to diversify it. We must make something of all these things. I was one of those who run a good deal on cotton. I have been trying to get out of it for several years, and this year I have not bought a pound of meat for my whole plantation; I have not bought a bushel of corn; in other words, I have sold corn myself, and sirup and potatoes and hay, and I just thrashed out enough of wheat to last us a year; I think we will have flour enough. A great many other people are trying to get on that same line; people are trying to do it, trying to get there, but it is a hard matter for them to get rid of cotton to a great extent.

Q. If they go out of cotton, must they have something to live on during the year, while the experiment is being made?—A. Yes.

Q. Will the merchants or banks, or anybody else, advance them equipment for 12 months, to make that experiment?—A. I should not think so.

Q. Can they put the land in?—A. Land is not negotiable.

Q. Land is not negotiable under the national-bank act?—A. They can not use land to borrow money to make that experiment with. There is one way they can use it—go to one of the land associations; they will loan money at 7 or 8 per cent.

Q. That puts them in for 5 years, does it not?—A. Yes.

Q. And the interest amounts to 15 or 20 per cent?—A. Something in that neighborhood.

Q. How about the labor? Is it all drilled and skilled in the line of cotton?—A. I was going to say, right on that line, I think another cause of trouble with us is the fact that our system of education in the South has been radically wrong for a number of years.

Q. You mean common-school education?—A. Common-school and college education. The whole thing has been that a white boy was given an education upon the idea that when educated he would not have to work. We ought to have had

that education which would teach him to work after he got his education, and we have not had it.

Q. You think our common schools and colleges and high schools ought to teach industrial education?—A. Industrial education. We ought to have had industrial training in our common schools and in our colleges.

Q. Is there any other education practicable to that laboring class we have there except industrial education?—A. I do not think there is, there, that will amount to much.

Q. Is there anything open to them?—A. Nothing at all.

Q. Mercantile interests, railroading, nothing at all?—A. No. I think one of the causes of the depression in agriculture in the South is the presence of the negro. The negro does not know how to use improved implements, and does not want to know how, and it is almost impossible to teach him. If a man farming cotton on an extensive scale puts an improved implement in use, every dinky says it is impossible to use it, and they do not. They enter very largely into the agricultural conditions of the South; the people rent to them, and work on shares with them. They are averse to making anything in the world except cotton. They do not want to make corn. They love watermelons better than any people or any nation on earth, and they do not know how to make watermelons. They do not care anything about knowing how, but they do love them. There is no man in the State that lives under pleasanter relations with the negro than I do, and I work a good many of them. A few years ago I had 6 or 7 white men employed, and I cut down to 3, and this last year I cut down every one I had, because I could not pay them. At the present time I have a negro foreman, and I expect everything to be all right when I go back there. I have never had any burnings and I do not have any stealing, and the negro and I get along just as well as we possibly can. The negroes on my plantation were born and raised there, some of them before the war, and they do not think about leaving there any more than I do. Mr. Lovejoy spoke about the darky and watermelon to-day. I said to a neighbor of mine the other day, who had some watermelons stolen by some negroes, that, if I was a justice of the peace and you brought them before me, I would not fine them. You have no right to put such a temptation before the darky. I was of the opinion that the man ought to be fined for doing it. I believe the presence of the negro in the South will retard its progress, its industrial and moral development, and its advantageous development, and its social development, agricultural development, and all other kinds of development; and the question is now, What are you going to do about it? Bishop Turner advocates a separation of the races. I am with him on it. I think it is the best solution of it. He wants Congress to appropriate \$100,000,000 to colonize them, and I am in favor of that. If I were a member of Congress, I would vote for it, or any other bill, to relieve the situation. I think it a good investment for the people of this country, because the relations are strained now. It will pay us to get rid of them at any cost. That is the way I feel about it. There is no question but that if the negroes were removed from our country their places would be filled in the future by more intelligent labor.

Q. Do you know about the Fitzgerald settlement?—A. Yes.

Q. Does that illustrate the statements just made to a very great extent? What are these Fitzgerald people doing?—A. I went over to Fitzgerald when it was first started. It is only about 50 miles below us. I went there a few days ago as a guest of these people. They were celebrating the erection of their gas and water works. They started out with the idea that they would have their own people in there, and that they would not have any darkies.

Q. Are these people all from the West and North?—A. Yes. They have a certain territory there within which they sell only to people congenial to them.

Q. They do not sell to colored people?—A. No; not at all.

Q. They do not let them in the city either?—A. Not to buy property.

Q. They own no property in the city?—A. That is my idea.

Q. They are prospering very well, are they not?—A. They seem to be very well satisfied. I stayed there during the afternoon before they had the banquet that night, and all the next day, and they seemed very much pleased with the town. They are putting up fine buildings all the time.

Q. (By Mr. PHILLIPS.) In what States, Territory, or country would you establish these colonies of which you speak?—A. I have no choice about that. I think that ought to be left very much to the negro. If he wants to go, let him pick out his country.

Q. Would you colonize them in this country or some foreign country?—A. That is a matter for future consideration. If I had my choice about it, I would put him in a foreign country; but I do not know as we ought to put on a foreign people something we do not want ourselves.

Q. (By Mr. KENNEDY.) Is it practicable to get rid of the negro by colonization, and would they give the suggestion of Bishop Turner, or anybody else, consideration?—A. That is a question—whether it is practicable. It is a question I do not discuss with many of them, because it is one that they are not prepared to handle; but now and then I do ask one about the question, and I do not believe they want to go. They do not want to leave that country because they feel it is their home. The other day I told a story to a negro. He has been around about my farm house for a number of years. He wanted to say something about trade; he wanted to make the next year with me. Says I, "Next year? I thought you were all going home next year." He says, "What home?" "Well," says I, "Bishop Turner wants them all to go home. He has a home for them." He says, "What home talking about?" I said, "Africa." He said, "I never been to Africa; I no' got no home there. I will not; if he want to go there he can go; I can get a home here. I kill nobody, and I don't reckon they will kill me, unless something to be killed for. I no scared of their killing me; and Bishop Turner can go if he wants to; I no go." Well, that is what that ducky said, and all the other negroes are pretty cunning. While they have not the sharp intelligence of a great many people, they are pretty cunning. That might not have been just exactly like he felt about it, but that is the way he talked.

I want to say something else about the negro, as long as we are on that line. A few years ago I asked a certain gentleman, who lives in the negro belt in our country, how long it would be before a certain territory in our section would be given over entirely to the negro. He smiled, and leading me a little farther on he says, "It won't be long before it is given over entirely to the negroes, and you will live to see the day when it will be given over to deer, wild cats, etc. The negro can not subsist by himself." I have lived to see it. It is within 20 miles of where I live. You put an object lesson before them, and they are great people for imitation. It kind of buoys them up, and they do more work, especially when there is somebody to stir them up every day. If you put them off to themselves, they are not self-supporting. You can not put them off. Give them territory and a year's rations, and in 5 years' time they will not own anything in the world. They will not make enough to support them for 12 months. The only way I farm with them is by having to see them every day myself, or have somebody else see them.

Q. Are not the people of the South so greatly dependent upon negro labor in agriculture that they would not be apt to look with favor upon that suggestion of colonization?—A. I do not know whether they would or not. They might not know it was for their interests. I hope I will not appear to be too egotistical. I was riding with a man 15 years ago, and we were talking on that line. I said to him, "The best thing for the South would be for every negro to leave by the 10th day of January." He said, "All I have I made out of negroes; wherever they go I am going to follow them." That man to-day is without a home. He finally got to the place where he had to rent out his lands and move to town, or did do it, and borrowed money from the loan association. It sold his land when the note came due, and he is to-day with a family of children without a house and home. There are a number of other instances that way, and a great many other people feel, perhaps, just like he does.

Q. Have you labor in Georgia to supplant the negro labor?—A. No; but it would be better, in my opinion, to let lands lie out 1, 2, 3, or 5 years, if necessary. I do not think it would be better for them in the beginning, but I do not know of anything that would be better for the people of the South and better for the people of this country than to get rid of the negro.

Q. Would you prefer to get rid of the negro and have white immigration come from other countries?—A. Yes.

Q. (By Representative LIVINGSTON.) Does the cotton producer of the South have anything to do with the price of his product?—A. Nothing in the world.

Q. Who prices cotton?—A. The price is made in Liverpool and New York City.

Q. Is there an unreasonable amount of tare on the cotton?—A. I do not know that there is; 24 pounds is what I understand it is.

Q. Is it true that you do not get anything for the bagging of cotton?—A. Yes, that is true.

Q. Do you get anything for the wrapping?—A. No, we have to furnish that.

Q. If your cotton was priced in this country and controlled in this country, do you think you would have more sympathy from New Yorkers and Bostonians and Baltimoreans than you get from Liverpool?—A. I really do not know. I hardly think we would. I think the Bostonians and New Yorkers would price it to their own interest.

Q. Is it true that the Liverpool cotton man sells his cotton to the manufacturers of Europe?—A. It is supposed he does.

Q. Do they manufacture and sell cotton to the world, a great deal of which comes back to this country?—A. Yes.

Q. Are these European manufacturers about upon a level with American manufacturers?—A. No; I think there is considerable tariff on their stuff.

Q. Are they not likely to make the cotton planter of the South pay it?—A. That is reasonable; that all comes out of the planter. Of course there is no question about that, just like the farmer pays all freights and all tariffs and all other expenses; no getting around that.

Q. And whatever advantage the manufacturer of this country has it comes out of the producers of the cotton?—A. Yes, of course.

Q. Does not that help to keep our people poor?—A. Yes, perhaps to that extent.

Q. Please explain the utter helplessness of the Southern landholder, financially, as to credit, improvement by borrowing money, and anything of that kind.—A. He has not much chance to borrow money unless he goes to the loan association and borrows at a tremendous rate of interest. Mr. Witham is president of 25 banks in Georgia. He has banks all over Georgia, run on an independent scale; every bank is independent of every other, but he happens to be president of the 25. He was advocating the other day before the bankers' association the loan of money to farmers. I was so much impressed with his talk that I wrote him to come before the State Agricultural Association—that he was the man we were looking for—and make a talk along the same line. He said there that he had never lost a dollar on a farm and had been at it several years.

Q. Would the cotton producers of the South be vastly benefited if they could manufacture within their own limits the cotton that they raise?—A. Yes, I think diversified agriculture is the first step, and then I think almost equally important is diversified manufacture. We want to manufacture everything that we need and can make in this country, and we ought to manufacture right in my home town and your home town and everybody else's home town, so we would not have to pay any freight on it.

Q. That can not be done without money.—A. No.

Q. And the entire landed property is entirely worthless as collateral to borrow money?—A. Yes. Then the great benefit of that idea is that if people in the country would make enough at home for themselves and enough to feed the people in these towns, it would give them a market at home for the whole product they make, and I think we in the South would then have an ideal country. We ought to diversify our products at home, but the lack of money has been the great drawback, and the lack of a proper system of education. If we want to start a manufacturing enterprise in Georgia, in any part of the State, we must import, getting men from somewhere to run it. I think, when Senator Morrill introduced his bill in Congress to establish these colleges, to maintain agricultural and mechanical schools, it was one of the grandest measures ever introduced, and wherever advantage has been taken of it they have done a great deal of good; and and I am sorry, blush, to think that our State money is not properly applied. The instructors of the youth in our State have gone on the idea that the boys must be filled with Greek and Latin, and be prepared to go out and teach school, perhaps, or something of that kind. It never has occurred to them that his hand needed training. We have proven this kind of education, in my opinion, necessary. They sent their sons to school with the idea that the school people knew what to teach.

Q. Georgia has a colored industrial school and a white industrial school fostered by State aid?—A. Yes.

Q. The Savannah school?—A. Yes.

Q. They are making a beginning in that way?—A. Yes. I think we are doing a great work. I have my son, a boy 17 years old, at the technical school at Atlanta. I went to the president of that college and told him that I wanted the boy to know how to set a tire, set a plow, and shoe a horse. He said he taught nearly everything else but that.

Q. (By Mr. RATCHFORD.) Have you, in the State of Georgia, an industrial school for girls also?—A. Yes; at Milledgeville.

Q. (By Mr. KENNEDY.) You must appreciate the work that is being done by Booker Washington, at Tuskegee, Ala.?—A. Yes; I do. I may state that I have a negro tenant that lives with me that has a son at the industrial school at Savannah.

Q. (By Representative LIVINGSTON.) Then you have an industrial school, colored, at Savannah, and a school for white girls at Milledgeville?—A. Yes.

Q. And white boys at Atlanta, all receiving State aid?—A. There is another school, supported by Northern philanthropy—Clark University.

Q. That is also on the industrial line?—A. I am not really prepared to say what the nature of that school is.

Q. It has been charged down there that the railroads, banks, wholesale merchants, and everybody are bleeding the farmer. Would you care to make any statements about these things?—A. I may say this, that so far as the merchants are concerned, the prices they have charged in many instances have been exorbitant.

Q. Is it owing to the fact that the men have to buy on time?—A. Yes; that gives them leverage; and then the merchant justifies himself on this line: That he did not want to do anybody injustice; that he did not know what he was going to get, and he was running a great risk, and in running a great risk he had to have a big margin. This system of doing business has not always inured to the enrichment of the merchant who charged the fabulous prices, because it proved that he was taking a big risk, and he did not collect; he did not get the money. I think some of them do not pay him. The banks have put a stiff rate of interest on the farmer. I speak from experience. I have paid all the way from 10 to 22 per cent per year for money.

Q. (By Mr. KENNEDY.) Is there any difference between national and private banks in regard to the rates they charge the farmers?—A. I do not think there is any at all.

Q. There is no favoritism shown by the private banks over the national?—A. No; not that I know of. I want to be perfectly fair on that line. As far as I am concerned, the biggest trouble I have had was to pay them back and not in getting the money. As far as the railroads are concerned, the relations between them and our people are very cordial and have been for a number of years. I will state, as an instance of that fact, that the railroads have cooperated with our State Agricultural Society and extended us many courtesies, just upon the asking. They run their roads, of course, to make money, and it is possible that some of their freights are too high; I am not prepared to say; I am not a railroad man, and I do not know how much money they ought to make, and I do not know how much money they do make; but there is no real difficulty between the farmers and the railroads in my State.

Q. Are they regulated by the State?—A. Yes; we have a railroad commission.

Q. That regulates them?—A. Yes.

Q. And they control the rates of freight and depot buildings and everything?—A. Yes.

Q. Are the railroad properties taxed by the commission?—A. Yes; they tax them, but I do not know whether they get the taxes on the full value of their property or not.

Q. What interest in the South bears the burden of taxation largely?—A. I should say the land.

Q. What per cent do you suppose the land bears of the total taxation in the South?—A. I should say perhaps 90 per cent.

Q. (By Mr. PHILLIPS.) You have stated that the negro would not be self-sustaining even if the land were donated to him.—A. Yes.

Q. What would be the condition if he were educated along technical and industrial lines? Has it been sufficiently tried to say whether he would be self-sustaining?—A. That is a question. But I really believe that if the negro were to be left entirely alone for a while, at least, he would retrograde, no matter what educational inducements might be offered him; that he would retrograde for a while. Perhaps he might get back after a while.

Q. Are there not quite a large number of noted examples of negroes who have been educated proving successful both in the professions and in the industries, sufficient to warrant the conclusion that if proper care were taken they might all succeed, or a large number of them?—A. It strikes me that those are only the exceptions to the rule. I notice, for instance, in dealing with them—we have white farmers without any education whatever, who make a little start and improve from year to year. For instance, here is a white farmer who comes from ignorant people; his people do not know how to read nor write, and he does not know how to read nor write. After a while he gets on his feet and accumulates a little property. The negro, say, is raised amongst intelligent people, and after a while he starts out, and by a little persuasion and coaxing and general direction accumulates a little property. In a few years it is all gone. They get to a certain place and they go back. There are instances all over the State of Georgia that way. I have studied the question for a good while, and I have studied it closely. I started out on the idea, a few years ago, that I would make a permanent tenantry of these people, and I cut my land all up into one-horse farms, two-horse farms, three-horse farms, and four-horse farms, and I gave them a comfortable house and stock, and I said to them that I was not after making any

money on goods. "If you want to get a little money, we will go down to the bank and sign a note together, and you just feel at home here just as long as you pay me the rent." He would go along and probably get the mule paid for, maybe two, and go, maybe 2, 3, or 4 years, and the first thing you knew he was all gone to pieces.

Q. Do not white people fail in the manner you have described?—A. Yes; but the negro fails almost universally. We have just exceptions enough to prove the rule.

Q. Is it not a fact that in this city and a great many places in the North negroes have accumulated a great deal of property and made successes?—A. Yes; when you put it in the aggregate, that is true.

Q. You have then but a very small per cent of what you would call thrifty, industrious negroes, who have accumulated anything in your part of the South or in the South generally?—A. No, we have not. If you give him a good price for cotton, the darky will do pretty well, because he will make cotton and he will make more out of it than anything else; but when it comes to growing other things, he is not in it. He may get there after awhile. But this I will say for them: They are the best-natured race of people on the face of the earth; they are accommodating; they are naturally polite and all that, but they are careless, they are indigent, and they are improvident. Generations may be able to instill these other qualities into them, but they are not there now, as a race.

Q. As they have only had their liberty 33 years, do you not think that there are indications of sufficient progress to warrant the conclusion that they will improve?—A. I used to think so, but I have my doubts about it now.

Q. There are very few races that have come out of slavery as the negro has, that have made very eminent progress in that time, even the whites.—A. Yes; that is true.

Q. (By Representative LIVINGSTON.) What per cent of these colored people become landholders in Georgia?—A. The per cent is very small; I do not know the per cent. There are a good many of them that became landowners that do not own their land now.

Q. Are these colored people prone to use intoxicating drinks?—A. Yes; they are very much inclined to drink whisky, and they have very little regard for their morals.

Q. Is it true that the white people have forced prohibition in almost all the counties in Georgia, largely to keep these people away from the doggeries and low drinking places?—A. That is true.

Q. How many counties in Georgia now are prohibition counties?—A. About 111.

Q. One hundred and eleven out of 137?—A. Yes.

Q. Has the great moving cause been the presence of this race?—A. Yes; to get the whisky away from them. When a negro is polite and pleasant and agreeable, if you load him up on whisky he will be a very different negro and a dangerous negro, and we do not want whisky kept in the country.

Q. Let me ask you if these terrible outrages—arson, murder, and rape—are not usually committed by a class of those people that are all the while drinking and all the while drunk?—A. I think it is true. Two years ago, within 8 miles of where I lived, there was an old gentleman murdered. He was sitting in the house with his wife, and a couple of negroes went in with an ax that they picked up near the woodpile and knocked him in the head, just as we would a hog. When I got there the next morning, he was still sitting in the chair, just as he was killed, and his wife was on the floor. Fortunately she was not killed. They thought they had killed her. They robbed him of his money. I said right then and there: "There is one thing you can set down" (we saw none but negro tracks around there), "this crime was not committed by a negro that owned a mule or a foot of land or any other piece of property." I have always been an advocate of bringing them up on that line. I say whenever any man is a property owner, he is a better citizen than he was before, if he does not own anything but a cow. Sure enough, we traced this thing to a couple of negro tramps that followed up and down the railroads and gambled and drank whisky with the negroes after they had been paid off. They are the classes that commit the crimes.

Q. As a race generally, they are kind and docile and good laborers?—A. Yes; that is true; but they are careless in their methods and seem naturally averse to improved implements.

Q. (By Representative BELL.) Is it a fact that almost every avocation now is completely organized outside of the farmers?—A. Yes; that is true.

Q. Do you know of any organization to raise the price of the labor of farm hands?—A. I do not. I do not know of any to raise the price of farm products either.

Q. Is there any real organization to raise the price of farm products?—A. No.

Q. Now the price of practically everything that grows is fixed by the syndicate, is it not?—A. Yes.

Q. In your speaking of a remedy, it is undoubtedly a good idea that you have manufactures all through the country.—A. Yes.

Q. I want to ask you if that is possible under the inclination of the transportation companies and manufacturing companies to manufacture at great centers like Chicago, for instance, and other great terminal points of railroads?—A. My impression was that these railroad commissions were organized for the purpose of protecting the smaller towns against the larger ones on that very idea. Not being a manufacturer, I am not prepared to say what the rates are and what the discrimination is between these smaller towns and the larger ones. I have never investigated that.

Q. Do you know, from the investigations of the Interstate Commerce Commission of the cases before it, that the general custom of transportation companies is to favor great manufacturing centers, for instance, through a system that they call common points?—A. Yes.

Q. For instance, they will say that the city of Denver, in Colorado, is a common point, and in shipping sugar from San Francisco they will charge you more to stop than to go on 300 or 400 miles before they reach the common point?—A. Yes.

Q. Do they not do the same thing generally in manufacturing—take a great city and say that ought to be a great manufacturing city or a great distributing point, and give it a rate?—A. We hear of those things. I am not prepared to state on that, because I have never investigated it at all, and I have never had any interest in any manufacturing; but it seems to be the idea that that is done.

Q. (By Representative LIVINGSTON.) Do you know of your own knowledge whether these cotton factories and others which are scattered through the little towns in the South are making money?—A. I hear in a general way that they are.

Q. That is the general opinion?—A. Yes.

Q. Those that are in the South?—A. Yes; for instance, Griffin, Macon, Columbus, Augusta, Jackson, etc.

Q. At these intermediate points they are making money?—A. That is the information that comes to me in a general way.

Q. Do you know whether the smaller towns get a proportionate rate with the larger cities?—A. I do not know. Ours is not a manufacturing town, I am very sorry to say. We have a barrel factory and an oil mill. I believe that is all we have.

Q. Was it not rather a rare thing to have banks in the small towns of the South, until the last 15 or 16 years?—A. I do not think it was, really, but I think we have a great many more now than we did then.

Q. Was there a great multiplication of banks 15 or 16 years ago, becoming nearly as numerous as blacksmith shops?—A. We have a great many more banks, and this same man, Mr. Witham, is president of 25. He has organized them within the last 15 years.

Q. Probably running them all on the same capital?—A. No; he goes and gets people interested; he says: "I will take so many dollars' worth of stock, and you get your people here in town to take so many." Then a man will say, "I have no money," and he says, "I will tell you what you do; you pay \$200 in stock and I will loan you \$800," and he has some man up here, I do not know where, that loans him the money. He loans it to him at a cheap rate, 5 or 6 per cent, on his stock, and he has made considerable money. I think Mr. Witham is doing considerable service at that.

Q. You think if a farmer can borrow money at 7 or 8 per cent, it is a godsend to him?—A. I think it is a great deal better to borrow money at 7 or 12 per cent than to be cursed with a mortgage of from 50 to 100 per cent.

Q. Is it not leading to absolute and unmistakable destruction when a man goes to farming on money at 8 per cent or 7 per cent or 6 per cent?—A. I do not think so.

Q. Do you know of any general farm in the South that is paying a net profit of 6 per cent?—A. Yes; I think I could mention some.

Q. Do you think it is a general thing?—A. I do not.

Q. It would be quite exceptional, would it not, if an ordinary farm should pay a net profit of 6 per cent on the investment?—A. I do not see why, right at this time. There is no question but what in the last 2 years our farms have been operated at a loss, because I think it takes about 6 cents to pay the cost of the production of cotton. But we do not propose to stick to that line, and I believe we can switch off on other things that will make our farms a paying investment.

Take into consideration, too, that our lands can be bought all the way from \$3 to \$8 and \$10 an acre.

Q. Do not the statistics of 1890 show that the general farmer in the South was not only making no money, but was eating up his capital?—A. I do not recollect what they show; I am not posted on that. That talk has been going on for 20 years.

Q. (By Mr. FARQUHAR.) In the matter of cotton, does the crop raiser sell to the storekeeper?—A. Not necessarily.

Q. Where is the immediate local market; in whose hands is it?—A. They carry it to the commission merchants, who sell it to the export buyers.

Q. That is, the local commission buyers?—A. Yes.

Q. They are really buyers upon commission?—A. They have their agents in all interior points.

Q. Where are their headquarters?—A. They are located at Savannah.

Q. Do they ship immediately there from the local market?—A. Yes.

Q. First of all it is taken from the farm and placed in the hands of this commission merchant?—A. Yes; the commission merchant simply sells it for the farmer to the buyer. He is the representative of the exporter, and he charges the planter a commission.

Q. There is a profit from the producer to this merchant?—A. To the commission merchant.

Q. There is a profit between him and the man who ultimately ships?—A. Yes.

Q. There is a profit from the shipper to the Liverpool market?—A. Yes.

Q. And there is a profit in the brokerage on the Liverpool merchant?—A. Yes; the exchange.

Q. None of those parties can have any claim on the profits of either the preceding ones or the ones after him?—A. No.

Q. Your idea would be that, instead of spending all these profits in Liverpool, if we were paying that profit in Augusta or Savannah, that profit should be taken out in the manufactured goods of your own State?—A. That is right; that is my idea.

Q. So that the whole total of the worth of the article as a raw material and the profit that comes to it in the manufactured state would remain in the State of Georgia?—A. Yes.

Q. And you think that is the commercial remedy for the cotton question in the South?—A. I think so. The cotton crop from all over our State is 1,000,000 bales. When it is manufactured into the coarsest kind of cloth, for instance, it is worth \$5,000,000; when it is manufactured into better cloth it is \$40,000,000. There is \$40,000,000 for Georgia instead of \$25,000,000.

Q. What are the inducements for people to go into Georgia to manufacture cotton?—A. I am a reader of the Manufacturers' Record, which frequently speaks of workers for the South. I am not capable of doing much in that line. I would be glad to be numbered amongst those people, but it seems they are continually striking at the idea that there is some inimical legislation in some of the Southern States that frightens capital out. If there is any in Georgia, I do not know of it. If there is any disposition on the part of any people in Georgia to fight capital, I do not know it. We want to get our money as cheap as we can, but we certainly have no objection to cotton factories coming there. We want them to come there. There is not a town in the State of Georgia that I know of or that I have heard of that would not offer them inducements to come, and I do not see any reason why there should be this fear. These loan associations have loaned their money there, and they generally get out of it their 7 or 8 per cent, and they pay their agent so much. Now and then they have to foreclose, but I do not hear of anybody pleading usury or anything of that kind. I think they hate to give up the land, of course, but when they can not get the money somewhere, where will they go? I do not see that there is any great conflict between us on that line.

Q. (By Representative LIVINGSTON.) What advantages have capitalists there, to entice them to go South and manufacture cotton? Will you say we have a good climate to manufacture in, or not?—A. I think so.

Q. Have we cheaper labor than they have in Massachusetts or anywhere else?—A. I reckon our labor is as cheap as it ought to be anywhere in the world.

Q. We have no State laws there to force them to 8 hours or 9 hours or any other hours?—A. No; nothing of the kind.

Q. They can work 10 hours or 12 hours or 15 hours if they want to?—A. I suppose that is entirely governed by the agreement. They should not work them, I think, longer than the endurance of the worker would justify.

Q. They work in wood houses, and they are not compelled to build of brick and stone?—A. Yes.

Q. You can spend all winter in a frame house?—A. Yes.

Q. (By Mr. KENNEDY.) If you had these laborers in the cotton mills, do you not think it would be but a short time before they would be organized and getting as good hours and wages as in Massachusetts?—A. I should think so.

Q. Would you not like to see them do it?—A. If they did, that money would still be in Georgia?

Q. Yes.—A. That is what we want.

Q. (By Mr. FARQUHAR.) It is for the salvation of your State, as you are cotton raisers and determined to raise cotton, to have this capital come in, have it on the ground, to retain the money for your raw product and your manufactured product?—A. Yes; that is the way it always ought to be.

Q. How do the lands of Georgia compare in fertility with those of Virginia and Maryland? Is yours as good a State in that respect as those States?—A. I really think so. I am partial to my own State, and I might not be a competent witness when it came to answering that question. I really believe, though, that if a man will go to Georgia and start right there is no better country for a farm. I think it is the ideal home of the farmer. A farmer who stays at home and raises what he wants at home—there is a difference between him and the speculative farmer. Where a man can be at home with his own family and raise everything that he can eat at home, it is the ideal place for him. I have some negro tenants who are living a great deal better to-day than a great many people in cities. Just take one instance: I have a boy who started last year, and he is not at all above the average. According to my instruction, he planted certain crops. At the end of the year he had a plenty of corn and fodder, plenty of bread, vegetables, and potatoes; he had plenty of sirup all this year, and he had plenty of meat. He has not wanted for one thing in the way of anything to eat. He had his milk, butter, chickens, and eggs. What more did he want? And he has had his melons and his fruit.

Q. (By Mr. KENNEDY.) You spoke of the difficulty which the Georgia farmer had in getting out of cotton raising. You have been diversifying over your whole plantation. Have you made or lost money as the result of this new departure of yours?—A. If I had not made a departure I would not be farming now. I do not know that I have made any money; I have managed to keep from breaking; and if I had not done that I would not be farming.

Q. You took the advice of the gentleman from Mississippi, who, you said, spoke about 15 years ago?—A. Yes.

Q. Have you not solved the difficulty for your farmers in the South?—A. I do not claim I have solved it more than anybody else. I have been preaching it everywhere I could—diversifying agriculture and diversifying manufactures. It is a hard thing to get out of cotton raising; we need a leverage that must come in the way of some money.

Q. You had that leverage?—A. No. Some people have a knack of borrowing the other fellow's help, you know, a little better than other folks. I have seen that, for instance, in buying fertilizer. A man may appear to be a pretty good farmer, but he does not think; he has no financial ability. He may go along and give \$4 or \$5 more a ton for his fertilizer than I will, or he may wait until he needs some and go down and get the money and buy it. If he would buy a stock of it when it is low it might be done, if he knows how to do it. He may have gone to a bank, but he does not know how to do it. The banks have held out the idea that they do not want to loan money to farmers; and whenever they go the idea is always that they may be able to accommodate them, but money is mighty tight, though they may strain a point and let you have it. That is the cry that the farmer has always heard, and when the bank man wants to know how much money he needs and he tells him about a hundred, he will want to know if he can not get along with fifty, and maybe he gets seventy-five; and that is the way they generally run; and he would rather go and pay a little more in a great many instances. For instance, a man in Macon, 50 miles above my town, said, "What is the matter with the farmers?" I said, "What do you mean?" He said, "They do not seem to come to town and want any money." I said, "You people say you do not have any money." And this man, who was president of a bank, said, "I guess that is the idea; they stay away for that cause."

Q. You have said you are looking for a way out, and the colored people are looking for a way out. It seems to me from your testimony that you have found a way out, and that this colored man you speak of, who is a tenant of yours, following your advice, has found the way out of his difficulties.—A. Yes. Well,

farmers, as a rule, do not think about their business, do not study their business, and do not work at their business with the business methods that other people use; and the very fact that they will not, and that a wrong method will prevail among them, as a rule operates against every other man who wants to do it properly. In a community where the majority of the banks pursue a wrong method, those who want to do it right can not succeed. The same way with a railroad; those who want to run them wrong, on their basis, do so, and those who want to run them in the right way can not succeed. And it is a fact that when the majority of the farmers go the wrong way, they bring the rest down with them.

Q. (By Representative BELL.) Does not that come out of the fact that the farmers have never been organized?—A. I am a great advocate of organization among the farmers, not to oppress other people, but to keep other people from oppressing them.

Q. Do you not think that the wage-worker gains from what he learns in his organization, and so with the banker and the merchant, and that the farmer is weak on that one point?—A. I think so.

Q. That he is not organized, and therefore he is not educated?—A. I think so.

Q. (By Representative LIVINGSTON.) Do you not think that they ought to go into a combine like the sugar trust?—A. We ought to organize. I am an advocate of it.

Q. You ought to organize and become equal with other communities in these great methods.—A. Yes, we ought to organize by all means in the world.

Q. (By Mr. RATCHFORD.) Your testimony is not exactly clear when we compare it with testimony of other witnesses from your State and from the South. You stated, I believe, that your State was not adapted to stock and cattle raising?—A. I said it was not peculiarly adapted to that. We have not a country that is peculiarly a wheat country nor a corn country, nor a stock country; but it is a country, in my opinion, peculiarly adapted to diversified agriculture. The West can beat us making corn and wheat and oats, but when you take into consideration that we can make sirup, potatoes, rice, wheat, corn, rye, milk, and butter; that we can raise plenty of colts for our own home use, and horses, and a good article of beef, too, then I say that all these things together bring up the average and make it a desirable place. But to produce any one crop—I do not believe it is peculiarly adapted to cattle raising nor horse raising nor wheat raising nor corn raising. I would not advocate the entire stopping of cotton planting. I think we ought to have it as one of our crops, but I think we ought to have these other crops to back it up and have it to back up the others.

Q. (By Representative BELL.) You have a good climate and good land and short winter seasons. Will you explain why it is not adapted to cattle raising?—A. I will not say it is not adapted to cattle raising, but I do not think it is superior to some of the other countries, because our lands are not as fertile. Our lands are thin. The grass does not do as well in our long summers. It gets dry and dies. I have gone into cattle raising a little myself. A field that was cultivated last year will make a better pasture than the field that was not cultivated last year, and the field upon which the cattle graze this year will make better corn and cotton next year by reason of the cattle having been upon it, or by reason of its rest from the plow. I think in our country we need all these different agencies to work together for the common upbuilding of the lands. It takes a good deal of thought and time and attention to do it. I do not believe that one can take any one line exclusively and succeed on it.

Q. You do not believe then that you have the advantage of the Western country in the raising of cattle?—A. I do not?

Q. You say that the banking interests and the merchants of the South will not take your corn crops and wheat crops as collateral to as great an extent as they will take the cotton crop. Will you explain why that is a fact?—A. The cause involved is that when the corn matures the merchant is in a mighty tight fix. The farmer depends on the retail merchant, and we are in the hands of agents and subagents, and New York is holding on to secure the whole thing.

Q. (By Representative LIVINGSTON.) He must have the money and you have to furnish it?—A. He must have the money, and the farmer goes to the retailer, and the retailer to the wholesaler, and he goes to the bank, and that bank goes to New York and gets the money, and in the fall of the year everybody must be paid. The Macon banker, for instance, goes to the New York bank, and the New York banker says: "I am afraid of the whole thing." That thing was pretty well demonstrated by a sawmill man in our county. He is a kind of a wag and philosopher. He said he noticed how things ran. Every Saturday night the darkies he had working for him would come up and take off their hats and ask for their little money, and he said he would step over to a certain man's house and get it

for them. He would go to the man and take off his hat and ask for a little money, and he said he thought to himself if he got in that man's place he would not have to do that. A few days after he happened to be up in Macon and he saw that fellow up in Macon bowing and scraping and asking for money, and he said "I heard them say that the Macon fellow went up to New York and just beat everybody bowing and scraping."

Q. Have corn and wheat as staple a value as cotton?—A. No. When corn matures, say in my town, everybody then has corn enough to do him until Christmas. Nobody there wants to buy corn. The merchant can not take that corn and use it; he can not pay the bank with it; and if he gets a carload of it he must ship it in competition with the West, and whenever he does that there is nothing in it for him.

Q. Is the statement that you make as to the people in your country being in the hands of agents and subagents generally true of the farmers?—A. I think that is true.

Q. (By Mr. RATCHFORD.) You have stated very plainly that the farmers of your State were going back, or, if not going back, that they are not progressing. Do you attribute that fact very largely to the employment of colored labor?—A. Yes; I think that is true to a very great extent.

Q. What wages are usually paid to colored farm hands?—A. We pay them from \$6 to \$8 a month. We give them in addition to their wages 4 pounds of meat and a peck of meal, and we give them a good house to live in, and we give them an outside patch of 2 acres to work on Saturday evenings, upon which they can make generally about a bale of cotton.

Q. How do those wages compare with the wages paid to white labor where they are employed in your State upon farms?—A. I think we give them about the same thing.

Q. Do you know of any other section in the country that pays its farm labor at as low a rate as is paid in Georgia?—A. I do not. It is not in the amount of wages; it is the efficiency of the labor. I have always argued that, and my father before me argued that question.

Q. The amount of the wages does not determine the efficiency of the labor?—A. And it does not determine the need of the people. It is the efficiency of the labor. A great many negroes I would not hire at any price. The more you pay a negro the less efficient he becomes as a laborer.

Q. You believe he is worthless at any price?—A. No; I say the more you pay the negro the less efficient he is. I will demonstrate that. The more you pay him the less efficient he is as a laborer. Now that is the whole plan. For instance, about a year ago I was talking with a sawmill man in Dodge County, and we got to talking about the negro problem and the labor problem, and he said he started them to work in the sawmill. He paid them 75 cents a day. It is hard work, and for a while they wanted a little better work and a little better wages, and he gave them \$1 a day. They had been working 5 days and they commenced to work 4 days. He said they gambled. They commenced working 3 days in a week and gambled and drank the balance of the time. And a few days ago I had a man put in a wire fence for me. I was in a hurry with my crops and I could not fence them in in the spring. He was to be there Monday morning, but he did not get there until Tuesday. I said, "Why didn't you come yesterday?" "I could not get my hands." I said, "Well, what are you paying your hands?" And come to find out I knew what the trouble was. They could make enough in 3 days to live on a week, and he worked then from Tuesday morning until Friday night, and the last time they quit Friday at dinner, and he could not keep them there. That is the truth about the negro. Now, I have an old foreman living at my house, he was born there before the war, and one day I was in the field and I said, "I could give you twice as much wages as I do if you would appreciate it and try to work up, but, if I paid you twice as much as I do, you would not be worth as much as you are now." He says, "No, that is a fact." And I will tell you why, because he would have more money to gamble with and spend for whisky.

Q. What influence does colored labor have in the South to keep the wages of the white men down; does it keep the wages down below what they would be otherwise?—A. I do not know. With the presence of the negro there, it gets into the white man's heart that the farm work is menial; that it is degrading for a white man to do; and I will say this, that you can not employ on farms the best white men, because they will go to town and live on air and water before they will go out and go to plowing for a pretty good salary.

Q. I infer that the reckless and improvident habits of the colored man have much to do with cutting down his wages?—A. Yes; I think that.

Q. That being the case, will wages set by them in these improvident habits have this influence on all other classes of farm labor?—A. Yes.

Q. You stated that you need a farmers' organization, not for the purpose of crushing anybody, but for the purpose of preventing others from crushing them.—A. For their own protection.

Q. Do you believe the labor employed on the farms should also organize for that same purpose?—A. I would not state about that. I do not think there is any necessity for the farmers to organize to protect themselves against the labor. We never have any trouble with them. I will tell you what I said last fall: The question came up, What shall we pay the labor? and I made this remark: "Gentlemen, we are paying them little enough now, and whenever it comes to a place where we can not pay them as much as we are paying now, we had better quit. I do not want anybody to work for me for less than good victuals and good clothes, and when it comes to that, I will quit the business."

Q. Taking the matter as a broad proposition, you believe in the farmer organizing to protect himself from whatever influence seeks to destroy him?—A. Yes.

Q. Would you accord to the laborer the same right?—A. Yes. I think if we had the farmers thoroughly organized all over the country that we could manufacture all the cotton we make in this whole country right in this country. Here comes up the great question of the uniform bale, the square bale, etc. They want the farmers to indorse this and that. But I do not think that cuts much figure one way or the other. The great thing for us to do is to manufacture it right at home; and if we had them organized, we could run our factories and farms and never would be out a dollar, and run them in connection with the merchant.

Q. (By Representative BELL.) Who gets the better part of the product of the farm in the South—the hired man or the owner?—A. The hired man, for the last few years. The negro laborer on the farm is better paid than a great many people in town. To demonstrate that I will say that I had a boy that had been living with me a number of years; quite an intelligent negro; could read and write quite well. He asked me one day if I would not be willing to pay him what draymen got in town. I had a little farm near Hawkinsville. I said, "Yes; I will be willing to pay you what they get. What do they get?" He says, "They get \$15 a month." "You want to work like they do?" "Yes; I would like to work as they do." "I will pay you what they get and settle with you every Saturday night. I want you to understand one thing: He pays so much house rent; he pays for his 4 pounds of meat and peck of meal." "Yes; I understand." "He works from Monday morning until Saturday night. He does not have any Saturday off nor any outside patch. And I want you to understand another thing: Whenever you want a load of wood I will haul it to you and charge you \$1 for it." He says, "Boss, let's go back to the way we are now."

Q. His \$6 a month is his profit?—A. We just give him his 4 pounds of meat. Now, if he wants any sirup, he buys it. He has this little piece that he calls his garden, and he will say he is going to have the finest garden of anybody, and he will get another dorky to help him, or maybe his wife will, in planting the seed all around the house. He is getting 2 acres of land, and he will plant his cotton outside, away from the house. He works his cotton very well. He does not work his garden, and that is all he makes. He has his cotton.

Q. It is charged here, and I have heard it stated as a fact a great many times, that the elevator combination that buys up the corn and wheat of Minnesota and Nebraska will ship it from there to New York cheaper than the farmer in Pennsylvania can ship his to New York. These charges have been made for years publicly and stated here. Do you know whether such discriminations extend to your country?—A. I really do not know; but I know this, that the freight on corn from our place to Chicago is about 15 cents a bushel. I sold a little corn at Hawkinsville and I had to send it out at about 43 cents a bushel. The reason I got 43 cents was because they gave me the Chicago price with the freight added. I suppose if I had had to ship that corn from Hawkinsville and compete with the man in Chicago my corn would have been reduced to about 25 cents a bushel; and when you talk about our raising corn in my country for 20 and 25 cents a bushel, that must mean that we are not in the business at all.

Q. (By Mr. A. L. HARRIS.) Do you raise a sufficient amount of corn to supply the demand in your State?—A. I think there is a good deal of corn imported into our State. I will say that to the discredit of our people. There is no excuse for it. They are able to make enough corn to do that in our own county. I do not know the reason why corn need be shipped in there. We ought to make enough corn.

Q. When you buy your subsistence you buy it from the Western farmer with the profits of the middleman added?—A. Yes.

Q. Corn, meat, and everything?—A. Yes.

Q. You can raise mules in your State?—A. Yes; my grandfather before me raised some as fine as anybody, on a limited scale. He did not go into it exclusively.

Q. Your State is fairly good for dairy products, is it not?—A. Yes.

Q. You can raise horses?—A. Yes, we can raise horses; but I will say right now that I would not advise a man to come to our State to raise horses in competition with Tennessee and Kentucky. They can raise a better grade of horses than we can.

Q. With diversification, what reason can you see for Georgia being a less productive State than Ohio, taking land, labor, and capital into consideration; outside, of course, of the dearth of capital you have now?—A. I really do not think our soil is as fertile, take it all the way through, but it is adapted to a great diversity of crops. I do not think we make as much per acre as you do in Ohio.

Q. You can raise crops that Ohio can not raise?—A. Yes.

Q. It requires more fertilizer?—A. Yes.

Q. About what is the average length of time that your pupils remain in school per year?—A. I think about 9 months.

Q. From what age?—A. They go from 6 years of age up.

Q. That, as I understand, is for both colored and white?—A. Yes. On my plantation we have a school for colored people, and the school fund now, I think, has been about exhausted, and the teacher is carrying on the school still by private subscription amongst my own people. The schoolhouse is right on my own plantation. I furnished them the land and bought the lumber and all the material for them to put it up, and they put up a brick schoolhouse and a church.

Q. Are you obliged to keep white overseers to look after your colored men?—A. I just say that was an expense that I could probably do without, and I was going to do it if I possibly could.

Q. Have you made money by the change?—A. I am trying to save what I was paying them. I talked to my people very plainly. I just told them, "I can not afford to hire a man during the year to be idle. I am going to start on this line and I am going to try to do the work, and if you will go on and do what I tell you, we will get out without any white boss, but if necessity comes, I will hire somebody to drive it out of you." We have got along very well so far.

Q. Please state in as few words as possible, if you have anything in your mind, what your remedy is for the conditions in the South.—A. My remedy, in a nut shell, is diversified agriculture in the country, and let the people in this country make everything they want at home and enough to feed the towns and cities—corn in the country, wheat in the country, meat in the country; and manufacture everything that we can in our own limits, in our towns and cities.

Q. What legislation would you suggest, that the nation could, under the United States Constitution, pass, to give you relief?—A. That is a great question. If there is any legislation that will bring about that state of affairs, I am in favor of it. When I was a member of the legislature of my State in 1894, and chairman of the committee on agriculture, that question was brought up, and I submitted a report to that committee, which was adopted and also adopted by the house, in which I made the very suggestions that I have just made here—that we favored any policy on the part of our State that would encourage the building up of manufacturing in the State of Georgia. It was a pretty broad proposition, but that was it. It was unanimously adopted by the agricultural committee of the house, and by that legislature.

Q. (By Representative LIVINGSTON.) You did have for a long time there an exemption from taxes?—A. Yes; some of the municipalities aid them now.

Q. (By Mr. A. L. HARRIS.) What is the prevailing rate of interest in your part of the State now?—A. I expect it is about 8 to 10 per cent.

Q. With the immense amount of capital we have in the North is there any reason why it does not go to the South when they can get such a high rate of interest?—A. I can not tell you. I have thought about that some and I can not tell you. I think there as a little apprehension on the part of some of the Northern people that perhaps their money would not be safe, but I do not see that experience should justify that apprehension. Not only that—I think they apprehend that the farmer can not pay this interest in the present condition of agriculture. It is not want of confidence in a man's integrity and his willingness, but it is a restoration of confidence in his ability to pay that we need. If one does not have confidence in another's ability to pay, he will not loan him any money, no matter how honest he knows him to be.

I simply want to state that my suggestion of what the remedy is for the condition of agriculture and the general conditions in our section of the State. I suggested that we wanted more diversified farming, more manufacturing; and I was

asked what national legislation I thought necessary to bring this about. It seems to me that I would first want this 10 per cent on State banks removed. I think that lands should not be outlawed as security by national banks; and I think probably it would be to the interest of the people to have a system inaugurated by which the land deeds could be offered as collateral, like stocks and bonds, and be more quickly transferable. Some, of course, would argue that would be against the interest of the landholder, but I do not think so. Then I do not think this gambling in farm products is a good thing for the people. We call it gambling; I think that is all it is. If there is any way to stop it by an enactment of Congress, I think it ought to be done. I do not think it is a good thing. From the agriculturist's standpoint, I would remove any legislation that operated against his interest in the interest of anybody else. The farmers, on the other hand, do not ask for any legislation for his special benefit. They have only asked for "equal rights to all and special privileges to none." Now, on the line of organization—I think we do not get enough for our products, especially for cotton. I see that Major J. F. Hanson, of the American Cotton Manufacturing Company, in an article recently published in the Macon Telegraph, and reproduced in the Manufacturers' Record, advocates the establishment of bonded warehouses in different centers, in order that the planter may carry his cotton there and get an advance upon it, take the money and pay the merchant, and let the merchant pay the bank in turn, so as not to be forced to sell it. You see this product is made in 12 months and sold in 3 months, and it is astonishing, under old conditions, that you could really hold out as well. Mr. Hanson is not a man that belongs to that class of people which thinks the Government ought to support the people, and I do not, either; in fact, he is a man of fine business qualities, and president of one or two manufacturing enterprises. I want to make myself clear on that point. While I think that this is the solution for all, there is something, perhaps, necessary to put us in a position, or to help us be in a position, to bring about that condition of affairs. I think that we have been talking too much on the line that the Government has been against us; and if you ever get an idea in a man's head that the Government is against him, there is no use trying to get him to do anything until he gets the right idea; he is in a bad fix. If we will all look on the inside, we are more than apt to find a remedy. I do not claim that our people have done all that they ought to do; I think that we could have done some things we have not done, and I think we could have left undone some things that we have done.

Q. I would like to have you give your reasons for your opinion that dealing in options and futures is injurious to the cotton raisers because the same thing affects the wheat raisers in the North.—A. I think it has a tendency to demoralize prices, whether it puts them up or down. I think if we are going to be governed by supply and demand that we ought to go on that idea, and let the real supply and demand govern it, and not the fictitious supply and demand manipulated in the book rooms of these exchanges, where there is forty, fifty, or one hundred times as much cotton sold in a week as we make in a year; and the same way about wheat. Mr. Leiter advanced the wheat market; the farmers got the benefit of it. I am not any more an advocate of that than I would be if he put it down to 25 cents a bushel. When the farmer gets the benefit of it the purchasers pay it. If the other side had been the strongest they would have carried wheat to 25 cents a bushel.

Q. You mean where there is really 1,000,000 bushels of spot wheat and 50,000,000 are sold, that injures the price of real wheat?—A. Yes; and it puts a fictitious value upon it.

Q. It destroys the law of supply and demand?—A. Yes, in my opinion. Now, why should a manufacturer to-day be able to go on the New York market and buy all the cotton he wants? He need not wait until I make any cotton.

Q. As I understand, the gambling goes further than the prospective supply; he might be able to sell the cotton planted, but you do not want him to go so far as to sell cotton you have not, never expect to have, and can not possibly get?—A. That is the idea.

Q. And therefore put on the market millions of bales of cotton which do not exist and never did exist?—A. That is the idea.

Q. (By Representative LIVINGSTON.) Do you know the amount of money tied up in deals with stocks—the current money?—A. I do not.

Q. (By Mr. A. L. HARRIS.) Have you any banks of exchange and deposits in your State?—A. Oh, yes; we have got two little banks in my town.

Q. Have they all of the facilities of the national banks, with the exception of issuing currency?—A. I suppose they have.

Q. They can loan money and take deposits and discount paper as well as the national banks?—A. I think they have all those privileges.

Q. Then a national bank has no advantage except the power to issue money?—A. That is all I know of.

Q. Do you prefer to have that condition of affairs to going back to the old State-bank plan?—A. I have always been opposed to the 10 per cent tax on State banks. If they want to prohibit State banks, let them come right out and say so, and not put a tax on them, because that is what it amounts to.

WASHINGTON, D. C., June 20, 1899.

TESTIMONY OF MR. P. H. LOVEJOY,

Merchant and planter, Hawkinsville, Ga.

The commission met at 2.25 p. m., Vice-Chairman Phillips, presiding. Mr. P. H. Lovejoy, being sworn, testified. The topical plan of inquiry on agriculture was followed in the examination of the witness.

Q. (By Representative LIVINGSTON.) What is your full name?—A. P. H. Lovejoy, Hawkinsville, Ga.

Q. (By Mr. PHILLIPS.) What business are you engaged in?—A. I am a merchant and a planter in Georgia.

Q. (By Representative LIVINGSTON.) What is the condition of the farmer and farm laborers of Georgia and the South?—A. I think the farmers are in worse condition than they have been. They are not prosperous in our section. They have been going back for the last 5 or 6 years. My experience in doing business with them, and then my experience with my own farm, shows that the conditions are not so good as they were years ago.

Q. Is the condition of the farm laborer improving?—A. The farm laborer can not prosper when the farmer can not prosper; it all comes under the same head. What the laborer gets he uses daily, and it leaves him without much to go on, and then the farmer is not able to help him much.

Q. What is the custom down there, hired help or crop sharing?—A. We rent, pay wages, and have crop work. We do all. We rent to some of them and share crops with some, and pay them wages; and I believe the man who gets \$6 or \$8 a month gets more than anybody else.

Q. The wage laborers fare better than the tenants and croppers?—A. I think so. In the last few years the products have been so cheap that it would hardly pay out. For instance, you go halves with the tenant; he furnishes the labor and you furnish the land, stock, and provisions to go with it; and his half would not pay his part of the expense.

Q. That being the case, how do the merchants South protect themselves in their advances?—A. Take mortgages on their land.

Q. And you hold the farm responsible for the crop developments?—A. Yes.

Q. Then when you let the cropper run it on his own hook; how do you protect yourself?—A. We take a mortgage on the cotton crop.

Q. At what profit on these goods do you sell to these people?—A. Size him up, and if he is pretty good, we sell him pretty cheap; and if he is a hard case, we just take what he makes and quit.

Q. What has led up to this depressed condition of labor and agriculture in the South?—A. It seems to me that it is the short prices and old cotton system we have been running in the South. When I bought cotton at 8 and 10 cents, it was all right; but when cotton goes below 7 cents there is nothing in it for the laborer, nor the planter, nor the merchant. The farmer figures his crop to get 10 cents for it. It has been this way now for the last 7 or 8 years; when the crop would sell it would bring 8 cents; and the next year he would figure for 8 and he would get 7; and the next year he would try to make it for 7 and he would get 6 cents; and the next year he would try to make it for 6 and would get 5 cents; so that just left him flat with the mules and land all mortgaged. Half of the planters in our country have mules and lands under mortgage, and they have been so for the last 8 or 4 years. These things seem to get worse every year, because the products they make will not pay expenses for making them, when they make cotton for less than 5½ cents. That is my experience.

Q. (By Mr. PHILLIPS.) Is it the superabundance of cheap labor that has so cheapened labor?—A. I think what did it was that the South started poor, and

there is nothing else made to bring ready money like cotton. Cotton is a product, you know, that will bring ready money every day in the week, and that has enabled the farmer to get hold of cash. They put forth every effort they could to make a cotton crop. I think 4-cent prices last year started them out on new lines. They are getting so they make provisions at home.

Q. If there had been only half of the laborers in the cotton States that there are there, or have been for some years past, would not cotton have been at a higher price?—A. Yes; I believe it would. I believe the labor that we have there must be worked some way, and cotton is about the only thing they know how to make. You may put them to work a farm; but my experience is they can not make anything but cotton, because cotton will wait for them. We can take a given day and tell him to work out the crop in 3 weeks, but corn, wheat, and other things would not wait; you have got to work them out at the right time. Cotton will wait, and you can work it out and it will make.

Q. Is there not considerable competition by cotton produced in other countries in the markets of the world that fixes prices?—A. There is some, I guess. I think where they do use our cotton competition is not so great.

Q. If there were grown only half of the cotton now produced in America, would it be a very much higher price in the markets of the world?—A. I think so.

Q. That would be so with anything.—A. Yes; it would, unless being produced in other countries to meet the markets of the world on these terms.

Q. (By Mr. FARQUHAR.) Suppose that the United States exported half of the cotton to the European markets that they do to-day, what effect would it have on the market price of the world?—A. I believe it would put it up.

Q. How much, do you think?—A. I do not know. I have not thought on that subject.

Q. Do you think it is the overproduction of cotton in the South thrown into the foreign markets that keeps the price of cotton down?—A. I do not think that is it altogether; I think that speculation has something to do with that.

Q. Did you ever notice the regular, even condition of the Liverpool market for nearly 12 months?—A. Yes; but they do the same thing over there, do they not?

Q. They sell futures over there and speculate in it the same as we do. You can take your judgment from the fact that they are dealing in cotton three or four times more than the product.—A. Yes.

Q. Would your general judgment be that out of 20 deals of that sort 19 men dealt with things they did not have?—A. Yes; no cotton in the warehouse to take out.

Q. Do you believe the Liverpool price of cotton makes the price for the world?—A. That was always my understanding.

Q. Do you know what countries are competing in cotton?—A. No.

Q. (By Representative LIVINGSTON.) If one-half of the cotton crop of America were cut off what effect would that have on the cotton fabric to be worn by the world; would it make it scarcer and higher?—A. Yes.

Q. Do you know whether there is a good demand for manufactured goods or not?—A. There is a good demand for them.

Q. Do you charge that to the overproduction of cotton?—A. It would not seem so. It would really work both ways. The raw material is going down and the manufactured has been going up for the last 6 months.

Q. Then you think there is something wrong about the prices made by that Liverpool operation?—A. It would seem to me that there was a "cat in the mill" somewhere, but I do not know where it is.

Q. Supposing the South manufactured itself one-half of the cotton it raises, would that be added to the wealth of the South and prosperity of the South?—A. Yes. Whenever we have to make a half a crop to get full prices we are not benefited.

Q. My question was this: if we manufacture in the South half of that we produce and export the other half, would not that add to the price of raw material?—A. I do not know as it would; it would add to the prosperity at home because that would leave money with us.

Q. Do you believe it would enhance the price of cotton in Liverpool if we shipped only one-half?—A. Yes; I do.

Q. (By Representative BELL.) You say it is remarkable fact that the price remains about the same throughout the year in Liverpool. Is not that the strongest indication that the same combination fixes the price and holds it?—A. It seems to me that is the cause or else it would fluctuate with other things.

Q. For instance, the combination that fixes the price of white lead—while the crude lead goes down in price, that will remain the same the year through,

because the combination itself fixes it?—A. That is right; cotton is nearly in the same fix.

Q. And then could the manufacturers of cotton goods uphold or fix the price?—A. It looks so to me. You take half the dry goods made—you will buy them just as the other fellow says.

Q. (By Mr. A. L. HARRIS.) Do you advance the goods to the cotton raisers on credit?—A. Yes.

Q. What margin do you charge for goods advanced?—A. We generally put a pretty good margin on cheap men because we have to take chances on them.

Q. About how much?—A. About 25 per cent.

Q. How do you charge what you call good men?—A. We sell good men at 10 per cent. We settle up what we call "papers" the 1st of September. We aim for 10 per cent clear, because you know there is a certain amount of leakage to business that no one ever found yet. You can not figure like you can when loaning money. When you loan money you know what you are doing. When you sell goods there is a leakage that has to be covered, and which you can not figure, and if you do not take care of it you will not last very long.

Q. Is that the reason why you demand such large margins from the cotton raiser?—A. Yes. You see; we take all the risk. You take the good per cent of them, we have nothing for collateral except the crop, and if they should fail and anything turns up that they do not make a crop, it is a clear loss, and so you see we have to figure for the whole crowd to pay it.

Q. Now, let me understand in regard to this 25 per cent. When you receive the invoice for the goods, is this price put on when marking the selling price of the goods?—A. We mark the cost price.

Q. And then do you have also a selling price?—A. Yes.

Q. Is this 25 per cent added to the selling price when selling on credit?—A. No, it is added to what the goods cost.

Q. You have various prices, then, in the same store for the same goods?—A. Yes. If a man comes in and we make a sale, we always let him know where he stands. We tell him we will risk his agreement. We can afford to take some risk. If he wants to do it, he has the privilege to take it or let it alone.

Q. Are the merchants prosperous in the South, as a rule?—A. No, not for the last few years. It has been all we could do to tote our customers with the money made in ten years. We are toting them with it now.

Q. You are not making any money.—A. If we keep things balanced up even we are doing pretty well.

Q. Do you keep a general store?—A. Yes.

Q. You sell dry goods, groceries, and general supplies.—A. Anything from a cambric needle up to a two-horse wagon.

Q. And this per cent of increase is upon all of the goods you sell?—A. That is, on time. We have had this system in the South for the last 30 years. It is bad for the merchant and bad for the planter. A good man has to pay for a bad man's account, which ought not to be. But you can not tell who is a good man; one may be good this year and bad next year.

Q. Where do you get your bacon and your corn and other supplies that you sell the cotton raiser?—A. We buy them from the West—buy it from brokers at home.

Q. And it is not raised in the South?—A. Now, this year we have been doing better. Our planters have made some supplies. We have handled a great deal of home-made supplies this year. We have bought about one car of corn this year. As a general thing we handle a great deal of corn.

Q. When you sell corn to the cotton raiser do you sell it at about the same price that you would sell it for if you had bought that corn in Chicago with freight on?—A. No; we are not in that business. We would not have any business long if we did that.

Q. Do you sell the corn you buy in Georgia at a less price than corn you buy from the West?—A. No, sir; we generally give the Georgia men the benefit of the freight in the price.

Q. (By Mr. PHILLIPS.) Is the corn equally as good?—A. Yes.

Q. (By Mr. A. L. HARRIS.) How much is corn worth down in your place now?—A. We pay 53 cents. We get 60 cents where we sell it for cash, and on time 75 cents a bushel, from which you can get an idea about the difference.

Q. How much is bacon worth?—A. Bacon costs us about \$5.40—I think the last we bought. We sell that at 6 cents for the money; on time we put it up anywhere from 7½ to 10 cents. You take the dinky and he just "blows" in what he gets to-day, and he does not figure for to-morrow at all; and we deal a great deal with the negro.

Q. (By Representative LIVINGSTON.) Do you want to say anything about bank facilities?—A. You can get plenty of money if you have the collateral. I think the ten per cent tax on State banks ought to be repealed.

Q. What collateral, personalty, generally?—A. Yes; that is about all you can use; personal security. Those national banks will not take mortgages on land, you know. It is too slow a process. You can not get your money out of it soon enough.

Q. (By Mr. A. L. HARRIS.) Do you refer to local banks as well as national banks?—A. Yes; all of them.

Q. (By Representative LIVINGSTON.) Farmers really do not borrow money, as a rule?—A. No.

Q. How do they get supplies?—A. Through merchants.

Q. And the merchants?—A. Through the banks.

Q. And where do the local banks get their money?—A. New York.

Q. And where does New York get it?—A. Usually it is from the Treasury here.

Q. A great deal of it United States money on deposit?—A. Yes.

Q. Have you any remedies to suggest about the condition of the farmer and laborer down South?—A. I can not see any chance for them, unless they change the process of farming or get easier money, because they pay too much per cent; the farmers are paying too big per cent for what they do. While I am one of the gang charging them, it works a hardship on the merchant; it puts the farmers in shape that they can not pay it, and wherever they are behind that leaves the merchant behind. If you strike a year when the product brings a good price, everything lies easy, but if you strike two or three years that it does not, we all feel it.

Q. Are the farmers in that section of the country able to switch right around and diversify?—A. No. You must take it by degrees. You can not jump right out of all cotton system and go into the other. They have not the means to do it with, and they must have help. The cotton crop is the only thing they can get ready money for in our section.

Q. Why do you not take corn and wheat and products of that kind?—A. We have no market there for it.

Q. (By Mr. A. L. HARRIS.) If you had a market, you would have no way of storing the wheat and corn, or anything like that?—A. No; and then they can not make enough corn and wheat there to the acre to make it interesting to go in it. Ten or 15 bushels of corn is a good crop in our country. That is the reason why we stick to cotton. Our average crop of corn is not over 10 bushels.

Q. (By Representative BELL.) What do you make in wheat?—A. Five to 10 bushels.

Q. (By Mr. FARQUHAR.) What is the reason of these small crops in your section?—A. You can not put as much on the land. I noticed on this trip that corn is all 2 or 3 feet apart. We have to put ours farther apart.

Q. (By Representative BELL.) What do you make of oats?—A. We make anywhere from 4 to 50 bushels, owing to how the land is manured and fertilized.

Q. (By Mr. FARQUHAR.) You are working that land now with fertilizers?—A. A small amount of fertilizer; that is all that it gets.

Q. (By Representative BELL.) How much hay?—A. We never gather much hay; but our land will make about 1 or 2 tons per acre.

Q. (By Representative LIVINGSTON.) You use grass down there?—A. Yes; the grass crop is worth more than the garden crop.

Q. (By Mr. FARQUHAR.) What kind of grass, Bermuda?—A. Yes, that is the best; but the grass that grows there mostly is crab grass and crow-foot grass.

Q. (By Mr. PHILLIPS.) Can you grow timothy and clover?—A. No; it will not grow.

Q. (By Mr. A. L. HARRIS.) What crop do you grow for fertilizers?—A. The pea crop, and then cotton seed, you know, is a great fertilizer.

Q. You can rotate the cowpea.—A. Yes, the cowpea is a fine fertilizer for our country.

Q. (By Representative LIVINGSTON.) You have to come to this country for goods?—A. Yes.

Q. (By Mr. FARQUHAR.) Is the cotton crop an exhaustive crop for that soil?—A. No.

Q. Does the cotton crop return anything to the soil at all?—A. Very little; but it does not take anything away from it. The seed is one of the best fertilizers we have.

Q. Is there a general impoverishment in your section of Georgia because of its having been cropped for a great many years?—A. It is owing to how it is cropped; if the crop is fertilized and rotated it builds it up every year.

Q. Have you much worn-out land down there?—A. A great deal of it.
 Q. Something like Virginia and Maryland?—A. Yes; been cropped to death.
 Q. Was not that one of the great reasons and the cause for putting in fertilizers—the impoverished soil?—A. Yes.

Q. And it ruins the soil; in fact, it takes everything from the soil and returns nothing to it?—A. That is it; and they use commercial fertilizer because it is easier to handle and to get better and quicker results; but I believe if the farmers would put the same amount of money into making a fertilizer that they put into the commercial fertilizer it would build the land up better and make better crops.

Q. (By Mr. A. L. HARRIS.) Are you a member of the board of education?—A. Yes.

Q. About what is your usual school term for the year?—A. Ten months.
 Q. What per cent of your school children attend your schools?—A. I reckon 75 per cent of them.

Q. Ten months is the term in the country or city?—A. In the city. In the country schools it is 5 months now. It was 6 up to this year.

Q. Are your school facilities good?—A. Yes.
 Q. You have good teachers?—A. Yes; we get the best teachers we can get.
 Q. The whites and blacks have equal advantages, except separate schools?—A. Yes; we try and give them good teachers.

Q. What degree of efficiency do they reach in education?—A. Well, on some lines the darky will go right along up with the white children, but in other lines he is off.

Q. Can you state the lines?—A. In writing and reading and memorizing he is all right, but on figures, or anything in that line, he is off.

Q. Have you a sufficient number of white children in the country to organize good schools?—A. Yes. We have very good schools over the country.

Q. What become of your white children when they grow up on the farm?—A. Most of them drift away from the farm. Some go to towns and hunt jobs, and things like that. We need them educated on different lines.

Q. Do the farm boys, after getting an education, remain on the farm, as a rule?—A. No; not if they can get off.

Q. Is there a good field for the intelligent farm boy to look after the farm?—A. There is not much room for them in the farming interests there. They can not see money enough in it; they want to drift out into something better. If a boy has any move in him he wants something better.

Q. Who does the work on the farm in your section of the State?—A. The darky and white man.

Q. What proportion of the whites work on the farm?—A. I reckon 25 per cent.

Q. How do the colored and white people compare in efficiency?—A. The white fellow that works for daily or monthly wages is no good. There is no more move in him than in the darky.

Q. He would not make a good farmer?—A. The majority of them would not. The negro feels like he wants to look up to somebody if he does much; if not, he is not going to do much. Take one of those fellows—the negro feels he is about as big a man as the white fellow.

Q. Twenty-five per cent, you say, of the work is done by the white man; is that about the proportion of the population?—A. I think not. There are more negroes, according to the population, that work on the farm than white people.

Q. Are the young white men able to manage improved farm machinery?—A. Some of them are. They are more apt to learn it.

Q. What class of labor-saving machinery do you use in your locality?—A. I do not use much of any kind.

Q. Do you sell farm machinery?—A. No; nothing more than wagons.

Q. You have drills for putting in your cotton?—A. Yes; we have what we call the cotton planter; we sell those.

Q. Do you have plows, and what kinds are they?—A. Well, all kinds of plows that we use.

Q. Do you have sulky plows for your cotton?—A. No; there are very few in our country.

Q. What kind of plows do you use?—A. Use the common Dixie and a common iron stock.

Q. And the single stock?—A. Single stock.

Q. You do not raise wheat enough to use binders, then?—A. Yes; they use some few.

Q. Are they satisfactory in their work?—A. I think so.

Mr. J. POPE BROWN (president of the Georgia State Agricultural Society). May I answer that question, Mr. Chairman?

The VICE-CHAIRMAN. Yes.

Mr. BROWN. We have some trouble with our white people. We have not been educated on that line. We are deficient in mechanical education. We have a few reapers and binders in our country, but when they get out of fix we do not know how to fix them. It was not very long ago that I heard a man speaking about a reaper and binder that was sent to his station, and there was not a man in the whole country that knew how to put it up. I saw a man that lost his oat crop last year because his reaper got out of fix, and while he was fixing it his oats fell down. We are very deficient in that kind of education. I used to have a lot of improved machinery, but I do not use much now. I cut all my oats with a cradle. I am deficient in it myself, and I have not anybody on my whole plantation that knows anything about it. If my machinery gets out of fix and I want it fixed, I must send away off to get a man to come and fix it, and he is very unreliable about getting there. We need that kind of education very greatly.

Representative BELL. Mr. Brown, is not labor at a cost of \$8 a month cheaper than machines?

Mr. BROWN. Well, I argue that, too. I say I can take my hands in the neighborhood there—for instance, I give my cradlers, as I figure it, \$1 a day and feed them. When I cut oats, if I have 100 acres of oats I want five or six men; if I have 200, I want to double up; and if I have 400, I double up, and keep doubling up.

Representative BELL. It is really cheaper, is it not, than the machinery?

Mr. BROWN. I am inclined to think it may be. After I count up the expense and the interest, the repairs, and wear and tear, I would just as soon have the negro cradlers. There is one thing about it—you can not cut it quite so clean, but I try to fix that this way: I let the hogs follow the cradlers, and they get what is left.

Representative BELL. It costs about \$1 an acre with a machine?

Mr. BROWN. I can cut it cheaper than that.

Q. (By Mr. A. L. HARRIS.) There is one crop, Mr. Lovejoy, that has not had much said about it, and that is the fruit crop.—A. (Mr. Lovejoy.) In some parts of Georgia they raise a great many peaches—a great deal of fruit. I think in our section we do not raise much fruit because our lands there, a great many of them, are not adapted to the fruit business.

Q. Do you raise enough for home consumption?—A. Yes.

Q. But not for export?—A. No.

Q. Many of our watermelons come from Georgia.—A. Well, they raise a great many watermelons down through there.

Q. Do you ship watermelons?—A. Oh, yes; but our experience in shipping watermelons is that we always have to pay the freight. They draw on us for the freight. We can not get anything out of it. The railroads knock us out, I think, and I can not understand why it is. It costs us twice as much to ship a barrel of Irish potatoes from our town to New York as it does to ship them from New York to our town. It costs us twice as much to ship them from our place as it does to ship them back.

Q. The railroads have a cheaper freight rate from New York?—A. I think it must be that way. If we could get the same freight rate out as we get in, we could make those industries pay.

Q. (By Representative BELL.) Is it your experience with railroads generally that discriminations are made in favor of great commercial centers?—A. Yes.

Q. Does that apply to manufacturing and everything else?—A. Yes.

Q. Do you believe that a country settlement can thrive while that system is in vogue?—A. I do not think so.

Q. Is it not your opinion that if the railroad rate bore equally upon every individual and every community, that instead of having great commercial centers like New York, Boston, and Chicago, there would be a great many good small towns in all portions of the country, to the great advantage of the body of the country?—A. I believe it would, yes.

Q. Have not your people in Georgia taken that into consideration in looking for a remedy for the stagnation of the country?—A. Yes; they have been looking into that.

Q. Have you some recommendation on that line as to railroad transportation—to equalize it?—A. If it were equalized, I think it would be a great benefit to the mass of the people.

Q. Do you believe the country can thrive until it is equalized?—A. No; I do not think so. The remedy for that I do not know—how to fix it.

Q. You say that the freight from your place to the New York market is just about half what it is from New York?—A. It is just about half from New York to our place what it is from our place to New York.

Q. Is that common to other great commercial centers as well as New York?—
A. I think it is in Georgia.

Q. Do you have in Georgia what are called common points?—A. Yes.

Q. (By Representative LIVINGSTON.) You call them competing points?—A. Yes; we have competing points.

Q. (By Representative BELL.) Sometimes charge you more to stop than they do to go on, do they not?—A. Yes; oh, yes. I had a steamboat man figuring with me the other day; wanted me to ship goods from the West through to Brunswick, and then he would bring them back on the boat for the same price that he would stop off at Hawkinsville.

Q. Do you think any country can thrive while that system prevails?—A. I do not think so.

Q. (By Mr. RATCHFORD.) Following that proposition out a little further, the testimony goes to show on this subject that intermediate points, smaller cities and towns, are discriminated against because of the advantages given to the great commercial centers by the transportation companies. If that be true, how do you account for the fact that during recent years of depression there was found in those great commercial centers larger numbers of unemployed and greater suffering and privation among the poorer class than was found elsewhere?—A. Well, the common laborer never got any more out of it; with all that, he did not get it.

Q. Do you mean to say that, take the city of Chicago, for instance, because of its peculiar location and its shipping advantages, the common laborer of the city is not more generally and more permanently employed than were those advantages not present?—A. Well, they could get the same employment at the same wages, and then distribute it more equally among the common people through the country.

Q. (By Representative BELL.) Do you believe it would improve his condition?—
A. Yes.

Q. (By Mr. RATCHFORD.) I want to know, if that particular city or section of the country be placed at an advantage over other sections, why he is suffering more there than he is elsewhere?—A. It must be his own way of managing, or else that he does not get out of it what he ought to have.

Q. (By Representative LIVINGSTON.) Is it not true that the lower strata of population drifts into these large centers, and that there is always a superabundance of them there?—A. Yes; I think that is true. You will find that a fellow comes to this country, or goes from the country to the city, quits his home, and will work there for less; throw that away just to be in the city, when he could go into the country and get a good job.

Q. (By Representative BELL.) Does the discrimination in favor of these great commercial centers have a tendency to aggregate a plethora of people there?—A. Yes.

Q. Necessarily?—A. I think it does.

Q. And then when business is stagnated they all turn up idle there in a body?—A. Yes.

Q. If they were distributed over the country would the whole country take care of them?—A. Yes; I think it would.

Q. Can you see any reason why it would not be to the advantage of the laboring people, generally, to have a better distribution of the manufacturing and shipping industries of the country?—A. I think it would be an advantage to them. It would get them out of such large cities. They would get out where there would not be so many of them in one body, and they could do better.

Q. (By Professor JOHNSON.) I would like to know whether we can not get at the cause of the difference in the rates out of your town, as contrasted with the rates into your town. Can you tell us whether you have competition, or more than one road in shipping from your place?—A. We have two roads, but they are under the same management. It is the Central and Southern system.

Q. They are under one management?—A. Well, they are not claimed to be, but we know they are; yes.

Q. Then you practically do not have competition?—A. Only our little boats there; they keep us in line when we can run them.

Q. Do the boats go direct to New York and Northern points?—A. No; they can carry them to Brunswick and there meet a line of steamers that carry them east or west.

Q. Then you do have some competition?—A. Yes.

Q. Do you know whether these two agencies, water and rail, compete against each other?—A. Yes; we have a line there that belongs to the city—a boat line; they keep it there for that business.

Q. Do you ever get lower rates because of that competition?—A. Yes.

Q. Still you say, in general, your rates are twice as much to New York as they are from New York?—A. From New York to our place they are cheaper than they are from our place to New York.

Q. Now, can you tell us whether the freight that comes to your town from New York, Boston, or Philadelphia is confined to one road, or whether that freight leaving those cities is adjusted between a larger number of roads?—A. They have it adjusted between the different roads, I guess.

Q. Then it is probably the competition at these great centers that gives you the low rate in, whereas the absence of competition accounts for the high rate out?—A. Yes. What I was trying to get at was that such a state of affairs kept our farmers back from raising products there, such as potatoes and things like that. They could not meet the market; the freight would keep them out—knock them out; they could not make anything out of it.

Q. Can you tell the commission how a consignment of watermelons from your town would reach Philadelphia, or any typical cargo from your town to any other Northern seaport town? Would it be shipped direct from your town on the bill of lading to Boston or New York or Philadelphia, or would it be shipped to some given shipping point and then billed to the point of destination?—A. I think they would bill it right through.

Q. Have you considered the best way to secure to your local town the rates that are secured by the large competitive centers?—A. I have always been interested in this. We ship more goods in than we do out.

Q. How do you think the United States Government, for instance, could give you the advantages which your town does not possess because of its physical situation?—A. I do not think they could do it. I think it is left with the railroads.

Q. Of course you would not advocate the fixing of the rates by the Government?—A. No; I do not think that would do it. I think that the commission looks after it, and that is about as good shape as you can get that in.

Q. (By Representative BELL.) Your commission can not look after that beyond your State line?—A. Is not there a national commission that looks after it?

WASHINGTON, D. C., June 21, 1899.

TESTIMONY OF MR. FRANKLIN DYE.

Secretary of the State Board of Agriculture of New Jersey.

The commission met at 10.55 a. m., Second Vice-Chairman Gardner presiding. Mr. Franklin Dye was sworn as a witness on the subject of agriculture. The topical plan of inquiry on agriculture was followed.

Q. (By Representative GARDNER.) You may state your name, residence, and occupation.—A. Franklin Dye; Trenton, N. J.; I am secretary of the State board of agriculture of New Jersey.

Q. How long have you been connected with the State board of agriculture and other agricultural organizations in New Jersey?—A. With the State board about 13 years.

Q. And previous to that time?—A. On the farm and connected with local farmers' organizations; farmer all my life until recently.

Q. Have you anything to say on the subject of the increase or decrease in number employed in agricultural labor in the several States during the past 50 years?—A. In New Jersey, with the increase of manufacturing interests, railroad building, etc., there has been a steady decrease in farm laborers, particularly of the native.

Q. And the cause of that; are there less acres tilled than in former times in New Jersey?—A. Do you mean that question as a cause for the decrease of laborers?

Q. Yes.—A. No; I do not think there is less acreage, but the manufacturing interests and railroad building and such other public enterprises have drawn the laborers away from the farm, in my judgment.

Q. They have drawn the laborers away from the farm, but if the acres are tilled it must require the labor to till them. What does machinery have to do with it?—A. Improved machinery has lightened labor; transferred the heavier portions to the horse. It has also decreased the demand for certain kinds of labor.

Q. Has the price for agricultural labor decreased in New Jersey, taking a long period together?—A. No; not taking a long period together. It is higher than it was at the time your inquiry starts here—40 to 50 years ago. I remember then men were hired by my father—the best of men—for \$150 a year and board. I would be glad to pay such a man \$300 now.

Q. That was true, was it not, at any time prior to the civil war?—A. Yes; I think so.

Q. Well, question 2, comparative condition of those so engaged.—A. That question is a little vague. If it refers to those who have left farm labor for some other, they are no better off; if to the condition of those now working on the farms, they are better off than were similar workmen 50 years ago. Hours are shorter and machinery has relieved them of the more trying parts of farm work.

Q. What is the comparative condition of those engaged in agricultural labor now and 25 years ago?—A. They are as well off, and I think better off, for the reasons I have suggested. They also have more of the conveniences and comforts of modern home life.

Q. Has there been a shortening of hours?—A. The hours are shortened very materially. The 10-hour system in the cities has had a tendency to compel that to a certain extent, particularly in the vicinity of the cities, where the whistle blows and they can hear it. Improved machinery has decreased the demand for certain kinds of work at certain periods of the year, as for men to do mowing and reaping during hay and grain harvesting. It has not decreased the price for labor.

Q. Under former conditions it was necessary to employ more men on the farm and for longer hours, was it not, during harvest time?—A. Yes; the neighborhood was scoured by the leading farmers for help; and it was usual to begin work on the farm before sunrise, if possible, and work on until very late. As to the causes of irregularity of employment, I will say: The general farmer does not require steady help, as he has little to do after the crops are gathered in the fall until the next season opens. With dairy farmers, workmen are required throughout the entire year. I think that is one cause of the irregularity of employment of the farm laborer. On the part of laboring men, most of such as are available for farm help now, there is an ever-present desire to see new places, try new employers and, perchance, strike a better bargain. The migratory character of farm labor decreases its efficiency. I think this cause of irregularity is twofold; not only caused by the character of the farm work, but caused by the character of the laborer himself—not willing to stay. I have had that experience right along with men on the farm.

Q. Is it true generally in New Jersey that farm labor migrates from the South in the spring that is determined to return in the fall?—A. To a certain extent, yes. There is more in the southern counties than in the northern. They are employing Southern help in Gloucester and surrounding counties, and they expect to go back. Farmers now must usually go to the cities and towns for extra help in busy seasons. Formerly this was to be had from among the owners of small farms and the poorer families whose sons and daughters were ever ready to earn a little money in this way. The latter were, as a rule, much more capable and efficient than the former. The native help that could then be hired was better than we can now pick up in the towns and cities; no question about that.

Q. Can you give the hours of labor in the different agricultural pursuits?—A. Farm help is usually expected to work "a day" whether hired by the year or by the day; but a day is much shorter on the farm than formerly, and few men will average 10 hours of solid work each day. I have often wished I could reduce to a method work on the farm so that we could have a system of hours. Some laborers have so many occasions to stop, loiter, and fool around, that they do not do 10 hours' work, usually.

Q. Do you know whether in New Jersey, generally, there is a difficulty in getting men to work on the farm in the most advantageous hours? In other words, if a man works on a farm 10 hours, does he or does he not insist upon putting in those 10 hours while the sun is up instead of at a time when it may be infinitely more advantageous to the crop, when a major part of it should be done outside of the hottest part of the day?—A. Yes; that is true. The 10 hours must be day hours.

Q. And is it not true that the system of putting in a "day" during the day is at times of very great disadvantage to the crop, particularly in dry, hot times like we have had this month of June?—A. That is true, and it is also true in haying and harvest time. By a little extra exertion—for instance, another half-hour's work in the evening might bring in a heavy load of hay, if the weather is threatening—but no, they must stop, and to-morrow that hay must be shaken out and

dried, and it will take a good part of the forenoon to get it ready to come in again. They ignore the advantage to the farmer, and to themselves even.

Q. It would be a very great advantage in many instances if the farm day were made from 6 to 11 and 2.30 to 7.30, would it not?—A. That is a question the farmers will have to meet. I will refer to that a little later. As to the average number of days employed in the year, that is difficult to come at, because some men are hired for the year and expect to work a whole year; others are hired for 9 months; others are hired by the day. Those who are hired for the year expect to work every day for the whole year, except holidays, usually.

Q. With your permission, we will pass to No. 8—"Tendency of agricultural labor to seek other employment; causes and remedies."—A. There is and has been a tendency to leave the farm and seek other employment. The causes, it occurs to me, are hope of larger and better wages and fewer hours per day and desire for social intercourse. The latter applies to the female members of the laboring man's family equally with the men. They desire to get together and spend the hours after 6 o'clock in social intercourse. The remedy—give steady or all-the-year work, equivalent to 10 hours, whether working early, as in the dairy, or late in the day, from any cause. There comes in your point of a minute ago, Mr. Gardner. It would seem necessary to divide it, and, where a man is in the dairy business, for example, and in harvesting and other work, to have a set of men ready to take the work up early in the morning and others who would be willing to work late in the evening, or else give them a longer interval in the middle of the day, when they can rest. For years I was in the dairy business and had to get up at 4 o'clock in the morning and get my milk off to the city, Sunday and week days, rain or shine. If you put a hired man on that work and expect him to work from 4 o'clock in the morning to 7 o'clock in the evening, he is not going to do it. He should not be expected to do it, unless he has extra pay. I do not know any other remedy than that.

Q. Do you think the character of the work causes a desire in young people to leave the farm, without regard to the number of hours or the pay?—A. Yes; there is such a feeling, I have no doubt. That obtains among farmers' sons who are leaving the farm and, it may be, to a certain extent among laboring men and particularly young men who want to get something that is a little cleaner and where they can be a little more "fixed up."

Q. And even more so, perhaps, among the young women?—A. I think so.

As to daily, weekly, monthly, or yearly payment: Few men would be able or willing to work for a whole year without receiving anything on account. It is largely a question of agreement. I believe there is a greater tendency among farmers to pay oftener than a few years ago—even weekly. This is to satisfy the demands and necessities of working men.

As to the maximum wages, and minimum: Where men board themselves, \$25 to \$30 a month, and usually a house and garden; where they are boarded, \$12 to \$18 per month, according to the character of the men—according to their ability to work. This includes lodging, and sometimes washing and mending. In harvest time \$2 to \$2.50 a day and board; ordinary farm work, 75 cents to \$1 a day, that is, for day work. Market gardening and truck farming and dairying command a little higher wages, I believe. I think that is about right.

Q. The store-order system does not prevail at all among your agriculturists, does it?—A. No. Sometimes farm produce—butter, flour, eggs, etc.—are taken in part payment.

Q. As to tenant houses and tenant-house allowances.—A. Tenant houses are falling down in many neighborhoods for want of use. They used to be fixtures of the farm, and men would stay all the year and work, but that is changing.

Q. How as to crop sharing, partnership, and tenancy?—A. Where farms are let "on shares," crops are divided as per agreement. This is strictly partnership farming. Where farms are rented, the tenant usually has full control, within the limitations of the agreement. He is sole proprietor of the farm and pays a money rent and certain privileges.

Q. The old method of crop sharing—A. I have tried that myself; it is not, as a rule, so satisfactory as tenant farming.

Q. Loans to tenants, liens on growing crops or prospective crops; extent of effect. The system of loans to tenants does not prevail in New Jersey, does it?—A. No; that is in the West, not here. As to the desirability of it—I think the history over there shows. In the middle West and in California, I believe, the banks will advance money and start a man on a farm. There seems to be a tendency on the part of the immigrant, especially, to start on a farm, and the bank advances him money. If he has good luck, he is all right; if he has a dry season, it is bad for him and bad for the bank.

Q. What is the character of immigration to the farm in New Jersey, or is there any of it?—A. We have. It is confined mostly to Hungarians, Swedes, and Germans. I think these, more than any other nationality, take to farm life.

Q. Character?—A. The moral character of the foreigner has to be discovered. The farm laborer of years ago was generally known. To-day he is usually a new man each year, and sometimes several times in a year.

Q. Are they settling in New Jersey and becoming proprietors?—A. Yes, they are doing that in proximity to our larger cities, around New York and Philadelphia; going into market gardening on a small scale. Of course you are familiar with the Jewish settlement in the southern part of the State; that is a colonization.

Q. (By Senator MALLORY.) What has been your observation as to their moral character, as a rule?—A. I think they improve as they settle and mingle with our people.

Q. When they first come in among your farmers in New Jersey, for the purpose of working on the farms, do you observe that there is any difference between them as a moral, quiet, and orderly people, and Americans, or any other nationality you have not mentioned?—A. Perhaps not generally, but, as I say, the character has to be discovered. They are strangers; we do not know them. They come and appear all right, but in some cases they are very disappointing.

Q. Nevertheless there is a comparison to be drawn probably. I understand you to say, that remains to be discovered hereafter?—A. I said their moral character would have to be discovered in each case. I do not know the character of these gentlemen present here. I presume they are all first-rate fellows, but if I got better acquainted with them I might find some faults, and they might find some in me. We may take a man on the farm who is a foreigner, a stranger, and from his daily work and appearances he seems to be all right.

Q. I am not speaking of those men that come to you to-day, but in the past, men of that class you have had experience with. How do they class as quiet, industrious people?—A. They compare favorably. Immigrants of 50, or even 40, years ago were a better addition to our population than are those of the present. It would be very much better, however, for a man to settle down to a business and become efficient in it. The farm needs such laborers to-day. I have had that very experience, and I know from the remarks of other men that farm labor is not efficient; and if these foreigners are going to take up farming in this country and will stick to it, it will be much better for them and for the farming interests. Manufacturers look for efficiency, and a man can not go into a factory and take up any certain line of work unless he knows it, and we ought to look for the same efficiency on the farm, but as a rule we do not get it. If a man can not get work at anything else he goes to the farm.

Q. And the farmer has to teach him what his duties are?—A. Has to teach him, and when he has learned he usually goes; very frequently goes.

Q. (By Representative GARDNER.) Percentage of literacy as compared with the American farmer?—A. I do not think we ought to compare them in the lump with our American-born people, laboring men if you choose. Some of them compare very favorably with our home people. The great majority, I think, are very illiterate. Foreigners coming to us now do not represent average European intelligence. They are peasants, coming from the lower strata of European society, and the illiteracy among our foreign-born population is 38 per cent greater than among the native whites.

Q. Is the tendency to colonize, manifest among these people, in your part of New Jersey?—A. Not outside of the Jewish settlements.

Q. Do you happen to know anything about it in the neighborhood of Hammon-ton?—A. Yes, I have been there, and have been to the Woodbine settlement.

Q. Is it true in New Jersey that wherever there has been an opportunity to get lands cheaply the Italian laborers brought in to pick fruit and do like things have begun to get hold of the land—have colonized and gone into that business and almost monopolized it in that locality?—A. I think that is true. Lands that were considered as barren a few years ago are being utilized and turned into productivity for these crops which you have indicated. We have several colonies in the southern part of the State—the Jewish settlement at Woodbine, as well as several others—and they are doing fairly well.

Q. Is it true that where the attempt has been made to colonize the foreigner in New Jersey systematically and with outside aid the progress has been less rapid than where these people have simply gone in themselves and colonized, by force of the circumstances, of their own desires?—A. I think, on general principles, that is true. I have not investigated it particularly. The fact of certain assistance all the time from outside sources will have a tendency usually to lead a man to comparative indolence. The system of colonization in general I do not think is best for the country.

Q. What I mean is this, more particularly: Where the Americans settle and start some particular sort of agriculture—as, for instance, fruit culture at Ham-monton—and they get it so far advanced that they get special railroad facilities, with their schools and churches and all that sort of thing, and they have to employ the foreign labor to help them pick and handle the stuff, in such case do the foreigners show a tendency to colonize and take the business they have come to assist with? And if that be true, is it true that they anywhere show a disposition to found a place of their own? Is it not the tendency always to take that which has already been created?—A. Yes; I do not know but there is such a tendency to create a similar industry of their own.

Q. (By Mr. FARQUHAR.) Do you know of the success or nonsuccess of the Jewish settlements in southern New Jersey?—A. In general, I may say they are succeeding. Their progress has been somewhat slow. They have had difficulties to contend with—very great difficulties—but I think they have overcome them.

Q. What was it mainly, agriculture or manufactures?—A. Chiefly agriculture. In Woodbine, for example, a man settles on 10 acres of ground, and to help him a little house is built, and provision is made for the cultivation of the ground and the growing of certain crops. The understanding is that if he is industrious and makes a little money that property will be his at a certain stipulated price in the near future.

Q. What county are they located in?—A. Cape May chiefly.

Q. What is the extent of lands that they settle on?—A. In the different colonies?

Q. Yes.—A. I could not tell you. Several hundred acres in each settlement, aggregating thousands of acres.

Q. You spoke of the transient help, foreign-born laborers and others; do you find usually among that class of immigrants men who have had experience in agriculture in the countries they came from?—A. It varies. We have some who have had experience in the countries they came from; the Swedes and Germans more, I think, than the Hungarians.

Q. Does that come from the fact that in Scandinavia there are more small farms than in any other nation in Europe?—A. It may be so. I have not thought of the cause of it at all. The German farmers are generally considered to be a thrifty people at home. They are industrious.

Q. Mainly, then, the foreign-born help in New Jersey are merely laborers without any experience in agriculture whatever?—A. No, I could not say that, except a certain per cent of them. I have in mind now Germans who came to our State years ago. They were industrious, worked for so much a month, and saved their money. There are scores of that kind of men. They own property now. They are good citizens. But I do not recollect any Hungarians of that class.

Q. Are there opportunities in New England or New Jersey for a foreigner who has some knowledge of agriculture and some means, to establish a little home there? Are the opportunities of your State of such character as to invite that class of immigration?—A. Yes, very emphatically; for the reason that our lands have decreased in value from former valuations, so that in numerous cases the properties can be bought for the value of the improvements on them. That is so throughout the whole State, and I know it is measurably true in New England also.

Q. What is the effect of immigration on American agriculture as to New Jersey?—A. It has been indirectly against it in the East. Unwarranted and unjust inducements to foreign immigration and the unfair (unfair to the people at large), almost gratuitous, disposal of our public lands, both to immigrants and railroad companies, has enormously increased agricultural productions. With this came, as a part of it, exceptionally low freight rates to the seaboard, and farmers in the older States have had to meet this competition. The result has been that for years they have grown some of their crops at a loss. Small wonder that the business has been dragging. Now, the effect of this immigration has not been, in New Jersey, directly apparent, but indirectly it has, because, as I say, the West has been taken up, and productions have been so enormously increased and brought to the seaboard at so low a freight rate that we were driven to the wall. It is a fact that a bushel of wheat in Dakota is just as near New York as a bushel in South New Jersey, so far as freight is concerned.

Q. (By Representative GARDNER.) Have you any suggestion as to the regulation of immigration?—A. Well, I suggest that, as we are just beginning to recover from this depression, the tide of immigration should be greatly restricted, at least for a time. There are enough laborers here now for our work and for years to come. Let these have it and the labor problem will soon settle itself. If any are admitted let them have intelligence and capital, so as to be a help and not a hindrance and burden to the State. Stop the opening up of new lands for at least

25 years to come, and, incidentally, irrigate no land, except for Government purposes, at public expense; let the States attend to that. All that will help.

Q. (By Mr. FARQUHAR.) Your test of immigration would be restrictive measures with reference to the character and education of the immigrant, and social standing, and to his having a sum of money to take care of himself?—A. Yes; I think that would be fair. It would be well to take care of our people. There are so many here now dependent on labor that it seems an injustice to bring others to compete with them.

Q. Under our treaty obligations with all foreign powers, how could the United States frame a law, unless they abrogated these treaties, to make these restrictions?—A. But you remember, no doubt, that, as I suggested, unwarranted inducements were thrown out right after the war. The railroad companies, when they got the public lands, put their agents on the Continent and advertised, and the steamship companies cooperated and brought these immigrants here, as you know, and our Western lands were taken up. We used to sing it as one of our popular songs. I remember a song on this subject of about forty years ago, the chorus of which was:

“Come along, come along—make no delay,
Come from every nation, come from every way;
Our lands, they are broad enough, don't be alarmed,
For Uncle Sam is rich enough to give us all a farm.”

Q. Colored labor—extent of.—A. In some localities that is on the increase. They come from the Southern States, and I think it would be well for both North and South if that could be encouraged, both for the housework and for the farm. It is a great trouble to get domestic help, as you know. Young girls will go in the store and work in the factory, but they won't work in the kitchen. If we can get these colored people from the South to go up there and work as they are represented to do in the South, it would be a great help. The majority of our help now is white, and mostly foreign.

Q. Do you know, or not, that as soon as you get the colored girl from the South to the Northern kitchen that she comes in contact with the colored people of the North, and inside of 2 months will be demanding more wages than the store girl gets in a great many cases?—A. Is not that true also of foreign help? You get one of any nationality and she will soon be initiated and demand a higher price. It is true, as you suggest, no doubt, about the colored girl from the South, and yet I have known of cases where they have worked steadily for 3 years, and then they must go South and see their friends.

Q. What have you to say as to the school age of children?—A. We run from 5 to 18 years in New Jersey; I believe that is the school age.

Q. What about the sufficiency of the public school facilities in New Jersey?—A. Any growing demand for increased facilities is usually promptly met; that is to say, we are trying to keep up with the demand.

Q. You do not think there is any lack of school facilities in the agricultural districts of New Jersey?—A. No, I do not.

Q. What is the percentage enrolled?—A. That I have not. I think, though, our school census takers usually get all of school age.

Q. (By Mr. RATCHFORD.) Do we understand that you have a compulsory education law in New Jersey—a truant law?—A. Yes. Under that law children between the ages of 7 and 12 years are obliged to go to school at least 20 weeks each year, but the law is not enforced as it might be, not to the letter.

Q. If it was enforced what would be the result?—A. They would have to go to school so many weeks in the year unless they were sick or were being taught elsewhere.

Q. Not during the full term?—A. No, I think not. I have not looked it up, but I think that while from 5 to 18 is the school age the compulsory feature does not go beyond 16. Sometimes the earnings of the children in the factory or some other industry overcome the law, and they do not get all the education they ought to have.

Q. (By Representative GARDNER.) The fact is, the compulsory education law is enforced by the local authorities in the different towns and cities in the State, and the rigor or laxity with which it is enforced depends largely upon local sentiment?—A. Yes, largely.

Q. In so far as you know, it is pretty generally enforced?—A. Not as well as it should be.

Q. As to the adaptation of the public school curriculum to the needs of the agricultural people, what have you to say?—A. The curriculum as now established in our public schools does not demand a knowledge of the principles of

agriculture on the part of the teacher. This makes it impossible for the pupil to secure training in those branches of knowledge so essential to his life work, if he expects to follow the farm. It would be a great gain were teachers qualified and required to give instruction in the elementary principles that underlie agricultural practice. Indeed, such knowledge would be of advantage to all pupils. We have had a committee from our State board of agriculture confer with the State board of education, calling attention to this fact. State normal school pupils who expect to become teachers are required to study chemistry to a certain extent, and botany, etc., yet the technical underlying principles of agriculture are not touched. Such knowledge would be of advantage to all, because we find there is a tendency on the part of nearly everybody who succeeds in nearly every other business to go back to the farm, and even city and town people have a yard, a garden, or a tree and want to know how to deal with them, and if these principles were taught somewhat in the school it would help them. Your question suggests a remark made by Prof. Austin E. Appgar. He said: "A pupil from one of the leading schools of this State recently came to enter the normal, and as she had studied and been graduated from the subject of botany, she wished to be excused from taking it again in our school. When questioned, she stated that they had never had a plant, or part of a plant, in the class during the whole course." Speaking to the State Board of Agriculture, he further said: "Insist that some of the time in your schools be devoted to nature and natural things. Insist that the plants, their organs and the office of these organs, are subjects as worthy of study as cube root and the purchase and sale of stocks. Insist that the education of the eye to see things and of the mind to comprehend these things is as important as parsing; that a portion of the time devoted to the study of the rivers of Africa be given to the study of the trees of your neighborhood; that the three great kingdoms of nature, animal, vegetable, and mineral, shall at least have a few periods of the school course devoted to their study."

Q. (By Mr. FARQUHAR.) Have you any agricultural or industrial college in the State of New Jersey?—A. We have an agricultural college at New Brunswick, under the Morrill Act.

Q. Is that exclusively an agricultural college, or what are the branches?—A. Agriculture and the mechanical arts; that is what the charter calls for. The pupils take a course in agriculture and the mechanical arts. In our State, of those who have graduated a very small per cent goes from the college to the farm. I understand in North Carolina a great majority, about 90 per cent, of their graduates return to the farm.

Q. Is it not the general opinion that these colleges and industrial schools have been the real foundation of bettering farming in America?—A. Yes; that is true. You know it was about 1840 that Liebig took up the question of agricultural chemistry. We had nitrogen, phosphoric acid, and potash, but did not know the value of either. Chemistry has taken hold of the agricultural question and discovered what each crop is in need of. And of course the agricultural colleges have taken up the work of Liebig and enlarged it, and by their bulletins have brought it down to the farmer, and if he will read and attend he can be benefited.

Q. Is it not a fact that the ignorance of chemistry of the soil and the rotation of crops is the cause of the impoverishment of the United States land to-day?—A. Knowledge of the chemistry of the soil, the plant food that is in the soil, and the requirements of the soil is essential knowledge. I have found that true in our intermediate West, in Illinois, in Iowa, and other States; continual growing of one crop, exhausts all the plant food in the soil that that crop requires and the yield is reduced.

Q. (By Representative GARDNER.) If agricultural chemistry had done what we claim for it and discovered the elements of plant food, so that we can return them to the soil, would not all the detrimental effects of continual cropping of one plant be overcome?—A. Laws and Gilbert have been carrying on such experiments in England, but generally that will not work. We have come to rotation as the better way.

Q. You do not think that is because we do not know what we are taking out?—A. We can discover that. The vigilant farmer, if he watches and finds that his crop of wheat, for example, is poorer this year and poorer next year, can discover that.

Q. (By Mr. FARQUHAR.) In the great prairies of the West the farmer knows that 20 to 25 years of farming has exhausted nearly half his soil proper, and his crops of to-day are just so much less than they have been in the old native soil.—A. Yes; they have been taking out the plant food and burning the fertilizing ingredients; have not utilized the straw, and have exported the wheat. If they had exported the flour and kept the bran and put it on the soil it would have

been different. They are waking up to that. Notwithstanding chemistry has discovered all this, the farmer has to get his money out of his crops to replenish his soil.

Q. (By Representative GARDNER.) Has any experiment been yet made that has demonstrated that nitrogen, phosphoric acid, and potash are the sum total of plant food?—A. Yes, these constitute the only essential fertility elements. The others are not liable to be exhausted.

Q. In other words, you would not want to say that we know enough about agricultural chemistry to enable us to keep a soil at its standard with fertilizer, with continuous cropping of the same thing?—A. I would not want to try it on a farm of mine. Would use some green crop for humus in connection with the fertilizer.

Q. We do not know what to put back yet?—A. We know what the plant needs, to a certain extent; not in every case.

Q. (By Mr. A. L. HARRIS.) What is the condition of your experiment station in New Jersey?—A. Its condition financially?

Q. Condition as to its usefulness to the farmer and developing the condition of the soil in different portions of the State?—A. We think it very valuable indeed. We believe we have one of the best corps of professors in the United States. Prof. Edward B. Voorhees is recognized as a very able man. They carry on in the different parts of the State every year certain experiments with farm crops, soils, and fertilizers, and demonstrate what is best for the locality. I have charge of the farmers' institutes, and I invite the professors to go to these institutes in the winter and give lectures on these subjects. The farmers question them, and by this means we get the information down to the farmers by the institutes and the bulletins, and we think the experiment stations of incalculable value to the farmers.

Q. Is it or is it not true that, after all, the experiments that are made on the farm as to what the soil will best produce are better than the laboratory?—A. The laboratory discovers principles. The farmer, knowing these, works more intelligently with his soil.

Q. Can you now, by any process of analysis, or in the laboratory, tell just how much phosphoric acid or ammonia there may be, suitable for plant food, in the soil?—A. The only way to ascertain that, as Professor Mapes has said, is to ask the soil questions; put several crops there with different proportions of different plant foods and see how they behave, and in an ordinarily favorable season you will see the trouble and can correct it.

Q. If you find you have too much straw and not enough grain you have the remedy?—A. Yes.

Q. If you find you have too much grain to the amount of straw and the grain falls, you know generally what to expect?—A. Yes.

Q. You have local experiment stations, all under the control of your general station?—A. Experiment farms. The farmers are cooperating with the professors in that way.

Q. You test the soil in all parts of your State?—A. Different parts each year. A soil analysis, as you suggest, will not always reveal what the crop wants. It is impracticable, because you may find a dozen different soils on as many acres. Soil analysis is hardly practicable; the other way is better.

Q. And the farmer, when he knows what is best to apply as a fertilizer, is then getting in the best condition to use his fertilizer most economically?—A. Yes.

Q. And until he reaches that point the application of fertilizer is an experiment and may be a loss?—A. May be a loss, largely through ignorance in its application or of its ingredients or availability.

Q. Have you a farm connected with your agricultural and mechanical college?—A. The college owns a farm, and the professor of agriculture lives on it, and they are carrying on now a series of experiments from year to year, which is highly edifying, and they invite the farmers of the State to come there and inspect what they are doing. I was there myself the other day. They have a very modern dairy, and it is more than self-supporting; the college does not give the professor any money to run it. He is making the farm self-supporting also and making some money, and it is not the best piece of land in the State by a good deal.

Q. Do the students to some extent perform the work on the farm under the eye of the professor?—A. To some extent; not so generally as would be desirable. They mostly simply go out and observe what is being done.

Q. Are there any inducements held out to the student to perform work on the farm?—A. I can not answer as to that; I am not posted. Prof. George H. Cook used to say that although young men did not go from the college to the farm,

that was no argument against this kind of education, and that in the final outcome many of these young men would come back to the farm.

Q. How about technical education?—A. It is on the increase, and should be encouraged. Summer schools of practical agriculture, horticulture, and dairying would be of great advantage, especially for city youth contemplating the ownership of a country home. Let them take a few months of the practical with the theoretical on the farms of leading farmers as opportunity offers. That is being done in New York. Mr. George E. Powell is inviting some of the millionaires' sons from the city to farm, and last summer some of the young ladies asked to come out and take lessons in horticulture on the farm. I wish we could have more of that kind of education. As to the total amount of capital employed in agricultural pursuits, we have in New Jersey 30,288 farms, with an average size of 86 acres; total value, \$159,262,840; live stock, according to the census, \$15,811,430; implements and machinery, \$7,378,644. I add to that \$1,500,000 for this fertilizer we are talking about (it approximates nearer \$2,000,000). That makes a total of \$183,952,914, which does not include labor. We are not largely a farming State, but those who are in it make a good showing.

Q. Earnings of capital compared with 40 years ago?—A. I do not think they are as much as 40 years ago. On earnings of capital invested in agriculture, compared with other lines of business—banking, manufacturing, railroading, mercantile, etc.—I have here a statement prepared by Dr. George H. Cook, which will give some light [reading]:

"In 1870 the capital invested in agricultural lands and implements in New Jersey was \$265,000,000, while that in manufactures and mining was only \$30,000,000; but the value of the products of agriculture was only \$46,000,000, while that of manufactures was \$169,000,000—more than three times greater. The manufacturer and speculator may turn his capital several times in a year, while the farmer expects to get back but a small portion of his each year.

"Invested in manufactories only in 1880 in New Jersey, \$106,336,593; paid in wages, \$46,083,045; value of material, \$165,285,779, making \$317,595,317. Value of products, \$254,380,236. Value of farms, fences, and buildings, \$190,895,833; implements and machinery, \$6,921,085, making \$197,816,918, or \$67,188,082 less than in 1870.

"Adding to this the value of live stock, \$14,861,412, and fertilizers used in 1879, \$1,001,009, gives us, invested in agriculture, in 1880, \$214,289,939. The estimated value of all farm productions was \$29,650,756.

"While the amount invested in manufacturing in 1880 had increased about one-third over that invested in 1870, leaving mining out of the estimate, the amount invested in agriculture during the same period had fallen off nearly \$15,000,000, and the productions from the smaller amount invested, \$16,349,244, being about 17½ per cent in 1870 against 13½ per cent in 1880. From these estimated productions must be taken interest on amount invested; cost of production, as hire, board of help and family, repairs, taxes, etc., which will leave a very low average per cent of actual profit."

It should be remarked that agriculture usually is the first to feel the depressing influence of unwise national legislation and of general financial crises, and if such depressing influences are long continued other business will finally feel the blighting effects against agriculture. They can not prosper long with agriculture depressed. And the fact needs to be emphasized that when business depression becomes general agriculture must first revive before there can be any general improvement. Our recent history shows this. Keep agriculture prosperous if you would have general prosperity.

As to the taxation of agricultural property, assessments are not uniform; assessors are in some cases a law unto themselves in fixing valuations. As to its "extent," as I understand the purport of that word, it is very general and comprehensive for most forms of property. Other forms of property sometimes evade or escape with a nominal assessment. Its effects are often burdensome because not equitable. A State board of taxation has been constituted by law in New Jersey at the instance of the State Board of Agriculture. It has done excellent work in unifying the methods of and basis of valuations for the assessors' guidance. It has arbitrary power to adjust assessments that, in their view, are unfair. A great need is to have a correct and uniform basis on which valuations shall be made. Farmers are required to pay taxes on certain forms of property over and over, as long as they live, that never earn anything. A young couple start in and get \$200 or \$300 worth of furniture, and if they live 40 years they are taxed forty times on that furniture. Our statute says tax all property at its full value; but who shall fix that value?

Q. (By Mr. KENNEDY.) Are you very much concerned about the subject of taxation in New Jersey? Is it not a fact that you are about to be relieved from

taxes by the enormous revenue flowing into your treasury as a result of the corporations being chartered by your State?—A. The taxpayer, except in a general way, does not have any access to that. A bill was passed last winter by the legislature, which will permit, after a certain amount, the turning over of any surplus—excess of that amount—to the counties to relieve them of their school tax. The only State tax we have is the school tax.

Q. Has this relief come to you on account of this revenue that I speak of?—A. This has gone on for several years. We could not have projected our big asylums, reformatories, armories, etc., without a State tax if it had not been for this income.

Q. Can you state what that income has been to the State of New Jersey?—A. The amount received by the State for the year 1897 from railroads and canals, less the amount allotted to taxing districts, was \$909,211, and from the tax on miscellaneous corporations \$380,941. This (1899) has been an exceptional year.

Q. (Senator MALLORY.) You say the school tax is the only State tax?—A. The only State tax.

Q. Do you have any bonded debt?—A. Yes; a remnant of our old civil-war debt of \$71,000. It is not payable until 1902; otherwise we could pay it now.

Q. This State board of taxation is taking up that question of fixing the valuations. Assessors have been a law unto themselves?—A. Some assessors have ignored the law and the decisions of the courts. The State board of taxation is compelling uniformity. If the taxpayers would take the matter up they would find the burdens and incongruities greatly relieved.

Q. Do you know how long it has been since New Jersey abolished all State taxes except for school purposes?—A. Since the adoption of the act of 1884, taxing railroads, canals, and imposing an annual license tax on miscellaneous corporations, the revenues from these sources have been sufficient to pay the running State expenses, without levying a State tax on private property.

Q. Have you any idea what the county tax and the school tax make—the percentage?—A. Although the State constitution requires that all property shall be assessed at true value, in most of the counties it is the practice of the assessors to assess at a percentage of true value, contrary to law. The average tax rate for 1897 in State was 1.78. In the urban counties where the assessment is based on an average of 60 per centum of true value, the tax rate is about \$2.13 per one hundred dollars' valuation. In the agricultural counties where property is assessed at true value, the average rate of taxation is \$1.26.

Q. What have you to say as to the causes and extent of migration of agriculturists?—A. The promise, often unrealized, of bettering their condition. Decline in prices of agricultural products is caused by overproduction and the other causes named, and also no systematic management by city authorities to see to it that all food supplies, especially quickly perishable articles, such as fruits, are regularly supplied or made accessible to the poor and laboring classes every day at a fair price. I do not know where the city authorities are taking hold of this question with a view of getting fruit and other perishable substances before the poorer classes, fresh and at a fair price. The hucksters regulate that, and when it reaches them it is frequently stale and hardly fit to eat. In the section of the very poor it seems to me our city authorities might do something. It would help farmers, too, very much. I do not think there is so much more produced than is needed; the fact is, it does not get to the people as quickly as it ought, and at a price at which they could purchase it. The price advances every time it changes hands.

Q. (By Mr. A. L. HARRIS.) Can you describe now the various channels that the garden truck, for instance, when it leaves the farm, goes through before it reaches the consumer, and what the cost is in each channel?—A. I can not. I know oftentimes cars are side tracked, and the products arrive in a partially damaged condition, and I have heard producers say it is impossible for them personally to get their goods before the consumers in certain cities because of the phalanx of middlemen, hucksters, and dealers who stand between them—some obstacle thrown in the way. I can not give you details. There is one other thing in that connection that I have no doubt indirectly plays a large and serious part in the declension of prices of farm products, and that is adulteration, and the consumer gets no benefit from it. The genuine article is adulterated with the cheaper, as you know, and the consumer pays the price of the genuine. That is what we are after in this pure-food movement. If an article may be adulterated, let us have it sold for just what it is, stamped just as our fertilizer bags are, and the consumer can buy intelligently.

Q. (By Senator MALLORY.) What article of New Jersey product is adulterated outside of butter—agricultural products proper?—A. Feeds are adulterated, bran, flour with meal, etc. Groceries are adulterated. Paris green is an article the farmers are complaining of this year; they get very little benefit from it; it is

very variable in quality. I do not say it is adulterated. I was speaking in the last sentence in a general way.

Q. (By Mr. A. L. HARRIS.) Your idea is that everything should be sold for what it is; if adulterated, it should be so branded; if it is marked "pure," it should be pure, and the person who sells it as pure should be held responsible for the purity?—A. Yes; that is right. There should be some means for redress.

Q. If you buy buckwheat flour, you do not want 25 per cent buckwheat, and 75 per cent some other kind?—A. If I buy buckwheat I do not want a certain proportion of fine indian meal or some other cheaper substance.

Q. Have you a pure-food law in New Jersey?—A. Yes; since 1881. It includes all foods and drinks used by man and all medicines.

Q. Have you an officer specially appointed to enforce your pure-food law?—A. That is in charge of the State board of health largely, aided by the State dairy commissioner, who is investigating the food products. He finds that a very large per cent are adulterated.

Q. Is his office at the capital?—A. Yes; in the State house.

Q. As to the decline in money value of agricultural lands in the older States; causes and extent.—A. The opening up of new lands with such enormous rapidity; sudden increase in the number of agricultural workers, from abroad largely; very low freight rates to the seaboard; farming for the cereals by wholesale by means of improved machinery on the Western plains, which was not possible there nor in the older States to such an extent without it—causes a low price for farm products, hence the farmers' sons in the East sought new fields of work and farm values declined even below the cost of buildings and improvements. The decline is general. As I said, we have just begun to recover from that condition of things, and I hope it will go on. That is my view.

Q. (By Senator MALLORY.) Is it not a fact that a thrifty, industrious, intelligent man can make a good living in New Jersey?—A. Yes; with a little capital. I would not be afraid to buy an average good farm with improvements if I could pay for half of what it cost. I could make my way nicely and pay for the farm at present prices; farms are so low.

Q. (By Mr. RATCHFORD.) That being the case, how do you account for the tendency of the farm laborer to go to the city? You say the young men on the farms are rapidly leaving them and going to the cities.—A. Mr. Gardner suggested it was cleaner work they were looking for in the city, but I think it is the promise, the hope, rather, of making money more rapidly in the city. The young man is after a sudden increase, and wants to get rich quick, and goes to the city; and coupled with that he has the idea that it is a little more respectable, and he goes to the city. Although he has an honest desire to improve his condition and to make money more rapidly than he can on the farm, it is largely sentimental.

Q. What, in your opinion, has been the experience of the young men who have gone from the farm to the city? Have they found it advantageous or otherwise?—A. We can answer only in a general way. We have statistics to the effect that not a very large per cent of those who go to the city with the expectation of making money succeed. They drag along in some clerical employment year after year.

Q. (By Representative GARDNER.) Is it true that there has been a steady decline in agricultural lands in New Jersey?—A. Yes.

Q. That decline has been due to the decline in the profits of agriculture?—A. Yes.

Q. Is not the hopeless outlook the source of the great influence on the young man who is growing up on the farm, if he sees it growing more hopeless and discouraging from day to day?—A. Yes. But there is another cause. If any of you have ever attended an agricultural meeting and heard a man lecture of stock raising, he has insisted upon the importance of heredity, of blood, of parental influence. Remember that some of the children of the last 25 years have been born in families where the hearts of the parents have been set against agriculture; they have come into life with hearts averse to agriculture, and the first thought is to run from it.

Q. There is a cause why the parents had an aversion?—A. Your answer comes in there, and the boy has taken up the same point.

Q. They have always had a hopeless impression?—A. Most of the crops were grown without much if any profit for a period of years.

Q. (By Mr. RATCHFORD.) The young man who stayed on the farm, according to your testimony, has fared better than the man who took his chances in the city?—A. In general he will fare better, in the outcome, I am sure. There are exceptional cases, of course. Some will go to the cities and succeed and some will stay on the farm and will not succeed.

Q. Just as it is true that the average of men who never gamble or speculate come out best; but the fact is that a few, one here and one there, make more or less money out of it.—A. The idea of the young man on the farm is the same as that of the young man everywhere.

Q. (By Mr. KENNEDY.) Is not that also accounted for by the fact, perhaps, of the desire of a large per cent of the men to become prominent in politics and statesmanship?—A. I do not know about that, although we have some prominent men who have gone into politics and become prominent there. I think few have left the farm for politics. This ambition has come later.

Q. (By Representative GARDNER.) You do not mean politics alone; you mean profession?—A. Yes; profession. Not politics alone.

Q. (By Mr. RATCHFORD.) Is it not a fact that the amusements of city life, and the allurements as well, which are so often portrayed to the farm boy, who is tired of his daily toil, weekly toil, and monthly toil—that that will have as great an influence in bringing him from the farm to the city as any other influence?—A. I have no doubt it has a very strong attraction. There is also the matter of social intercourse. It was to meet this that such business and social organizations as the grange were organized.

Q. Do you give it as your opinion that the greatest influences operating toward leading farm boys from the farm to the city are imaginary inducements?—A. Well, largely, bred of discontent.

“Decline in productive conditions of soil in said (older) States; causes and remedies.” This reached the first climax about 40 years ago. I remember when some of our best lands of to-day were turned out as “commons,” and were driven over. The plant food was gone and the farmer did not know how to get it back. Peaches came along and brought a little money, and marl was discovered. That brought clover, and clover improved the soil. Then came along these agricultural investigations we have been speaking of, and the tendency has been forward since in the better farming regions of the State. From that time on up to the recent depression, the productive capacity of our lands increased in New Jersey, and now we produce more wheat to the acre than any Western State.

Q. (By Representative GARDNER.) Why do you say not in south Jersey?—A. Those are sand regions, so far as I know. The production of wheat was 20.7 bushels per acre for the State in 1897.

Q. (By A. L. HARRIS.) Your average was higher than Ohio?—A. Higher than any Western State. I did not find it in California, because continual cropping with the same crop on the same soil has exhausted the plant food necessary to its production. Chemistry has revealed what constituents enter into the composition of the several crops, and what dairy cows and other domestic animals need for best results. This necessary plant food, nitrogen, phosphoric acid, and potash are provided commercially. Peru has provided nitrate, and all the clovers and other leguminous crops are grown by progressive farmers. That is the key, I think, to reclaiming all run-down soils in almost any part of the country where clover will grow, and where that would not grow we can try some other similar plant.

Q. (By Senator MALLORY.) Do you know what methods have been resorted to in central Europe for the purpose of preserving their soil from total destruction—soil which has been cultivated for hundreds of years, in Germany and France?—A. They were doing something a hundred years before chemistry was paying any attention to it. They depended on leguminous and root crops largely. German farmers live on little farms, and they have been very saving of manure. As Mark Twain says: “Their bank is their manure heap.” And they not only preserve the coarser part of it, but they have been very choice of the nitrogenous part—the liquid and urine. I have been told by progressive farmers that at the proper time—the spring of the year—they apply this to certain crops, and the effect has been most beneficial and helpful.

Q. Do you know if they save the drainage of the cities and transfer it back to the soil?—A. I do not know about the experiments. There is one going on in France, I think, to save the sewage of Paris, but as yet it is too expensive.

Q. Have you any calculation of the value of the garbage of the cities if taken back to the soil?—A. It would be immense. Anything that smells bad has generally the elements of manure in it, although stink is not essentially manure.

Q. (By Representative GARDNER.) All stink is not manure, but all manure stinks?—A. Not necessarily, although your question is to the point—if we could, by any means, save the city sewage and apply it generally to our soils, it would aid in rapidly restoring their fertility.

Q. Has not that been done in some of the small countries of Europe for a long period?—A. I can not state positively.

Q. What have you to say of the effects of increased acreage on productions, on prices, on profits, on wages, on employment?—A. Increased acreage lowers prices; that is, if you increase the acreage above the demand of the consumer, as has been done in certain lines, the increase destroys the profits; reduces the numbers of those who might otherwise be steadily employed. As for "bonanza" farming—in 1893 I was in California and passed up through the Sacramento Valley. There were supposed to be 15,000, 20,000, or 30,000 acres owned by one man, plowed, seeded, and harvested by the best improved machinery. Suppose this large property was divided up into 100-acre farms, the population would be increased and employment given to many people; roads would be improved; schools would be established.

Q. "Organization of agriculturists; causes inducing; objects sought; results secured; rules governing."—A. The causes inducing are, I think, in general, hopes of improving their condition. I know that to be the case—to increase the intelligence; to buy at wholesale prices by buying in large quantities. I know they are doing that in my State now, particularly in fertilizers and groceries. To cooperate in selling, and reduce the cost of transportation thereby, and to work together for the general improvement, with reference to roads, schools, taxation, social advantages, etc. These results are being secured and rules governing are fraternal, businesslike, and strict. In the neighborhood of Moorestown and in other localities they save several thousand dollars a year by buying fertilizers and mixing them themselves, instead of buying from the manufacturers of fertilizers. One object they have in view is to save money in that way. They also increase their intelligence. They have discussions and essays, and take, as I suggest, an interest in other matters and discuss them.

Q. (By Senator MALLORY.) On that point of roads: You have, I suppose, a system of public roads—aid for building roads in New Jersey?—A. Yes; we have, I might say, several systems. We have the old-time township system of appropriating money for the improvement or repairing of the public roads. There was a law passed a few years ago taking the management of these roads from overseers entirely and putting it in the hands of the town committee. Then we had special road acts; for instance, the Union County law, by which they could improve their roads, and prior to that Hudson County; but later the general road act for improving roads under a State-aid system was inaugurated.

Q. (By Representative GARDNER.) Please give an outline of that and what has been done with it.—A. The State board of agriculture has taken an active part in road improvements since organized 26 years ago. During Governor Abbott's administration we had a committee appointed from the board. They were then desirous of having improvements and of having the road laws codified, because they were so many and so intricate. In the discussion of the question in my office of what could be done, Mr. Conrow suggested that the State should help to build the roads. To bring this question before the people, I asked the executive committee of the State board whether they favored calling a State road convention, and they favored it, and for 3 successive years we had a State road convention, meeting right after the meeting of the State board of agriculture, and they were very enthusiastic meetings. It was surprising to find the interest that was manifested in the question. Just then this idea of State aid was advanced and the law formulated, and I think the first year \$75,000 was appropriated under Governor Abbott's administration. He wanted to restrict it to \$25,000, but we finally got it up to \$75,000. The first year of that system not much of that money was used. I think nearly \$40,000 or \$50,000 went back into the treasury. The farmers were afraid of it in many localities. They said it would be a burden to them if they had to pay for the building of a road and then keep it up afterwards. The next year the matter became more popular, and it has been growing in popularity ever since, so that the appropriation increased, I might say, to \$100,000 later, and last year to \$150,000 for this purpose. Under that law, if the parties living along any line of road want a stone road built by State aid they sign a petition to that effect, which, I believe, the law requires to be signed by two-thirds of the property owners.

Q. (By Senator MALLORY.) What distance?—A. Any distance.

Q. Suppose a road was 20 miles long; would it require two-thirds living along that 20-mile stretch?—A. Yes.

Q. Could they petition for a shorter road?—A. Oh, yes. I think a mile is the shortest. If the application is granted, they are to pay one-third the cost of the building of the road.

Q. The people who sign it, or the county?—A. The people owning property along the road; and the State pays one-third and the county one-third. Appraisers are appointed to fix the proportionate sum that each one of these property owners

should pay, constituting this one-third. After the road is built, laid down, and accepted, it becomes a county road.

Q. And to be cared for at county expense?—A. Yes.

Q. Then the road tax is mostly from counties, is it not?—A. Yes; for these roads. The freeholders report to the county board of assessors the sum required annually. This sum is included in the annual assessments, is collected and paid over to the county. We take township tax for ordinary roads, and there may be special tax for that purpose.

Q. Do you contract and let out repairs?—A. Yes.

Q. You have no county convict labor or anything of that kind?—A. No. The original act confined the material for the roads to stone macadam or telford, and the width and depth is a matter agreed upon largely by the property owners and road commissioners; but amendments have been made to the last law, allowing State aid for the building of roads with gravel, and also oyster shells, also bog ore.

Q. Have you any idea of what the cost in New Jersey per square yard is to build a stone road?—A. From 20 to 70 cents; a little more where the road bed is springy; less, if rock is mined near the road to be constructed.

Q. I suppose it is different in different parts of the State?—A. Yes.

Q. (By Representative GARDNER.) The decline in the value of agricultural lands in New Jersey seemed to be primarily caused by opening large areas in the West, did it not?—A. I think so.

Q. After that, New Jersey, lying directly between New York and Philadelphia, with the various considerable cities within it, became largely a trucking area, did it not?—A. Especially near the cities.

Q. So that the ordinary farming was displaced by truck farming. That used to be profitable, but now it is all gone; and where does that competition come from; do you know?—A. For early fruits and vegetables from the Southern States largely, for grain and meat—fat cattle—from the West, by reason of railroad facilities; but that is a matter we must face and meet.

Q. It is true, then, is it, that the transportation facilities from the South and West raise a competition that is destructive to the New Jersey farming?—A. Yes; to a certain extent. I spoke of the wheat a while ago, and the chairman suggested that they abandon wheat and go into truck farming. Of course, at particular times, the competition of the South strikes pretty heavy; other times it does not affect us much; so our gardeners and truck farmers try to run in between these times.

Q. Does that competition prevent the New Jersey farmer from getting the prices he used to get for his first fruits?—A. In general, yes. In various isolated cases he may get those big prices, but they do not stay long.

Q. Can he ever get them, only when he gets the first pease marketed? Have not Southern pease cut it down to standard level?—A. Yes.

Q. And that is an illustration of all other kinds of products; so that milk is about the only thing now that is free from competition from a long distance?—A. That is being overcome by refrigerated cars. Dairymen are not getting 2 cents a quart for their milk for the year. It does not pay at that price a profit such as should be derived from a business requiring so great an outlay of money, time, and labor.

Q. What can you say as to the present annual production in relation to consumption and existing markets?—A. I will simply answer that, in some lines, it is in excess of demand at paying prices.

Q. Overproduction in certain lines; underproduction in other lines; causes and remedies?—A. This occurs from various causes. Ignorance of market demands leads to excessive planting sometimes. Natural conditions unusually favorable, give a crop far above normal at times. Underproduction results from the same cause as first named, and also adverse weather conditions. Farmers should be better informed as to the world's annual requirements of the several crops, and carefully prepared reports as to acreages devoted to these crops in the different States should be given out each winter by the State boards of agriculture to their own States, as well as by the United States Department of Agriculture to the several State boards. A great aid to a correct knowledge on this subject would be to have our foreign consuls report as to production and consumption in foreign countries to the United States Department of Agriculture. I think that has been hinted at by somebody. If such information could be furnished and utilized by the Department of Agriculture, and put before the farmers, it would be helpful. In my judgment, it would be impossible to so regulate the acreage as to have an annual production just equal to the requirements of mankind, either locally or generally, exactly or anywhere near it. Suppose we do know just what we would need in the

United States, and how many acres would be required under natural conditions to produce it, and we plant so many acres, but there comes a drought we did not expect, the people would have to suffer. So, after all, our excess acreage may sometimes be a blessing in disguise to the consumer.

Diversification of agricultural industries; This would be helpful locally in some sections.

Effect of improved machinery on production and prices: Improved machinery has made possible ranch farming on a scale that was impossible before its advent, and hence enormous acreages have been brought into productivity. With an enormously increased acreage and increased crops, consequently lower prices followed. Anyone who has traveled over the Dakotas in the time of wheat harvest would be convinced of this. If we had to plow that in the old way, sow it by hand, and harvest it with the cradle it would never be done. Improved machinery has worked a revolution in that direction.

Q. That is in the West?—A. Yes; and in the East relatively.

Q. The farmer in the East, before the advent of machinery, in determining the acreage which he would cultivate each year was guided more by the amount that he could fertilize than by the difficulty of harvesting it, was he not?—A. Yes, and it depended on what he could take care of.

Q. Has the advent of the commercial fertilizer been a great agent in the increase of acreage and overproduction?—A. Yes; in a general way it has. It has brought up acres which were unproductive years ago. It has increased the product per acre very largely. Our wheat average in New Jersey a few years ago was 12 or 13. It has run up to 16 now, and 20. That has helped.

Q. As to "the extension of foreign markets—possibilities and methods?"—A. It is possible, and ought to be encouraged. Our consuls can help, as suggested. The Department of Agriculture can help by introducing our products abroad, and teaching foreigners their value by teaching them how to prepare them. Special agents should be sent to Asiatic countries to introduce our cereal products and extend their use, especially wheat. I remember a remark of President Hill, of the Great Northern Railway System, at St. Paul in 1897, that he believed it possible, without much effort, to introduce the use of our wheat flour in Asiatic countries, so that they would take all the surplus flour of the Pacific States without any trouble. They do not know what we have and do not know how to use it.

Under 42—"cost of production, including interest on capital, cost of labor, and other charges"—the cost of production is largely determined by the yield per acre for farm crops, or the yield per head for dairy animals, but other factors must be first considered, as value of land, expenditure for fertilizers, feeds, machinery, labor, marketing, etc. These vary somewhat in different crops and in different localities. I do not know how we are going to get at a general statement covering that question. We have got to consider those factors before we can get at the cost of production. It is a question, however, that every farmer should take hold of and endeavor to settle for himself. I think it lies frequently at the foundation of success or failure; he is working too much in the dark.

Increase or decrease in transportation during the past 50 years: There is much complaining as to what are claimed to be excessive freight rates. It is alleged that classification is so arranged as to beat the farmer; also that there is discrimination against the short haul and in favor of the long haul; also in favor of shippers in large consignments; but I can not give a comparison of rates. I have not that in my possession. I have not looked it up. These complaints are very prevalent.

Q. There is a general feeling of the New Jersey farmers that the arrangement of rates—long and short haul—discriminates against them and in favor of the farmer of Ohio, for instance, in the New York market?—A. I will not say Ohio, but I will say the long as against the short haul; and classification.

Q. Is not that complaint becoming specific against Ohio and northwestern New York, that country up there, as to milk?—A. Yes; it is in our State. Refrigerator cars made it possible. The peach growers, for example, in Hunterdon County—that section of the State where they produce in one county nearly 2,000,000 baskets a year—they began last year to pull up their orchards. They say, "The freight is so great we can not afford to grow peaches any more." The same thing occurred this year. Two or three years ago a gentleman who lived 22½ miles from Newark had a large peach crop, exceptional in his neighborhood. He had other peach growers, who had no crop, to cart his crop to Newark in wagons so as to avoid the necessity of sending by rail, and he claimed he got to market in less time than if he had sent them by railroad, and in better condition.

Q. Do you know the freight rate per hundred for that distance?—A. No; I do not. As I say, they are classified differently. Pears are light and they rate them

higher because they are more quickly perishable, so a higher rate is charged on them than on apples and potatoes.

Q. What is the effect of good roads on cost of local transportation?—A. Good roads affect those especially who are near enough to team their products to market and market them themselves. For soft or quickly perishable products this is a great gain. It will not pay, usually, to cart long distances, even on good roads, in competition with steam roads. Their supposed value is easily overestimated. I put that in merely as a hint.

Q. What have you to say as to combinations to control prices in local markets?—A. With the farmers in the East, especially those who grow small quantities of any one crop, it is difficult for them to combine to control prices. Indirectly, it might be done by organization to grade products so as to put on the market only that which is worthy, and sending to the best market each day. That is being done in California. I think the large proportion of their output of fruit which goes east is handled by the association, and the fruits are graded; hence they reach the Eastern market in a nice condition, uniform, and marketable shape.

As to the effect of the so-called grain and cotton gambling, they are usually constituted to aid their promoters; the cheaper they can buy the greater their profits. They are not organized to benefit the farmer primarily, nor yet the consumer. Their usual effect is supposed to be against the farmer's interest. The requirements of consumers will be best met by the supply on hand going direct from the producer without the intermeddling of crop gamblers. That is the general view. I have not looked into the matter of this grain gambling as much as some have.

Q. Have you investigated that subject so as to have any idea as to whether grain gambling does or does not affect the price of grain?—A. No; only in a general way; general impression.

Q. (By Mr. A. L. HARRIS.) It does not rob the producer of the general law of supply and demand?—A. Yes.

Q. After the producer has parted with his product, what further interest has he?—A. Suppose we have not a very large crop. The farmers are not usually posted as to the output of the country. It is presumed that a half dozen of us have posted ourselves. We send out our men and buy the bulk of the crop—all we can get of it—and put it in the elevators. Immediately the crop begins to advance in price. We brought all the influence we could to bear to make it raise.

Q. Suppose I have the financial ability to dump on the market a million bushels of wheat, when, in fact, I have not a bushel of wheat, what effect has that on the price?—A. The market does not know whether you have that wheat or not. Such sale is reported and the price. This has a tendency to fix prices lower than they would be had not a fictitious product been sold.

Q. Are the fictitious values and this booming of prices an advantage to the farmer himself in getting higher prices?—A. They do not always boom them.

Q. Is it a fact that even the bucket shops and curbstone brokers really contribute to the better prices rather than depressing the prices; and is not the object to keep up the prices rather than depress them?—A. There are bulls and bears on every market. If they keep up prices it is usually after the crop is under their control and largely out of the hands of the producer.

Q. The bear is found even in the real market, but as to the speculative market itself would you not say that the bulls are predominant?—A. Perhaps so. It is a question you want to look into very closely before you can give an answer; but the general impression is that this grain gambling works adversely both to the consumer and the producer. They put the price down to the producer and up to the consumer. That is the general belief.

Q. Please state whether, in your opinion, the dumping of large amounts of fictitious grain upon the market constantly does not affect the price, and whether it does not deprive the farmer of the benefit of the natural law of supply and demand.—A. In my judgment it does. If we could have the information as to crop yields placed in the hands of the farmers very approximately correct, they would have the matter in their own hands; they would know the product of the country for the year before, and the reports this year would show what the probable output would be this year, and no man would be able to hoodwink them, as if they had not this information.

Q. By what method could that be put in their hands?—A. By the present methods of the Department of Agriculture. Its correspondence is generally efficient and reliable.

Q. Have you studied them?—A. Somewhat.

Q. Is it almost always true that these bulletins, and especially those of the agricultural papers, exaggerate the estimate of every crop in advance?—A. Well, I

would not like to say that in reference to the Department of Agriculture. If they do, I think it would be an error in reporting rather than a willful exaggeration. But there is such a tendency.

Q. Is it not almost always true that the hard period is the period of maturity and every crop promises better than it yields?—A. It is frequently the case.

The next question is the legal regulation of trusts, combinations, and other forms of monopoly. That is a difficult question. I do not think any of us can question the right of men to consolidate their capital for the prosecution of great industries; in fact, it is necessary. We could not build our railroads or our suspension bridges, or carry on great enterprises of that kind without a consolidation of capital. We have touched upon that general question in the previous one. If they are going to consolidate their capital in order to monopolize the trade or to drive others out of the business, or crowd down the prices to the producer and enhance the price to the consumer, they ought to be regulated; that is, if you are able to find out in Congress a way to do it.

Q. (By Representative GARDNER.) Do you know of any farmers' organizations that would, upon investigation, prove to be trusts?—A. No; I do not.

Q. Do you happen to know anything about the organization of fruit growers—whatever you call it—in California? I ask because you spoke, a few minutes ago, about it.—A. That is not in the form of a trust, but it is to aid the producer to get his crop on the market in a marketable shape, and send it to market so it will command a good price. The individual producer in California could not ship his goods to the East unless he was a very large producer, and make it pay. It is only shipped by trainloads, and hence this horticultural society has conceived this plan. The stuff is crated and shipped to the East in a marketable shape, and only that which is supposed to be in demand. No; I do not know of any trust.

As to the operation of existing pure-food laws; objects sought; results secured; advisability of Federal legislation thereon; that we touched upon this morning. Where they are enforced they are beneficial. They seek, or should seek, to prevent the sale of poisonous or injurious foods, drinks, and condiments, and to prevent the sale of an article, adulterated to cheapness in cost of manufacture, as pure and at the price of the pure. All goods should be honestly labeled. One result would be the consumer would buy understandingly and would not pay a larger price for a cheaper article. It would seem necessary that Federal legislation should cooperate with State, the two working harmoniously to secure the one end—honest goods, honestly labeled, and sold accordingly.

As to the operation of existing Federal and State laws to prevent the spread of diseases among domestic animals; among plants; suggestions for the modification or extension of said laws; these, when judiciously enforced, are most helpful. Witness the eradication of pleuropneumonia. Other diseases now claim, and should have, immediate attention—tuberculosis, anthrax among hogs, etc. In this work, both for animal and plant diseases, best results will follow when the Federal and State authorities cooperate. I have no suggestions to make.

Q. (By Senator MALLORY.) Do those laborers who come there in a transient way have families, as a rule?—A. Some of them do.

Q. Are there any facilities for the children to go to school?—A. They have the same advantages that the other population have.

Q. What rule have you as to the residence of the child in the school district?—A. Simply as determining what school they belong to. For instance, a man comes into a certain district or township. He has children. It must be determined whether he is a resident there before they can be enrolled.

Q. Is his residence one of the conditions under which the child can attend school?—A. No. The law provides equal facilities for all alike; there is no discrimination.

Q. Suppose I should go there to spend 2 months this summer and want to send my children to school; would the fact that I was a nonresident, merely a transient visitor there, prevent my children from attending school?—A. Being a nonresident of the State your children could not draw any of the school money. By special arrangement with the school board they could attend school, you paying for their tuition.

Q. These transient farmers can send their children to school?—A. I never heard any objection.

Q. As I understand, the poorest farm laborers' children can have the same advantages as rich men's children?—A. They sit on the same bench and graduate in the same class frequently.

(Afterwards, on the 21st day of June, 1899, Mr. Franklin Dye, being present during the examination of another witness, and being asked for information upon certain topics, further testified as follows:)

Q. (By Representative GARDNER.) Will you state what, if any, efforts have been made to improve the market for milk, or any combination on that line?—A. I will say, in a general way, there was a movement started about a year ago by Mr. Myrick, editor of the American Agriculturalist, who took a very active part in organizing what he called the Five States Milk Association. It aimed to organize the milk producers in the five States contiguous to New York into a combination to control the output of milk, so that there would be no more put into the market than the day's demand in the city of New York.

Q. (By Representative LIVINGSTON.) Did that succeed?—A. They have not succeeded as yet. They have pledges from a large number of the farmers in the States named who have given a power of attorney to three or four men, which is a very doubtful course; but the thing has not matured and they have not realized, and I doubt if they ever will.

Q. What do they propose to do with the residue of the milk; make it into butter?—A. There would be a surplus, and they would use that at home; make it into butter perhaps.

Q. Did they establish agencies in New York?—A. They would do that if they could get the farmers to subscribe to this general plan and could hold them so they would not sell any beyond a certain amount; but it is doubtful whether it will succeed. A similar effort was made in Philadelphia a few years ago, and it petered out finally. The last legislature passed a law which goes into effect the 1st of November, that after that day cattle brought into the State must be examined and pass the tuberculosis test.

Q. I will ask you if it has not been established in New York that tuberculosis is contagious?—A. Medical men claim, I believe, that it is not contagious; and yet, if you put a tuberculous cow in the stall and two healthy animals on each side, the chances are the other animals will show the effects of the disease sooner or later.

Q. I believe it is held by the medical world that it is not contagious between man and man?—A. I will say that recently we went into a herd of 30 or 40 animals and took out 17 or 18 of them. We put them in the same stable, and they were there about 12 weeks. The man wanted them all tested, and some 8 or 10 of those calves were condemned and showed traces of tuberculosis. The first inference was that they had been nursed by a cow that was tuberculous; but one of the veterinarians, and I think his judgment is very wise, gave it as his view that this vitiated air was the cause of those calves taking the disease. It was very close, and they were there from their birth, not only taking milk which was contaminated, but breathing the air. Therefore I think his reasoning was correct.

WASHINGTON, D. C., June 21, 1899.

THE TESTIMONY OF MR. JOHN O. MAGIE,

Farmer, dairyman, and stock raiser, Elizabeth, N. J.

The commission met at 10.55 a. m., Second Vice-Chairman Gardner presiding. At 2.15 p. m. Mr. John O. Magie appeared and, being duly sworn, testified as follows:

Q. (By Representative GARDNER.) You may state your name and residence.—A. John O. Magie, Elizabeth, Union Township, N. J.

Q. What is your occupation?—A. Farmer, milk raiser, and raiser of thoroughbred stock.

Q. As to the condition of the dairy business in New Jersey—what do you say?—A. In sections of our State where we can retail the milk from our own wagons, it is done at a profit. Raising milk for New York City markets in our vicinity can be done at a loss only.

Q. Then, I understand, your milk can not be raised and sold to the milk dealer at a profit?—A. The New York milk dealer I spoke of. There are people in our township who raise milk and sell it for Elizabeth and Newark markets.

Q. Milk can not be produced in New Jersey for the wholesale market at a profit?—A. That is correct.

Q. But the dairy business may be profitable if the producer is his own retailer?—A. That is the fact.

Q. The dairy business is carried on in New Jersey very extensively, is it not?—A. It is.

Q. All the way from Sussex down to Salem and Cumberland counties?—A. Yes; the northern parts. In all the upper parts of the State they very largely ship their milk to New York.

Q. The development of the dairy business in New Jersey to its present extent is comparatively recent?—A. It is.

Q. At what period would you put it?—A. In our neighborhood we commenced selling milk about 1840; but that was then shipped to New York.

Q. What caused the New Jersey farmer to turn from the regular lines of agriculture pursued theretofore to dairy farming?—A. The West could undersell us on grain and all their products, as the carrying powers were increased to bring them to the people.

Q. The larger productions of the West and facilities for transportation reduced cereals.—A. Potatoes can be raised to an advantage now; we raise them in our county largely for the early market. After the potatoes will do to ship from New York State they can undersell us; at least, they can sell at prices that make it unprofitable for raisers in our section of the State.

Q. The only crop of potatoes marketable is the one you can market before they come in from New York?—A. Ordinarily. Some farmers keep them all winter for a fair return. Prices are generally best on early potatoes.

Q. How does the dairy business compare with what it was 10, 12, or 15 years ago?—A. Prices are a little lower and people demand better milk, put up in better shape. We are bottling milk mostly now.

Q. Is the competition by reason of transportation facilities growing in the dairy business?—A. Yes; competition all around us is growing. People who were formerly market gardeners are leaving it and are raising milk, for the reason that we are crowded out of the gardening market by Southern raisers.

Q. You are driven out of ordinary agriculture by the West, and the South, if I understand you, is crowding out the trucker?—A. Yes, largely so.

Q. So that milk is all that you have left?—A. That is somewhat so.

Q. And even in that conditions are becoming harder?—A. Yes.

Q. From what cause?—A. More are going into it; people are leaving trucking and going into it. Towns are growing up, but not as fast as the supply is increasing.

Q. What about refrigerator cars in transportation, or the equally low price for the long haul out of Orange County, etc.? What effect is that having?—A. That is having an effect in New York State, not with us. In our county we do not raise any milk for New York City.

Q. Is it affecting the dairy business generally in the State?—A. It is affecting shippers all over the State.

Q. What is your opinion as to the future prospect of the dairying business in New Jersey?—A. I think we have touched bottom; I think we are on the upward; in other words, there is a limit.

Q. You think conditions will become no worse; that you have reached the height of practicable competition?—A. That is my opinion. There are no statistics to prove it.

Q. (By Senator MALLORY.) What other business besides the production of milk have the dairymen of New Jersey? Do they produce anything else?—A. In some sections they are producing corn and hay to some extent.

Q. They farm as well as carry on the dairy business?—A. Yes; in some sections they are raising and feeding stock to some extent.

Q. Raising stock for sale?—A. Yes.

Q. What kind of stock—cattle and horses?—A. Cattle and sheep. Very few horses raised in our section; in some sections of the State a few horses.

Q. Does this class of people make butter as well as sell milk?—A. Some localities make butter, but selling milk is the general practice.

Q. Have you any cheese dairies in the State?—A. Not in our part of the State. I do not know of any.

Q. What is the average price of milk per quart for use in Elizabeth? What do you get there in your locality?—A. Seven cents a quart delivered. Within a year it was 8 cents. A year ago this last spring it was lower—from 8 to 7 cents at retail.

Q. Sold for consumption in New York, what would you get at your place?—A. About 2 cents would be the price. We formerly got that when we shipped to New York or sold to the man who did ship it.

Q. You sold to a middleman?—A. Yes.

Q. How far is your town of Elizabeth from Jersey City?—A. Thirteen miles.

Q. Is any milk made in your locality sold in Jersey City?—A. I do not know of any.

Q. You say you can not afford to ship to New York. Would that remark apply to Jersey City?—A. I should think it would, although I think Jersey City is largely supplied by dairymen near the city; but the New York supply comes from a distance.

Q. Were it not for the nearness of the city of Elizabeth, you would probably have much lower prices than 7 cents a quart?—A. Yes. Newark is 6 miles from us, and that is five or six times as large as Elizabeth, and of course there is a great deal of milk sold there, shipped in from Morris County largely.

Q. Have you any electric roads running into the country from these cities by which you can ship milk?—A. Nothing that can be used for shipping at present. They are agitating that question. I was up at Passaic a few months ago; we can go all the way there by electric roads, but there is no shipment of any produce being made.

Q. What is the average number of cattle that the dairymen of New Jersey keep on hand?—A. I am not posted on that. We are milking about 50 head—one of my sons and myself—on two farms.

Q. How many acres have you?—A. We are cultivating a little over 200 acres.

Q. Does that furnish pasturage during the summer for your stock—50 head?—A. It affords ordinarily fair pasturage. We have a great deal of young stock, 50 head, making 100 head in all; but this season being uncommonly dry we are feeding, of course; in fact, we expect to raise corn and feed dry feed the year round.

Q. You feed dry feed the year round?—A. Yes.

Q. What do you do for forage in winter?—A. Corn fodder, hay, cornstalks. We raise corn for the corn as well as the corn fodder alone.

Q. Are there any special diseases that trouble your cattle or cause them to deteriorate in your part of the country?—A. We are troubled in our section of the country sometimes with tuberculosis, and it is very detrimental to us that we have not a law to prohibit cattle being shipped into New Jersey without being tested for tuberculosis. Our legislature has not seen fit to pass a law that would prevent shippers of stock from dumping the stock upon us without being tested.

Q. Can you state what is the average yield of your milch cows in your dairy and the dairies similarly situated in your State?—A. We consider a very good cow one that will average 10 quarts for 365 days; seldom that we can get one.

Q. That is above the average, is it not?—A. Yes. There is a dairyman in our neighborhood that has done that, but it is seldom that any number will do it. He has a small dairy and has been a very practical man.

Q. Your dairymen, as a rule, pay some attention to the improvement of their stock?—A. As a rule, they do. In later years they have done a great deal on that line.

Q. Is there any particular breed of cattle that they prefer for dairy purposes in New Jersey?—A. The Ayrshires are very popular. Jerseys are wanted by those who sell cream. Guernseys are good.

Q. Do you have the full-blood Jerseys there for that purpose?—A. Yes.

Q. How do they stand the climate?—A. They stand the climate well. The trouble is to get those that will give milk enough to pay. It is very hard to get a Jersey herd that can be made to pay.

Q. (By Representative LIVINGSTON.) What amount of milk do you expect from a paying cow?—A. For selling milk you must get one that will average 6 or 7 quarts a day the year round, and very few Jerseys will do that.

Q. (By Senator MALLORY.) Do your dairymen raise cattle for the market?—A. Not as a rule; usually do not raise enough for their own use. That is the reason we can not get any law against tuberculosis. There are a great many fresh cows brought in for sale. Dealers in that stock and their friends do not want any hindrance put upon bringing in that stock.

Q. What portion of the dairymen raise beef cattle for sale?—A. There are no beef cattle raised in our vicinity and very few dairy cattle, and there is not one dairyman in a hundred who raises calves enough for his own use to keep up his dairy.

Q. I also understood you to say you raised sheep?—A. There are sheep raised in the State, but none in our vicinity. The first sheep I saw after leaving home was down near Trenton.

Q. Is that because you have no pasturage for them?—A. We have run into milk; and the dogs drove the sheep away.

Q. (By Representative LIVINGSTON.) Can you make more money off milk, butter, and cheese than you can off mutton and wool?—A. Yes; they can be shipped 1,000 or 2,000 miles about as cheaply as we can get them into the market.

Q. (By Representative GARDNER.) You have stated milk usually retails for 7 cents. What is it in Newark?—A. About the same. Some milk is sold down to 4, 5, or 6 cents.

Q. What is the retail price in New York?—A. Five to 8 cents. I think Mr. B. C. Seers told me he was getting 8 cents in New York for bottled milk shipped direct from his farm.

Q. What do you know about that combination of milk dealers in New York that absolutely regulates prices, and the farmer takes just what they elect to fix the price to be?—A. I know nothing about that, from the fact that I have had nothing to do with them; we have sharp competition right around us.

Q. You know as a fact that the wholesale price is 2 cents a quart and the retail price in the New York market is 7?—A. That is the highest retail price for the best goods. There is, as I said, milk sold for 4 cents.

Q. What does it retail out of the can for—not bottled milk, not something fancy?—A. Seven cents from the can.

Q. The difference between the wholesale and the retail price is 5 cents?—A. Yes.

Q. (By Senator MALLORY.) Can you undertake to say what is the average number of milch cows on the dairy farms in New Jersey?—A. I could not say.

Q. What number of milk-giving cows would be the least that you think a man ought to undertake to carry on this business with?—A. There are people in our vicinity who have started with one or two and grown to a good business.

Q. He must have land?—A. Many have only a city lot or one or two city lots.

Q. How about the grazing of these cattle?—A. He would keep them on the commons about the cities, and in a stable and feed.

Q. In the country where there are no commons?—A. In the country people ordinarily are occupying farms, and have pastures to keep them on; expect to have some pasture and utilize ground feed and dry feed as well.

Q. (By Representative LIVINGSTON.) Did you ever try a combination of the milk producers against those New York people; did you ever try a milk combine on them?—A. We never have.

Q. (By Representative GARDNER.) Is there any statement you would like to make on any matter you think important?—A. In the matter of labor, farm laborers are receiving more in our vicinity than they did 30, 40, or 50 years ago. Competent farm laborers are receiving more, and their hours are shorter than formerly. Of course, in the dairy business we have to make long hours, but they are shorter than they were some years ago.

Q. (By Representative LIVINGSTON.) What are your dairy hours?—A. From 4 o'clock in the morning until—we are trying to make it 6 in the evening. We run over that in some seasons.

Q. What are the wages?—A. From \$12 to \$20 a month and board, or \$30 or \$35 and house rent for competent men.

Q. You mean you pay that money to what you call competent labor?—A. Competent.

Q. You do not take indiscriminate labor and pay those wages?—A. We usually pay \$12 to \$20 and their board, not indiscriminate. They must be good, competent men for \$20 a month, men that are not only good milkers, but good farmers, as it were—teamsters.

Q. (By Mr. A. L. HARRIS.) Do you know whether an independent producer could establish himself and sell his milk in New York?—A. My impression is that he could, although some men that have had abundant means behind them have abandoned it, and that recently. There was the Havemeyer estate that sold their stock at auction a year ago last month. Mr. Meyer, the son-in-law, who carried it on, said he could not realize off his milk. He had a dairy store in New York where they were selling gilt-edge milk, and he said he could not realize enough for it to pay his bills.

Q. Did he assign a cause for not being able to?—A. Competition. Prices were reduced. They used to get 12 cents a quart for Jersey milk put up nicely, shipped in ice refrigerator cars and kept on ice; but the price was so reduced that he abandoned it.

Q. You are not aware of any combination?—A. No combination that I am aware of in that line.

Q. (By Representative GARDNER.) Do not they have a milk dealers' association in New York?—A. They have. Of course, that is the foundation of it, but there have been a good many independent dairies that have shipped their milk in in bottles. Up at Fairfield there is a dairyman who has—I saw it published not long ago—385 cows. They are shipping their milk to Newark or, rather, they are carting it there, through the Oranges, and selling it and retailing it about, and they are doing a large business. Whether it is actually profitable or not I am unable to say.

Q. You do not know whether, if an independent milk dealer starts in to get a

route in New York—whether the milk dealers' association put down prices on that route to drive him out or not?—A. I have heard it said they have done that, but from my own knowledge I could not say positively.

Q. It is the understanding, is it not, that they do that?—A. It is so understood.

Q. (By Mr. A. L. HARRIS.) You say the milk you ship to New York you get 2 cents a quart?—A. That is the summer price, as I see from the papers.

Q. And it is sold at 7 cents a quart—who gets the benefit of the 5 cents?—A. The New York wholesale dealers, as they are termed; the middlemen.

Q. (By Representative GARDNER.) One-half cent a quart, 20 cents a can, goes as freight?—A. Yes.

Q. (By Mr. A. L. HARRIS.) How many hands does that pass through before it reaches the consumer?—A. These middlemen would have the milkmen come to Jersey City, where the cars land it, or New York depot where it lands, and load their milk, take it where they want it; that would be the practice. There are wholesale men in Newark who have their wagons drive through the upper part of Sussex County and Morris County and come back loaded with milk.

Q. In your opinion, who makes the greatest profit from the milk, the producer or the middleman?—A. The middleman.

Q. (By Mr. FARQUHAR.) Is not the profit of the middleman in milk divided between the two? Are there not two parties to it?—A. Yes.

Q. First of all, there is the man who pays the freight and receives it, and then it is scattered out to what are commonly called the peddlers?—A. Milk peddlers.

Q. These peddlers must keep their own horses and drivers, and collect their money, and everything of that kind, and also they furnish the small retail stores all over with their milk?—A. Yes.

Q. These parties all have a profit?—A. Yes.

Q. Now, can you give us an idea about what that average is to a man with horses and wagons; that is, considering the keep of the horses and the hire of the men, for instance, for a day in New York?—A. I can not, correctly.

Q. Independent of the freight, that is 4½ cents to divide, and I suppose there is 1 cent given to the man who has the sending out there in New York, and there is 3½ cents to divide; and that is all there is between the consumer and the man who first of all gets his cans on the wagon and does the whole distribution and the whole collection, and keeps his horses, and at the same time takes care of all this?—A. Yes.

Q. (By Representative GARDNER.) Do you state the fact under oath that there are two of the wholesale men in New York? In Philadelphia the wholesale man generally has his own wagons and serves his own several milk routes. He does not sell it to the peddler.—A. No, he owns the wagons; he owns the horses; and he serves the milk routes.

Q. George Abbott has a third of Philadelphia, has he not?—A. Yes.

WASHINGTON, D. C., June 22, 1899.

TESTIMONY OF MR. JOSEPH B. AGER,

Master of the State Grange of Maryland.

The commission met at 10.50 a. m., Mr. A. L. Harris presiding. Mr. Joseph B. Ager, Master of the State Grange of Maryland, being duly sworn, testified, following the topical plan of inquiry on agriculture.

Q. (By Mr. A. L. HARRIS.) State your name and address?—A. Joseph B. Ager, Hyattsville, Md.

Q. You may state your occupation.—A. Farmer and dairyman. Principal business is dairying.

Q. How long have you been engaged in dairying?—A. Twenty years on the 1st of last May; in Maryland.

Q. How largely are you engaged in the business?—A. I keep from 40 to 50 cows.

Q. Where do you market your dairy product?—A. Washington.

Q. In the shape of milk, butter, etc.?—A. Milk and cream.

Q. You do not manufacture butter or cheese?—A. No.

Q. Has there been an increase or decrease in the agricultural labor of your State or vicinity in the last 30 to 40 years?—A. Throughout the State there has been a

decided decrease, from the fact that 40 years ago there was a great deal more land under cultivation than there is at the present time. There are a good many farms and plantations, cultivated at that time, which are not cultivated at all now, and a great deal has grown up in timber. Along the lines of railroad many farms have been subdivided into small town sites. Small towns have grown up along these lines. I should say there has been a decided decrease in the number employed.

Q. What is the condition of those employed compared with former years?—A. They are not in as good condition as they were at that time, although there are exceptions. In every locality you will find thriving industrious farmers making money, but the average condition, I should say, was below what it was 40 years ago.

Q. What effect, if any, has improved machinery had upon the advance or decrease?—A. It has a tendency to decrease, from the fact that with improved machinery farmers do not require the amount of labor they did before. During the harvest, where we used to have 5 or 6 men, 1 or 2 answer now with improved machinery. Self-binders, mowing machines, hay loaders, and horse pitchforks do away with a great deal of labor.

Q. What effect does that have on the drudgery of labor?—A. It makes it much lighter. With machinery a great deal is done riding that used to be done walking.

Q. Is employment regular or irregular in your State?—A. That depends a good deal upon the employee. Our labor is mostly colored, and during the summer season, when they can get employment most anywhere, we can hardly ever keep them more than a month. I would be glad to keep a good hand right along, but they flock away to the city, and when they can get work it is for shorter hours and larger pay. The employees themselves are the cause of the irregularity largely.

Q. What are the hours of labor in your business?—A. Generally from 4 or 5 o'clock in the morning to 7 or 8 at night—long days. I once heard one of our public speakers say that the farmers had settled the 8-hour question by having 8 hours before dinner and 8 after.

Q. What are the hours of labor in other agricultural pursuits outside of dairying?—A. About the same.

Q. What have you to say about the average number of days the laborer is employed?—A. In dairying it is 365 days in the year, and in other occupations there is not as much employment in winter. In our neighborhood it is largely according to contract. They keep some labor during the winter, but not as much as during the growing season.

Q. What, if any, is the tendency of agricultural labor to seek other employment?—A. They will seek other employment when they can get less hours of work and better pay.

Q. Does that prevail to any great extent?—A. Yes; quite a great deal, especially in this season. There is a great deal of work going on in this city, and the best labor flocks into the city.

Q. A great deal of labor?—A. There is more this season than for several years.

Q. (By Mr. FARQUHAR.) What are the wages prevailing for agricultural labor by the day, month, or year?—A. We usually hire very little by the year. It is usually by the week, day, or month. Ten dollars a month would be the minimum and \$15 the maximum amount. They are boarded at these prices. Seventy five cents and \$1 a day when they board themselves.

Q. When they come to Washington and get \$1, \$1.25, and \$1.50 a day they care for themselves?—A. Yes.

Q. (By Mr. A. L. HARRIS.) What is the cause of the difference between the maximum of \$15 and the minimum of \$10?—A. Well, often in the season of the year, and then in the difference in help. Some men are better worth \$15 than others are \$10.

Q. Do you pay in cash?—A. Yes.

Q. How frequently do you pay?—A. Those employed by the week we pay by the week; those employed by the month expect to be paid by the month, but they almost always want more or less every week.

Q. What have you to say in regard to tenement houses?—A. Most farmers have them, more or less. I have three tenements on my place.

Q. You may state the terms upon which the occupiers of your tenement houses work for you.—A. I have the houses with the view of having my own help in them. I thought I would have more reliable help, but I find I was mistaken in that. In fact, of the tenants of the three houses I have not one is employed on the place. They go outside and go to somebody else.

Q. Describe the houses.—A. Usually small, perhaps three rooms; about the general size of that.

Q. Of what are they constructed?—A. Usually frame, lath, and plaster; quite a comfortable house, but small.

Q. What appurtenances go with the houses?—A. Generally a garden spot, perhaps a quarter of an acre of ground. That is more than most of them will cultivate.

Q. Is that all free?—A. Yes. I charge \$4 a month rent and they have the use of the garden spot and such down fuel as they may pick up about the place.

Q. When you furnish the tenant house with a garden spot and hire 'he help and charge \$4 a month rent, how much do you pay?—A. We pay about \$15 a month.

Q. Does he board himself?—A. No; he is boarded.

Q. (By Mr. FARQUHAR.) Is it in the form of rations?—A. No. That used to be the custom years ago, but not at present very much.

Q. (By Mr. A. L. HARRIS.) What does he raise on that garden spot?—A. A few garden vegetables, potatoes, and corn, and possibly some watermelons.

Q. Can he raise sufficient vegetables to support his family?—A. They do not do it. Some classes of tenants, like the Germans in the West, on a piece of that size, would raise enough to support themselves, but the colored tenant hardly will use the ground you give him.

Q. What time, if any, do you give your tenants to till this?—A. We usually plow it for them and they work it at night or early in the morning. Their wives often do some of it; generally do more of it than the men.

Q. You do not give them so many hours a week to take care of it?—A. No.

Q. (By Mr. FARQUHAR.) Do you give them any time on Saturday, as is given in the South—about 3 or 4 hours Saturday afternoon?—A. Not as a general thing. We aim to get through the work a little earlier on Saturday night than other times; but it is owing to the condition of the work we have on hand.

Q. That would drive the tenant to the cultivation of his garden spot on Sunday?—A. It would if he took much pride in cultivating it.

Q. Do they put in any Sunday work on that garden?—A. No.

Q. Do you rent any of your land?—A. No.

Q. Is that practiced?—A. It is in some localities.

Q. You may state on what terms.—A. That depends a great deal on the condition of the farm, locations, etc.

Q. Is that cash rent or crop sharing?—A. More apt to share crops; do it in southern Maryland. I know one gentleman who furnishes everything and he gives the tenant one-third of what is sold off from the place. In other localities, where land is in better condition and they raise better crops, they furnish usually one-half the seed and give one-half the crop.

Q. Have you an opinion as to the practicability of that method of renting, both for the tenant and landowner?—A. Well, I do not think, as a general thing, it is very desirable for the owner; in fact, it is very difficult to get men to rent a farm who have sufficient energy to work it as it should be. It is very hard to get work done at the proper time and in the proper manner, from the fact that the man who is industrious enough to rent a farm, and work it as it should be done, usually has a farm of his own. Owing to the cheapness of land in Maryland, a man with much ambition or much energy is able to have land of his own and not rent land.

Q. Do you practice loaning to your tenants who cultivate your land?—A. In some localities they do. Sometimes they get short of grain, etc., and the owner perhaps will sell them the grain at the market price, and then when the crop is harvested he returns the grain at the then market price.

Q. I am anxious to know whether you have any general way of doing that?—A. No, I think not.

Q. Does not prevail to any extent?—A. No.

Q. You have nothing in the nature of liens on crops?—A. No. As far as Maryland is concerned, especially in the southern part, where they grow tobacco, which is a crop that does not bring in money frequently, they go to Baltimore and obtain supplies from the merchants there, and I presume they take a lien on the crop. They obtain their fertilizers and necessary provisions, and so on, and when they sell the tobacco they settle with the merchants. That business is done more with the merchant than with the owner of the farm.

Q. Not done by the local merchants?—A. No. Generally done by the men in Baltimore.

Q. (By Mr. A. L. HARRIS.) To what extent is that done?—A. Quite largely, I should judge, through southern Maryland and other localities where they grow tobacco.

Q. What is the effect on the tenant?—A. I think it has a depressing effect. He would be better off and more thrifty if he were able to pay cash for what he bought and then have his crop left.

Q. Do you know anything about the terms on which these advances are made?—A. No; I do not.

Q. Have you any immigrants in that locality?—A. Very few; they are mostly Germans.

Q. What is the character of those you have?—A. Those we have are very good immigrants. I think Germans are about the best class of immigrants we have. They are generally thrifty and industrious. I have known them to come and go out to work on a farm as laborers and in a few years have land of their own.

Q. Do they make good citizens?—A. Make good citizens.

Q. (By Mr. FARQUHAR.) These were men of experience in farming before they came here?—A. Undoubtedly.

Q. Do those immigrants there settle on farms or small property near the cities?—A. Generally about cities, and engage in trucking. It requires less capital. With a few acres and an old horse or two they can go to trucking, and it does not require the capital that it does to buy a larger tract and go into general farming, stock raising, etc.

Q. Is there much truck farming in Maryland?—A. A great deal near Washington and Baltimore. In Baltimore County and Prince George County there is a great deal of it done.

Q. Is truck farming a paying business?—A. It formerly was very profitable; especially if a man understands how to maintain the fertility of the land and grow the best crops. Some have greenhouses, where they grow winter crops; that is quite profitable. But many of them complain that they can not any more than make both ends meet.

Q. Is there ready access in the cities to manure and other crop fertilizers; is it cheap in the city?—A. Not so very cheap, considering the comparative value.

Q. What is the price in your locality?—A. They charge about 75 cents to \$1 for a 2-horse load in the city, and haul it out, but since they have got the improved stables here, where the liquid portion goes into the sewer, about all they get is dirty straw, and that is not very valuable. I believe if the gardeners would work less land and try to enrich their land with clover, cowpeas, and other leguminous crops they would have more money at the end of the year than in hauling so much manure. I think Professor Voorhees, of the New Jersey experiment station, said that the average ton of horse manure has not over 28 pounds of plant food in it, and when you pay \$1 a load and haul it out you are paying a pretty good price.

Q. (By Mr. A. L. HARRIS.) What effect on American agriculture have the Germans you spoke of; is the effect to improve or lessen the condition of the agriculturist?—A. It has improved the condition. They certainly set us good examples in everything. They are industrious and economical and some are our best citizens. One of the leading men in our neighborhood is a German, a man who has accumulated quite a good property through industry and economy.

Q. Would you suggest any changes in our present laws in regard to immigration?—A. I think you have stringent laws against importing criminals and paupers.

Q. I had more reference to encouraging good citizens?—A. I think there is a grand opening for immigrants from foreign countries in portions of the North and West and in Maryland. There is land lying between this city and Baltimore as fine as ever lay out doors, and all it needs is intelligent cultivation to make it produce, and they can have a home market for all they can produce.

Q. Have you a large amount of colored labor?—A. Nearly all colored labor.

Q. What is the efficiency of your labor?—A. Some of them very good, but as a general thing you have to have some one right with them to superintend and see that they do the work properly.

Q. Do they become intelligent hands after experience?—A. Not very many of them. There are very few whom you can trust to go on and do a piece of work properly unless you have a foreman right with them.

Q. You do not consider colored help as valuable as white help?—A. It depends on the kind of white help. The white help in the South is not much better than the colored, but the German, Dane, and Norwegian are different. I lived for 25 years in Wisconsin, and although we paid them higher wages it was cheaper help than we hire here.

Q. Do the colored help improve by experience on the farm?—A. Not very much.

Q. Do they take to farming as a matter of taste?—A. I think not. I think they would rather come to the city here and black boots than work on the farm.

Q. What is the school age of children?—A. Six years to, I suppose, about 20.

Q. Are the facilities for public instruction in your State sufficient?—A. I think they are for the white, but I think there should be more schools for the colored. I think there is a lack of schools for colored children.

Q. You may state the difference in the facilities for educating the white and the facilities for educating the colored children?—A. As a general thing they look after the schools for the white better than the colored, but I think, perhaps, they have good teachers. There is one thing about it: I can say for the colored children that many of them are more anxious to get an education and go a longer distance to get it than the whites.

Q. You have separate schools and separate teachers.—A. Oh, yes.

Q. What is the condition of your schoolhouses, as a rule, for both white and black?—A. As a general thing, good.

Q. And your teachers?—A. Very good teachers. They have to be qualified and have a good grade. Many of them are graduates of normal schools.

Q. Have you any compulsory law?—A. I think not.

Q. What is the average attendance, if you know, in the year?—A. I could not say, only so far as our district is concerned; that averages about 40. We have to have that average in order to have it a graded school.

Q. What is the average enrollment?—A. I think about 50 in our district.

Q. Have you free schoolbooks?—A. Yes; furnished by the State; a law passed, I think, by the last legislature.

Q. Do you have any truant law?—A. No.

Q. You feel the adaptation of your public school curriculum is equal to the wants of the agricultural people, do you?—A. No; I do not. I think agriculture should be taught in our schools—nature studies.

Q. You may state in a general way what is taught in your schools, and then you may explain your idea of enlarging and teaching subjects which pertain to agriculture?—A. The usual studies taught in our schools are arithmetic, geography, grammar, reading, bookkeeping, and writing. I think that agriculture should be taught, for I believe that it is as important that every boy should be taught agriculture as it is for a young man if he intends to be a lawyer or a doctor to be taught those professions. I think they should teach agricultural chemistry in order to be able to analyze the various soils, to be able to analyze the fertilizers and know their value. I think in the primary school the first principles of agriculture should be taught and, where it is possible, they should go to agricultural colleges and have practical lessons. It is very important in dairying now that a person should understand that thoroughly; should be able to use the Babcock tester, to know the value of his cows, the amount of butter fat in the milk, and how to select a good cow. I think that should be taught at the colleges and experiment stations in our State.

Q. You have an agricultural college in your State?—A. Yes.

Q. Have you an agricultural farm connected with it?—A. Yes.

Q. (By Mr. FARQUHAR.) Where?—A. At College Park.

Q. Is that well attended?—A. Yes. Since President Sylvester has been president of the college they have had to build an addition to accommodate the students.

Q. Any branches taught besides agriculture?—A. The mechanical arts, horticulture, and dairying.

Q. Do you teach the classics?—A. Yes; I think there are more of them educated for that than there are for agriculture.

Q. Do they get a diploma for different courses of study?—A. I think they do.

Q. Do they receive a diploma for the agricultural course, say, bachelor of agriculture?—A. Yes.

Q. You have a scientific course?—A. Yes.

Q. A separate diploma is given for that?—A. Yes.

Q. You have a mechanical course?—A. Yes.

Q. And give a diploma for that?—A. Yes.

Q. Have you an experiment station in your State?—A. Yes.

Q. You may state how efficient you think that is.—A. That has been a great help to the farmers of Maryland. Those who will take the pains to get the bulletins (which they can by sending their address) read them. It has been a great help to the farmers. They often let the professors come out to our institute meetings and Grange meetings and give lectures on various subjects, and that is of great benefit to the farmers. As an illustration of what they accomplish I will name one thing: Last year the average crop of wheat throughout Maryland was not to exceed 20 bushels per acre, but on a field of 12 acres at the college they had 40 bushels per acre. I inquired of the professor of agriculture how it was done. He said he attributed the small crop of wheat throughout the State to several causes. One was, on the 1st of April we had a very warm time a year ago; wheat took a very vigorous growth, and then the last of April it turned cold, pretty nearly snowed, and consequently wheat looked very poor. This weak plant was like a weak individual—disease attacked it. He thought that was one of the causes

of the light yield. I asked, "How is it that you have such a large yield?" He said, "We were looking at it, and I told the president of the college, 'the farmers' clubs are coming to visit us and we must do something for that wheat.' We went to work and sowed 100 pounds of nitrate of soda per acre, and it came right on. We attributed the yield to the fact of the sowing of 100 pounds of nitrate of soda per acre."

Q. He determined that by knowing the kinds of plant food necessary?—A. Yes. To show the benefit of the knowledge we got in the growing of early potatoes last year. I went to Professor Patterson to get a formula. In our grange we get the chemicals, instead of mixed fertilizer, and mix them ourselves according to the formula given by Professor Patterson. He gave us the formula, but did not put in any nitrate of soda. Some of our members thought it was strange and so I saw the professor and said: "Our members think it strange that you did not put in any nitrate of soda." He answered, "I did not put it in because I was afraid it would get away from you. It is very soluble and if you were to put it in the drill the spring rains would dissolve it and it would get out of reach by the time the plant would develop to take it up. If you want to use nitrate of soda, mix 100 or 200 pounds of phosphate, and sow it on the row when the potatoes come up." Some of us procured the soda and phosphate and sowed it under his direction, and we left several rows that we did not put it on. During the time the potatoes were making the weather was very dry, and this soda caused the vines to make very rapid growth and shadow the land and protect it from the drought, and where the soda was put on there was a good crop, and where we did not put on the soda there were hardly any marketable potatoes. That made several hundreds of dollars to those who used the nitrate of soda.

Q. Have you ever experimented in top-dressing to your pasture lands?—A. Yes; and we have used nitrate of soda; not especially on pasture lands, but on our hay crop; sowed 100 pounds of nitrate of soda per acre on the grass just as it was starting and it often increased the crop 1,200 to 1,500 pounds to the acre.

Q. Have you experiment farms under the control of the experiment station, except at the agricultural college?—A. In some cases they have experimented with various kinds of crops in other portions of the State.

Q. You have a variety of soil in Maryland?—A. Oh, yes; a great variety.

Q. Have your experiments at the experiment station gone far enough to test the different varieties of soil in different portions of the State?—A. No; I do not know that they have. The fact is, about all that is necessary for any soil is nitrogen, phosphate, soda, and potash. Large amounts of them they claim are in the soil. The great trouble is to make it available. This is done by the use of lime, which is a great help in many instances, and thorough tillage.

Q. (By Senator MALLORY.) You stated that the principal labor is negro labor; is there any other, to any appreciable extent?—A. Not very much.

Q. In your section of the State?—A. No.

Q. Do you know anything about the western and southern part of the State?—A. No, I do not; but I think as a general thing it is nearly all negro labor.

Q. Are these negroes that work on the farm, as a rule, stationary or migratory?—A. I think back from the cities they are more stationary than near the cities. Near the cities they are migratory.

Q. As a general rule they are hired labor?—A. Yes.

Q. Any of them do farming on their own account?—A. Once in a while; but not very many.

Q. Is there any requirement in your State that a man shall live in a certain school district in order to have his children attend that school?—A. I think not. There should be a law, but I do not think there is. If there is it is not enforced. In our school district they will go to Hyattsville, Brookland, or come into the District.

Q. What is your observation regarding the literacy of the average negro laborer?—A. They are improving.

Q. Many of them read and write?—A. Quite a good many of the younger ones; most of the younger ones can.

Q. What is their character for orderly life and demeanor—morality?—A. I do not think they are up to the whites by any means. I was on the grand jury at Marlboro, our county seat, and I think nearly every case brought before us was a colored case.

Q. What is the relative proportion of population of whites and negroes in that county?—A. I should judge there were about one-third colored.

Q. Do you consider the proximity of a large city like Washington as tending to bring about that effect?—A. Yes; I do. I think there is not as much criminality as you go back from the city; there are not as many criminals as near the city.

Q. (By Mr. FARQUHAR.) What are the reasons, if you know, for the crime among the black people?—A. Well, I think the use of intoxicants. They usually want a little money Saturday night, and they go down to Bladensburg, or wherever liquor is sold, and they get into cutting or shooting scrapes. They are generally under the influence of liquor.

Q. Have you local option in the counties in Maryland?—A. In Montgomery County they have local option. I think in several counties they do.

Q. Do you regard that making this county "dry" is some prevention against crime?—A. Yes; I do. A few years ago we had local option in Prince George County, and the sheriff of the county told me there were not nearly the number of arrests and the county expenses were much less.

Q. What is your observation of the percentage of crime caused by drunkenness?—A. I should judge almost nine-tenths.

Q. Do you think that drink is the bane of the black race?—A. I do.

Q. Do you not think it accounts for the more than natural shiftlessness of the negro, and his carelessness, and his transient condition, traveling from one spot to another, losing time and opportunities? Do you think that drink is the main cause of both the crime and indolence?—A. Yes. I have a man living on my place now who has been sick ever since last summer. The doctor says he is going to die. His condition was brought on by drink.

Q. Do you find the negro laborer a faithful, docile man when away from drink?—A. Docile enough, but I have never found one that was very trusty—that you could depend on to do a piece of work. He goes away Saturday and you expect him back Sunday, but you can place no dependence on him. If the month is up and you pay him off, expecting him to come back the next day, maybe you will never see him again.

Q. Do they work faithfully enough under supervision?—A. If you have a man right after them.

Q. Are they quarrelsome or sullen?—A. As a general thing they are not, unless they have liquor about.

Q. Most of your farmers in Maryland are native Marylanders?—A. A great many of them. Quite a number of them are Northern and Western men.

Q. When did the Northern men come in there?—A. During the last 20 years.

Q. And those who take up Maryland farms usually become permanent?—A. Yes.

Q. It is noticeable to every man who passes, especially along the railroads of Maryland there, that there is a large amount of abandoned land. Can you say why it is that those farms are abandoned entirely to the brush and to the weeds?—A. I think it is because during slavery it was owned in large tracts, and when the slaves were set free the planters thought they could not do anything with hired labor, and they did not attempt to farm it with free labor, and the consequence was they went to living out these farms. They mortgaged them to get means of support, and they fell into the hands of merchants here in Washington. A groceryman here owned perhaps half of Prince George County, by furnishing goods and having to foreclose mortgages and take the land. That has thrown large tracts into the market, and they have them on their hands and want to dispose of them. Another thing which causes them to be unoccupied is that they have grown crops on them continually, crop after crop, until they have exhausted the land, and let it grow up to brush, weeds, and timber.

Q. What do these abandoned lands sell for now, especially in Prince George County?—A. Different prices. From \$6 to \$10 an acre. President Sylvester bought 200 acres for \$900 in southern Maryland, and he was so pleased with it that he and his brother-in-law bought 1,700 acres for \$10,000.

Q. Has there been much reclamation of these abandoned lands of late years?—A. They are taking hold of them now more than a few years ago.

Q. They are good soil and all they need is intelligent cultivation?—A. I remarked to Dr. Hill, near Marlboro, "You have good lands and all they need is intelligent cultivation, get the lands into clover, etc." He says, "The farmers down here do not want to raise any clover when they can get fertilizer in Baltimore by just signing a note."

Q. (By Senator MALLORY.) What, in your judgment, is the condition of the farmer of Maryland to-day as compared with what it was 20 years ago?—A. I do not think the average is as good as it was.

Q. To what do you ascribe that decadence?—A. The low prices for farm products and farm machinery has had a tendency to make these lower prices; and the opening up of the West.

Q. Sharper competition?—A. Yes. As a class, the farmers have not kept up with the times. They have kept in the same ruts. They have not endeavored to produce at lower prices, tried to keep up their land cheaper, and raise better crops;

they have raised the same crops year after year, and have not applied business principles to farming.

Q. Do you observe any impulse, under the stimulation of experiment stations and agricultural colleges, in the farmer to advance some in that matter?—A. Oh, yes; since the experiment station has been started. We succeeded in getting a bill through our legislature for a small appropriation for holding farmers' institutes; that has had a tendency to improve conditions. But the very class who need this instruction do not attend these institutes and meetings. They are the ones who are seldom there. They call it "book farming," call it "theory, not practice;" but there is where they are mistaken.

Q. Are you engaged in truck farming?—A. I am a dairyman.

Q. Do you know whether the importation from the South of early vegetables has any effect on the market here?—A. Oh, yes; it has a tendency to lower the prices.

Q. Is there any steady shipment from the South during the vegetable season, or is it sporadic?—A. Yes; generally through the season. It commences down in Florida and works along up the coast. Now the Norfolk early potatoes are coming in and keeping the market down lower than it would be if it were not for these.

Q. (By Mr. FARQUHAR.) You are not able to go into the market when Florida or the Carolinas come in?—A. Yes; but get lower prices.

Q. Nor when the Carolinas come in?—A. No.

Q. Where is the first line that touches you—Virginia?—A. Yes.

Q. You have the advantage, certainly, against crops of lower Virginia, have you not, in the market?—A. I do not know. The transportation, especially by boat, is almost as cheap as it would be to bring it from 10 miles out by wagon.

Q. Does any competition come from the South while your products are coming into the markets here?—A. In potatoes.

Q. What else?—A. Tomatoes, strawberries, etc.

Q. When you have the flush of strawberries here?—A. Not with the flush; that could not be.

Q. Do you export North after your season passes here, when you have an open market North?—A. Commission men do to some extent, but gardeners do not, though I think they should.

Q. You could not be under a disadvantage when you consider the Florida production and this middle production here of the District and Maryland, and the northern district of Pennsylvania and New York?—A. Yes; but there are various objections. The vegetables come up from the South, and the people have them until they get tired of them, and there is not the demand there would be if they had not had those.

Q. (By Mr. A. L. HARRIS.) Is the capital employed in agriculture as profitable as it was 30 to 40 years ago?—A. It is not.

Q. You may state the reason.—A. The lower price of farm products; and another thing, our taxes seem to be increasing all the time.

Q. If the price of the farm product is low for a series of years, it affects the price of land?—A. Yes; it affects the price of the farms.

Q. In other words, the more profitable the farms the higher the price of the land?—A. If wheat was bringing right along for a number of seasons \$1, \$1.50, or \$2 a bushel, farm lands would be sought for, and would advance in price.

Q. Compared with other business, how does capital employed in agriculture yield profit?—A. It does not seem to do near as well. You do not find capitalists investing in farms. They seem to prefer trusts, banking, and things of that kind instead of buying farms very much.

Q. Is it not a safer investment, when properly invested?—A. For my part, I would rather have what I have invested in my farm than in anything else. I can manage that, and I would be a poor hand to manage anything else.

Q. Taking the farmer as a rule, what is his condition, from your observation, as to the necessities of life—good living, getting out of life a comfortable living?—A. A good many seem to have it. That is one trouble—the farmers like to have their sons and daughters dress well and have as good horses and carriages, etc., as those engaged in other business; and it is often the case that the farm is mortgaged to do that. Thirty per cent of the farms in Maryland are mortgaged, and I am told by those who know that of those who were free from debt 20 years ago, many have mortgages on their farms to-day.

Q. You mean when the sons and daughters get a taste for dress and pleasure they neglect the duties of the farm?—A. Yes; I think so. The tendency of the farmer is to gratify his sons and daughters, and the profits of the farm are taken to pay it.

Q. Can the banker or the mercantile man on the same capital give to his family greater comforts than the farmer gives to his family, as a rule?—A. I could not say as to that. I am not familiar with banking. It is said, I believe, that 90 per cent of the people who go into the mercantile business make a failure, and I do not believe there are so many farmers.

Q. Are there many farmers who make failures?—A. Yes.

Q. (By Mr. FARQUHAR.) In other words, \$5,000 invested in your farm is a better investment in your mind to-day than \$5,000 put into a produce commission house down here on Louisiana avenue?—A. It would be for me.

Q. And you think that for yourself, family, and your peace of mind, in fact, your home comforts, you are 50 per cent better off than this man struggling here in the market with his \$5,000?—A. I think I would be. I would sleep better of nights and have better health.

Q. (By Mr. KENNEDY.) Do you look with favor on Mr. Havemeyer's suggestion that the farmers form a trust to regulate prices of their products?—A. I think it would be a good thing for them, if it is a good thing for other classes. But that is the last thing they would ever be able to accomplish. It would be the worse trust extant if they could do it, for a man has to have something to eat. There would be a howl if the dairymen should say no milk should come into Washington for a week.

Q. Is not the grange looking in that direction?—A. Not at all; no.

Q. They never discuss that subject?—A. No; they have never discussed it in a formal way. If cabbages are worth \$4 a hundred on the market and some man comes in and quietly offers \$3.50, the farmer would let him have them.

Q. Are Maryland farmers in favor of that kind of a trust?—A. I would be if it could be accomplished. I am quite sure it could not be. The only way we can do is to lump our orders and buy in large quantities. Our grange last spring bought 300 barrels of seed potatoes. We buy them in carload lots and make quite a saving. We buy our fertilizer, and there is quite a saving in freight; and when we come to sell, in certain instances we might ship off to certain points and combine to control prices. The only combination that I know of of this kind is what is called the Five States Milk Producers' Association, near New York. The dairymen have combined to a certain extent to maintain prices. There is a trust, formed in New York City, of dealers to handle milk and get it from the dairymen at their own prices. Through the influence of the American Agriculturalist the farmers formed what is known as the Five States Milk Producers Association, with agencies at nearly every shipping point on the lines that ship into New York; and at these stations they put up a creamery or cream separator, and have a man in New York to tell how much should come from each station, and they send on that quantity and keep the surplus off the market, and obtain a fair price. They made a contract with this syndicate in New York to furnish milk at \$1.17 per 100 pounds, whereas they were only getting before this organization 80 cents, about 2 cents a quart in summer and about 3 cents in winter. That is about the only organization of farmers that I know of that has accomplished anything in that line.

Q. (By Mr. A. L. HARRIS.) What have you to say about the taxation of agricultural property and its bearing upon agricultural property compared with other property in Maryland?—A. I think in Maryland and other States agricultural property bears a larger taxation in proportion to the profits accruing than any other, because it is all visible property. The assessor sees everything that the farmer has and it is taxed.

Q. That is supposed to be the case with all property, is it not?—A. That is supposed to be the case, but a great deal of invisible property never is taxed.

Q. How does it escape?—A. I believe many men would perjure themselves in giving a statement in regard to their property to be taxed when they would not in any other case.

Q. Who fixes the valuation in your State?—A. The owner first makes out his statement and then the assessors fix it to suit themselves afterwards although you can go before the board of review and get it cut down if it is not right.

Q. The merchant and banker are required to do the same, no exception?—A. Yes.

Q. Personal property?—A. Yes.

Q. How often do you value real estate for taxation?—A. I have lived in Maryland for 20 years and they have never had a general assessment until, I think, a year ago last summer.

Q. Is that true of city property as well?—A. I could not say as regards that. I think in Baltimore they assess oftener than that.

Q. What do you mean by general assessment?—A. During the regular assessment the treasurer goes over the district and sees the improvements made or

buildings put up. But a law was passed by the legislature, I think 2 years ago, and the assessors went around and made a list of all the property, both real and personal, and made a new valuation.

Q. Is your real estate assessed for taxation now at the same value it was 30 years ago?—A. Well, 20 years ago is as far as my judgment goes. They have increased it very much.

Q. Is your real estate as valuable as it was at that time?—A. Oh, yes; it is more so, as the city extends out that way.

Q. The State at large?—A. Through the State I could not say it is. It is only property contiguous to the cities that has increased very much. In Montgomery County and southern Prince George they lowered the basis of taxation.

Q. You have no regular period for reappraisal of real estate all over the State?—A. No. When they want a reappraisal a bill is passed by the legislature.

Q. (By Senator MALLORY.) Can you state the percentage of the State tax in Maryland?—A. I think 17½ per hundred is the State taxation.

Q. In addition to that you have a county tax?—A. Yes; I think our county tax is 90 odd cents on the hundred.

Q. Does Maryland have a tax for bonded debt?—A. I can not say for the State. Our county has, from the fact that a number of years ago they decided to borrow money and go on a cash basis, and they had to bond the county for, I think, \$80,000 to do it.

Q. Have you a State school tax and county school tax also?—A. Yes.

Q. Do you know what the State school tax is?—A. That is included in the whole amount.

Q. How do you build your public roads in Maryland?—A. They are not built at all, you might say.

Q. There is some law on the subject?—A. Yes; there is a law in regard to it, but it is a very poor law. The commissioners of the county appoint supervisors, and they generally appoint men of their own party as a compensation for political work; and that is about the way our road system is worked out.

Q. Is the fund out of which it is built a tax on the county?—A. Yes.

Q. People are not required to work the roads?—A. No. Gen. Roy Stone told us at the grange a year ago that \$600,000 had been spent every year in Maryland for the improvement of roads which were never improved, and I think he is about right. The roads are no better than 20 years ago. If the money was judiciously used, we should have had good macadamized roads all over the State.

Q. Each county has a road commissioner?—A. Our county is divided into 14 road districts or precincts, and there are 3 commissioners appointed for each district. Their duty is to go over the roads and see their condition and make a report as to the amount of money they need to have expended on them. I have acted as such commissioner, and we sent in a report, and 9 times out of 10 it was put in the pigeonhole and never taken out.

Q. If the commissioners make a report, the county is the one to furnish the funds?—A. Yes.

Q. Does the State furnish anything at all for the building of roads?—A. No. We have a liquor-license fund which generally goes to the roads.

Q. What becomes of your fines for criminal offenses?—A. I could not say.

Q. (By Mr. A. L. HARRIS.) Have you anything to say as to a remedy in regard to tax methods?—A. I think a system of annual assessment like in the West, if it could be done as cheaply as it is done there, would be more equitable than being assessed once in 10 years. Property changes very much in value during that time. When I first came to Hyattsville I had 20 cows and 3 horses. The treasurer came and took down the amount of stock I had. I paid tax on that for 10 or 15 years, while I had double that amount a good deal of the time. In a good many cases a good deal of property escapes taxation that way.

Q. Suppose your property should be reduced?—A. I would be paying tax on the full amount I was assessed for. I think there should be an annual assessment, and instead of having 3 assessors, as in these cases, 1 should be sufficient to do the work. It could be done economically, and would be better for the taxpayer and all classes of property. I think it would be a good thing if we could have an income tax. All corporations, etc., should pay their share of the tax.

Q. And everything else?—A. And everything else.

Q. What is your opinion as to the inheritance tax?—A. That would be a good thing.

Q. Both direct and collateral?—A. Yes.

Q. Have you any suggestions to reach stocks, bonds, money, notes?—A. That is the only way that I know of. They used to claim in the West they could not tax

mortgages—that is, of nonresidents—but they arranged that. They allowed the mortgagee to pay the tax and deduct it from the mortgage.

Q. What is the per cent of the decline of agricultural products, if you know?—
A. A good many have declined. Wheat, for instance, has declined 25 per cent, at least.

Q. That covers the entire farm product?—A. Yes.

Q. You may state whether there has been an increase or a decrease in the acreage under cultivation in your State in the last 20 years?—A. It has decreased.

Q. Is it abandoned because no longer productive?—A. Partially so and partially because it could not be worked by the people who owned it at a profit.

Q. (By Mr. FARQUHAR.) You mean to answer that the ownership was in the hands of nonresidents?—A. Yes.

Q. (By Mr. A. L. HARRIS.) What is the character of your organization and causes inducing it, the objects you seek, and the results you have obtained by it?—

A. We organized for the social, educational, and financial benefits received from it. Largely the educational feature we considered the foundation of our order.

Q. Any profession except the agriculturist admitted?—A. No. They must be engaged in agriculture or in interests that would not conflict. We take in clergymen, school-teachers who teach our children, etc.

Q. Any distinction in regard to sex?—A. No; from the age of 14 years up.

Q. (By Mr. KENNEDY.) State the strength of the organization in your State.—
A. At one time we had a strong organization, but it has been reduced very materially. We do not seem to see the benefits a great many farmers do in the West and North. In the little State of New Hampshire they have 21,500 members, in something over 200 granges, but the order throughout the South is not generally very prosperous.

Q. (By Mr. FARQUHAR.) Was there not an expectation on the part of many that it would assume political features, and they were disappointed that it did not?—
A. Yes.

Q. Is not that one reason for the lessening of your numbers?—A. That was one of the causes. When they found out the grange could not be used for political purposes they withdrew. A great many went in expecting it was going to put dollars into their pockets without any effort on their part, and they were disappointed and withdrew. While we have now a prosperous grange in our neighborhood, a great many farmers do not take interest in the organization; do not see the benefit of the educational feature. It is something of a farmers' club. At every meeting we have questions selected to discuss at the next meeting. We have some who read papers on those questions, and we often invite the professors from the Agricultural Department and from the college to our county meetings. The greatest benefit derived, I think, is the education we receive through the organization.

Q. (By Mr. A. L. HARRIS.) You confine your discussion to agricultural questions?—A. Yes. Partisan politics or sectarian religion is not allowed to be discussed. We are not necessarily confined to agriculture. Any question which may be of interest to us as agriculturists is acceptable to the grange.

Q. What benefits have you received from your organization, in your estimation?—A. We have been made better farmers and better citizens, and the social feature is worth a great deal. We form a great many acquaintances which we would not but for the grange, and we know our neighbors better, and there is a fraternal feeling existing in the order which is beneficial. I lived 10 years right out here, and you might say I did not know my neighbors for the first 10 years, but when the grange was organized I found I had some excellent neighbors I did not know before. We become acquainted throughout the State more or less, and I think it is a great benefit to us as agriculturists. It is said that 2 men can not converse together 10 minutes without learning something, and if we meet other grangers from the State we learn something.

Q. Creates a higher ambition?—A. Yes. A great many grangers exhibit their products; exhibit what they have grown and tell how they have grown it. As one man expressed himself, "I have been a gardener and trucker for 30 years and thought I knew all about it, but when I joined the grange I found I did not know anything."

Q. Your meetings are pleasant and attractive as well as instructive?—A. Yes; I think so.

Q. Do you see any difference among your farmers who belong to the grange, in their manner of farming and in the condition of their farms?—A. Oh, yes; a decided improvement, I think. They are better farmers; I believe there are very few grangers who attend the grange meetings but make better farmers and better citizens and are more prosperous. The great trouble with the farmers in Maryland is they do not understand their business thoroughly enough.

Q. You think a general interest in the grange throughout the State of Maryland would have a good effect on the farmer?—A. I do.

Q. And create a greater desire to see his children better educated?—A. I think it would.

Q. Give a wider expanse of knowledge to his children by the time they grew up?—A. I think so.

Q. Have you anything further you desire to state in regard to the advantage of an organization of that kind among farmers?—A. Nothing except what I have said, and bulking our orders, and the principles of doing business for cash. We claim it is better for a man to hire his money and pay interest than go in debt.

Q. (By Senator MALLORY.) Is this organization confined to the State of Maryland or is it in connection with the granges of the other States?—A. We have a national organization, the State organization in the several States, the county organization, and the local or subordinate organization.

Q. What is the title of the national officer in charge?—A. Master of the National Grange.

Q. You have your national convocations annually?—A. Yes.

Q. And your State convocations annually?—A. Yes.

Q. County?—A. Quarterly.

Q. And your local organizations?—A. Weekly, monthly, semiweekly, or semi-monthly.

Q. How is the attendance?—A. Generally good, except perhaps in the busy season of the year. In the winter attendance is better than in the summer.

Q. Since the decrease in membership have not the remaining members shown more interest than the bulk of the members formerly?—A. I think perhaps they have.

Q. Have you a larger average attendance than you had when the membership was larger?—A. Well, that differs with different granges. Some are larger, some not as large. It depends a good deal on the locality, distance from meeting, etc.

Q. (By Mr. KENNEDY.) Are you influential enough in Maryland to secure legislation favorable to the farmer and prevent inimical legislation, as the grangers of Kentucky and New Hampshire are?—A. No. We are not as strong as in New Hampshire and some other States, but we have secured something for our benefit in the past, and I think perhaps we may be able to do so in the future. Through the instrumentality of members of the grange and the college a delegation several times went to Annapolis and secured an appropriation of \$4,000 for holding farmers' institutes. We never attempt anything in a partisan line at all; only what we consider to be for the general good. We are not a political organization in any sense of the word.

Q. (By Mr. FARQUHAR.) Have you a large representation of the farming interests in the Maryland legislature?—A. No, very small; a good deal like it is in Congress—very few farmers.

Q. Do you think the farmers of Maryland, according to their numbers and the interests of the State they represent, are as well represented in the legislature of Maryland as other classes?—A. I think not.

Q. (By Mr. A. L. HARRIS.) Please describe the object of the farmers' institute and the work performed, in a few words.—A. There is a director of farmers' institutes appointed, and he holds a meeting, and notice is given of the meeting and different subjects which will be discussed. If he is going into a locality where dairying is the principal business, dairying will be the principal subject. If he is going to hold an institute in a locality where truck farming is general, he will have that for the principal subject. He will secure speakers, and if they can not be obtained in the State he will go out of the State and get practical men in these lines—either in dairying, fruit-growing, or gardening—to come and deliver addresses. At the close of the addresses the speakers are questioned. Anyone is at liberty to ask questions in regard to anything he may wish to, and in that manner it enlightens the farmer on various lines, which information he would not get if it were not for these institutes.

Q. How long do you hold your sessions, usually?—A. They have been holding them only 1 day. They have not had sufficient funds to hold them more than 1 day; but they have perhaps 3 sessions—morning, afternoon, and night.

Q. (By Senator MALLORY.) Please state what effect you think institutes have?—A. As far as we can get the farmers out I think it has a very beneficial effect. The director, Mr. Amos, thinks they have been much better attended the past year than formerly. The more interest created in them, and the larger the attendance, the more benefit will be derived by the farmer.

Q. (By Mr. A. L. HARRIS.) In your opinion is the condition of the agriculturist improving?—A. I think it is.

Q. And his family have more comforts than they had before?—A. Yes. I think if the farmer understood his business as thoroughly as most other classes do their business, and applied business principles to farming, they would be a great deal more prosperous to-day. They would know better how to improve their farms, and consequently would make more money. As the saying is, "There is always room on top," if they produce a first-class article. Hardly any of the butter the farmer brings in on this market would bring a first-class price. The people send out to Illinois and Iowa and get Elgin and creamery butter, whereas if a farmer living near the city would make a good article he would be able to command first-class prices.

Q. So he puts in the labor without intelligence, and has to sell his product at a low price?—A. Yes. He wants intelligence in his business to make it successful.

Q. Do you wish to say anything about the present production and existing markets?—A. I think there is an overproduction—I do not know what the remedy would be—of a good many things.

Q. Is it something that can be affected by legislation?—A. No; I do not think it can. Some say there is overproduction and others say there is no overproduction but that the people have not the money to buy and consume. I do not know.

Q. If your organization should ever become more universal would you be able to take advantage of the products that are overproduced and turn them to products that, I might say, are underproduced?—A. Yes. There are certain things that are imported; they say there are a great many eggs imported into this country. Certain things are imported here which should be produced here. The tendency of the American farmer is to work along certain lines and stick to them without regard to changed conditions or changed demands.

Q. You would be an advocate then of diversification in farming and agriculture?—A. Certainly. The diversification of farming and the rotation of crops, I believe, is the only successful way to farm.

Q. What effect, if any, has the improved agricultural machinery had upon the production and the ability of the farmer to produce?—A. Of course a man is enabled to produce a great deal more at less expense than without the machinery.

Q. Would it be possible at the present time, with the amount of labor there is on the farm, to produce without the assistance of machinery?—A. No, I think not; not with the amount and class of labor that we have here at least.

Q. Has not the improved machinery largely taken the drudgery away from the farm?—A. Yes; very materially so. There is quite a difference between mowing with a mowing machine and the way I used to do it by swinging a scythe.

Q. And your binder is preferable to the old-fashioned cradle?—A. Yes; I served my time at both.

Q. Have you anything to suggest in regard to the possibility of extending foreign markets?—A. I hope it may be done. I suppose that Secretary Wilson is laboring to accomplish that. Secretary Rusk did accomplish a good deal, I believe, formerly.

Q. What per cent of the exports come from the farm?—A. I believe they said that last year 70 per cent of our exports were of agriculture. It is the farmers that deserve the credit for the balance of trade, I think, which is in favor of this country. I think it is what has brought the gold into this country.

Q. Have you anything to offer the commission as to the best means of extending foreign markets outside of what has been suggested in the way of consuls by the Secretary of Agriculture?—A. No. I believe they should labor to that end as consuls.

Q. Have you anything to say in regard to carrying the tonnage of this country on American ships?—A. I should like to see it done.

Q. It would be of interest to the farmer, would it?—A. Yes; I believe so. I think it would be much better for the interest of the farmers to have the ships manufactured here in this country than to take the oak timber from out here in Howard County and send it to Europe and have the ships built of it there.

Q. What have you to say in regard to the decrease in transportation rates in this country?—A. There has been quite a decrease; especially from the West to the East.

Q. Has that affected the Maryland farmer?—A. Of course; it has lowered his products very much as the trade from the West has increased.

Q. Low transportation rates, then, in your opinion, have affected the Maryland farmer adversely?—A. Yes; as far as the sale of his products is concerned. You might see an offset against it. We dairymen have to buy bran and mill feed from the West and low transportation rates help us.

Q. How much do you have to pay for bran?—A. I bought a carload in connection with some others and I paid \$15.50 per ton, about a month ago.

Q. Has your State any laws touching the subject of pure food?—A. No; I do not think we have.

Q. What is your opinion in regard to the necessity of a law of that kind?—A. I think there is a great necessity for such a law. I think the adulteration of food is not only injurious to health, but it is a detriment to those who will produce pure articles of food.

Q. In what way is it a detriment to the producer?—A. It lessens the price. This oleomargarine and butterine which they have takes the place and lessens the price of a good article.

Q. What would you suggest in the way of protection from oleomargarine?—A. I should suggest that they have a heavy tax upon it, or have it colored pink instead of having it colored butter color, so that people, if they want to buy it, might buy it for what it is and not for butter.

Q. (By Senator MALLORY.) Is that done to any great extent now—selling it for butter when it is in reality oleomargarine?—A. Perhaps not as much as it was. They have a stringent law here in the District, and there have been several prosecutions and convictions under it, and of course, they are not doing it so much.

Q. Many of the States have prohibited it?—A. Yes; many States have. I guess Iowa has about abolished it.

Q. (By Mr. A. L. HARRIS.) You have no objections to oleomargarine being sold as oleomargarine?—A. No. If a person wants to buy it, he can buy it; but I think if he would go into some of these packing houses in Chicago and see how they make it, he would not want to buy it.

Q. (By Mr. KENNEDY.) Is coloring resorted to in dairies in making butter?—A. Oh, yes; there is very little winter butter but what is colored.

Q. The same thing is done for oleomargarine, which is sold for butter?—A. It is sold for butter.

Q. Supposing it is labeled, as it is here in the District?—A. I do not suppose there would be any objection where it is sold for what it is and a person knows it.

Q. (By Mr. FARQUHAR.) Is oleomargarine a wholesome food?—A. As far as I know, no. I would not buy any of it for my own use.

Q. Have you ever used it?—A. Not that I know of. I may have. I think that they take most kinds of grease to make it of. In the way of deodorizing of it and purifying of it, they claim—

Q. (Interrupting.) Are you aware of the fact that there is not one single pound of it made from deodorized material in this country?—A. No; I am not.

Q. (By Senator MALLORY.) Your objection to these adulterations is that they are sold to the public under false pretenses?—A. Yes.

Q. (By Mr. A. L. HARRIS.) What, in your opinion, is the advisability of Federal legislation on the subject of pure food?—A. I think there should be a strong law against the adulteration of any kind of foods; that is, that would be injurious to health. As far as the coloring of butter is concerned I do not think that any of you gentlemen would use winter butter, white as it is, in preference to the colored article, providing, of course, you knew it was colored. A preparation of annatto is used in the coloring of butter.

Q. Have you anything further to suggest on the subject of adulteration?—A. Some of the dairymen here in the city are coloring their milk. That gives it a richer appearance, whereas there may not be the same amount of fat in it as in samples that were not colored. It gives it the appearance of being better, and it is bought in preference to the milk of the man that does not color his milk; and so in cream. There have been several arrests, and they are not doing it as much as they were. Some test was made last winter. Parties were arrested here in town for selling colored cream and milk. I think it requires 20 per cent to be pure fat in the cream to be the standard; and they found some of the colored samples were only 14 per cent, while, as to appearance, they looked just as well as those which contained 20, which were not colored.

Q. (By Mr. KENNEDY.) Does this coloring add to or take from the quality of the butter?—A. I do not think that it adds to or takes from. It adds to the appearance. It makes it more pleasing to the eye.

Q. (By Mr. A. L. HARRIS.) What is the coloring matter you use?—A. A preparation of annatto is used largely. It is largely manufactured by Wells & Richardson, of Vermont. They make what is called Wells & Richardson's butter coloring which, I think, is largely used by the creameries and dairymen throughout the country.

Q. (By Mr. FARQUHAR.) What is the nature of the matter—harmless, clean, and very nutritive?—A. I could not say.

Q. (By Mr. A. L. HARRIS.) Do different kinds of feed affect the color of the milk?—A. Yes. If you had carrots to feed that would tend to make the butter

more yellow. The feed has a great deal to do with it. During the summer season, when you get grass, there is no necessity of coloring either milk or butter; it is yellow enough.

Q. Is the coloring that is used in milk or butter deleterious to health?—A. It is claimed that it is not. I hardly think that it is. This annato is a vegetable matter which is not injurious to health.

WASHINGTON, D. C., June 22, 1899.

TESTIMONY OF MR. L. W. YOUNANS,

Farmer and Merchant, Fairfax, South Carolina.

The commission met at 10.50 a. m., Mr. A. L. Harris presiding. At 2.30 p. m. Mr. L. W. Youmans, of Fairfax, S. C., was introduced and sworn as a witness.

Q. (By Representative LIVINGSTON.) What can you say as to the condition of agriculture in the South?—A. In my section of the country it is in a deplorable condition. I can not say that it is from any vicissitudes of the season, from any lack of industry on the part of the people, or from any failure in the soil to respond to cultivation. At least for the last 2 years the seasons have been good. I have not seen anything especially wrong in the industry of the people, and the yield has been abundant. But the fertility of the soil, the propitiousness of the seasons, the industry of the people, and the abundant harvests, so far from securing a benefit to the country, as in past years of prosperity and plenty, seem to have brought about hardship and distress. There must be some cause for it and the cause must be artificial. We can not charge it to natural circumstances. To claim that the triumphs of art or the bounty of nature would result in an overproduction of the good things of life and therefore bring about hardship and distress, it seems would be to argue an absurdity.

Q. Will you give us the conditions of the landholder and the laborer in the Carolinas and the South? Are they in debt?—A. Yes; the small landholders are being forced to give up the title deeds to their land, and with the large landholders, under present conditions, it will only be a question of time until they follow suit.

Q. Is that done in the form of mortgages?—A. Yes; it just means that the proceeds of their crops will not pay the expenses of making them. I can give you my own experience. I think I have as fine a plantation as there is in my section of the State; I have it all stocked; I have as well-disciplined labor as there is in my section of the State, and I considered the 1st of January whether there was any crop that I could plant on that land with the certainty of reaping a profit. It was suggested by some gentleman who testified before this commission that they ought to diversify. My experience is not confined to raising cotton. I have raised watermelons, corn, vegetables, and other crops which grow in my country, and, after mature reflection and an experience of 30 years, I thought the best promise would be in cotton. I tried it last year and I lost money on it. The very same consideration was given the subject again when I started in January of this year and I thought cotton was the best chance, and I am going into cotton again.

That question will lead right up to wages. The charge is made against the agricultural element that they are extravagant. I do not think that will apply, especially to my experience, and right here the element of cost of the production comes in. I have heard a great deal about the protection of American labor, but I do not see any of it in my section. Take my plowmen, for instance: I employ them by the month, and they make 5½ days' honest good work each week, unless they are interfered with by the weather or sickness; but the application of what I am going to say is on the supposition that they perform 5½ days' work; it is all that is counted and a little more than we got from the slaves before the war; and these hands on my plantation I allow to have 2 acres of land, and the plowmen, if I do not need the animals, have the use of them on Saturday evenings. But when I settle with them at 12 o'clock on Saturday or Friday night, I pay these hands for their 5½ days' work, in addition to their rations of 1 peck of meal and 3 pounds of bacon and salt, 60 cents in trade, to be traded out in the stores at 50 per cent profit, and 20 cents in cash; that is all they get for 5½ days' labor. If I employ the labor by the day—and there is a great deal more of it than I have any need for—I pay them 80 cents, one-fourth in cash and three-fourths to be traded

out at 50 per cent profit; and yet raising the crops as cheaply as that the proceeds will not meet the expense of raising.

Q. What monthly wages do you pay?—A. \$5.20 for 26 days' work.

Q. (By Mr. KENNEDY.) What do you mean by "being traded out at 50 per cent profit"?—A. They take orders on the store. I run my plantation in connection with a store and the instructions are to put 50 per cent profit on the goods sold. I will say that my labor is about as well paid, as well clothed, and I think the best satisfied labor in that vicinity.

Q. (By Representative LIVINGSTON.) Have you tried diversified farming with the same labor?—A. I have tried watermelons.

Q. Wheat, corn, and oats?—A. I do not raise wheat. There has been an experiment made of wheat there this spring, but it was not very satisfactory; but we have had a very unusual spring, very dry. I can get wheat flour cheaper. It is cheaper in my section to raise cotton than wheat. Our section does not produce wheat.

Q. Do you find your labor efficient?—A. Yes. I have no complaint to make of my labor at all.

Q. They are colored?—A. Yes.

Q. If you should adopt another method, and succeed in manufacturing the cotton that you raise on your plantation instead of selling it in its raw or crude state, what would be the result to you?—A. I could not give you any reliable information on that point, because I have no experience as a manufacturer.

Q. From a general standpoint, do you believe that any man can sell any raw material produced at a profit, whether cotton, flax, watermelons, or anything else?—A. I always sold my raw material at a profit until 1890. I was a cotton planter, and made money steadily until 1890.

Q. Why is it that since 1890 cotton is unprofitable?—A. Not only the cotton, but there is scarcely any industry that is profitable in that section. Low prices are not confined to cotton, but to all products we raise.

Q. (By Mr. KENNEDY.) Are the prices of all the products of labor declining?—A. Yes; as a general thing. Of course there are temporary reactions in certain lines, but the tendency of prices is downward.

Q. We have had testimony here to the effect that the prices of many products are increasing.—A. That is only a temporary increase; it will not hold. I am talking about over a period of years.

Q. (By Mr. RATCHFORD.) How do you know that, in the light of the past?—A. I know it because I could sell for \$20 twenty years ago what I can not get \$5 for now.

Q. You believe history will repeat itself beyond a doubt?—A. I believe history repeats itself. I know this matter of prices repeats itself, and I can prove it by the decline in the '20s and '40s, the rise in the '50s, and the decline since 1872.

Q. (By Representative LIVINGSTON.) Can you give the comparative prices of some of the leading products in 1873 and 1878 up to now outside of anything you have given? Take cattle, horses, wheat—anything you please.—A. I can take what I deal in. I have paid 9 and 10 cents for meat and I can buy it now for 5 cents. Taxes, debts, and all fixed charges require just as much money as they ever did. These have to be paid out of the products of labor. They are worth half what they were in 1873. It takes twice as much of the products of labor to pay these debts, and these liens pretty nearly cover the entire sales of the products, and it leaves nothing to the producer to purchase on his own account.

Q. Are rates of interest much lower now than they used to be?—A. I can not say that the rate of interest is; in that country it is not any less. We pay 18 per cent to the banks for money now. I pay it.

Q. (By Representative GARDNER.) Where is that?—A. Barnwell County, S. C. I started to raise cotton on a basis of 7 cents. My debts were all contracted on a basis of cotton at 7 cents. When I sold my crop it did not average me over 4½ cents a pound. You see very easily I could have made money if I had got 7 cents, or even 6 cents, but when I got only 4½ cents I met with a loss, and so did every man who advanced on the cotton crop. Cotton has been steadily declining since 1873. There have been reactions, but the tendency is downward.

Q. (By Mr. RATCHFORD.) In that connection, is it not a fact that everything else has had a downward tendency?—A. Yes.

Q. Has the decline in cotton been greater than other commodities?—A. Cotton sold in 1871 at 20 cents a pound; I sold my last crop at 4½ cents a pound; that would be a decline of 75 per cent. I do not think other commodities have declined so much. I think there has been an average decline of about 50 per cent.

Q. (By Representative LIVINGSTON.) Did the farmers of the South largely contract the debts that now worry them prior to 1872?—A. I do not think so. Those

parties contracted and the lands passed out of their hands. Other parties have bought them, and they are going out of their hands now. We have to pay a usurious rate of interest—the agricultural element of our country. The discount is about 13 per cent when they can borrow from the bank; and when a man has not good collateral he has to borrow from the country merchant and has to give 50 to 75 per cent profit.

Q. Why is it you are required to pay 13 per cent?—A. I can not go to New York and borrow money. I can not go to Augusta and get money. I went there to make the experiment, and I said to the president of the bank: "I want to borrow money." "What security do you propose to give?" "Real estate." "I won't take that; any bonds?" "No." "We do not loan money on real estate." That throws me back on the country banks, where I can borrow money, but I have to pay 13 per cent. When money congests at these trade centers there is no automatic power to redistribute it. It stays there, and when it does come out it comes out from the town with brokerage, and you gentlemen know as well as I do that there is no business except successful mining and gambling that can stand 18 per cent; but that is what our people pay, and a great many pay more. I attribute that to the fact that there are no banks of private issue allowed in the country. I think it comes about as the result of the 10 per cent tax on the issue of private banks. I am not in favor of wild-cat banking. I am in favor of a judicious system of banking that will allow judicious circulation up to a certain amount, a judicious system of local issue, well regulated, limited by the General Government to a certain amount. In fact, we want our own money and we want to borrow money, and we ought to be able to borrow money at 6 per cent.

Q. (By Senator MALLORY.) County banks such as you have there at Barnwell, made money, did they not?—A. One of those banks has gone out of business. I do not think they made money. The president told me that they have a certain paid up capital; it amounts to \$40,000 to \$50,000. They very soon loan that. They get a certain line of securities and they arrange with New York banks to borrow money, and they pay 6 per cent. They bring that money back and have to make that 6 per cent, and they have to put on their profit. Everything is declining. Land is going down. Men took mortgages on land 5 and 6 years ago when it was worth more than now, and they can not realize what they advanced on the land. There is a general decline in prices.

Q. (By Mr. KENNEDY.) I believe you said there was no industry in South Carolina that was thriving. Is it true that the industry of cotton manufacturing there is thriving?—A. I do not know anything about the manufacturing of cotton. I think the depression of agriculture is so great and the wages so low—as I told you, 30 cents a day—that the manufacturers can get their laborers much cheaper than they can up North.

Q. They do not get labor at that rate in the cotton mills?—A. No; but when they can get men for that in the fields, for a little more they can get them in the factory; but I am not an expert in manufacturing; I can give you no information on that subject. There is very little manufacturing in my section.

Q. There is considerable in South Carolina?—A. In the upper part of the State, but I live in the southern part.

Q. (By Representative LIVINGSTON.) Do you think you could diversify farming and benefit the producer?—A. If I thought I could diversify to my advantage, I would do so, but there is no crop there that I can plant with more certainty of coming out even. I came to that conclusion from examining the market. Some years I can make money on watermelons, but if I strike it wrong it is a dead loss. Many have tried watermelons; they have tried potatoes, have tried wheat. I know a man who sunk lots of money in a vegetable farm. One went into the tobacco business, and I think he lost thousands before he quit. I raise all my home supplies, oats, corn, forage, and as a money crop I think cotton is the best I can do; but sometimes I try watermelons. Some years, when everybody had lost money and I thought they would get frightened and not plant them, I planted them.

Q. Is the labor you have fairly satisfactory?—A. It is satisfactory to me. I have no fault to find with my labor. I suppose I have between 300 and 400 negroes on my plantation, and I have no fault to find with their conduct. I am perfectly willing to leave my family there. They are like good, large children. They have to be looked after, but they respond to kindness more than any other race in the world.

Q. You have your foreman?—A. Yes.

Q. What has been done to educate the masses?—A. We are pretty heavily taxed to educate them. I do not think education is of any benefit to them. My experience is that if you educate the negro he is of no account, but I am very friendly disposed toward them, because I have been raised with them all my life.

Q. (By Mr. KENNEDY.) Have you introduced improved machinery into agriculture in South Carolina?—A. What do you call improved machinery, mowers, rakes, double plows? Further than that, in my experience, improved machinery does not pay, usually.

Q. Do your people take readily to machinery?—A. They can not run machinery; it is the exception.

Q. Do you prefer white labor to the labor you have in South Carolina?—A. I prefer colored labor.

Q. You do not want to colonize the colored man and send him out of the country?—A. No. I do not want this line of cosmopolitan people around me. The negro will respond to kind treatment. We do not look for mobs. I think we are the safest people in the world. I have traveled all over my State, and where there are only white people those sections do not look any more prosperous. No matter how much the colored man may make he will make way with it, but there is good in him. He is a good laborer and responds kindly to good treatment.

Q. Do you think it is detrimental to the negro to educate him?—A. I do not think it improves his morals; I do not think it is any advantage. That is my experience.

Q. Your own State of South Carolina is doing this?—A. That is public sentiment and we would be criticised if we did not do it. I pay the taxes and pay them cheerfully, but I think that is thrown away.

Q. (By Mr. FARQUHAR.) What is the difference between the competition of the white labor and black labor in South Carolina?—A. The cotton is raised by colored people. The white people raise cotton in competition with the colored man and for the same work we do not pay any more. My whole place is arranged in so much for a day's work, and no matter who I have to plow I pay the same for the work. I have overseers and a colored foreman that I pay more.

Q. Do you think usually a white foreman or colored foreman is the best?—A. I have 2 white and 1 colored.

Q. Is your preference in handling that class of labor for the white, or can you bring the black up to be good foremen?—A. There are instances where you can get good black foremen, but where you can not get there every day it is better to have a white man, because his judgment is better.

Q. Have you many white farmers who own their own land in the State?—A. Yes. They have the title deeds yet, but they are mortgaged. The small farmers are being crowded out. The mortgages have eaten them up. They get in debt, increase the mortgage, and every year it takes a little more, and finally they have to give up the deeds. I think it is only a question of time until most of them will be drawn into town.

Q. And the absorption of the small farms into the greater comes from the fact of the indebtedness?—A. A great many large plantations are being absorbed too.

Q. Is their indebtedness in the hands of the local brokers or bankers, or where does the indebtedness on farm lands usually lay?—A. It starts with the country merchant or cotton factor usually, and he borrows his money here at the North.

Q. Are your country merchants prosperous?—A. Not in my section. They lose money.

Q. How do your smaller banks do?—A. They are going out of the business; they have their money all tied up in real estate, and can not realize the amount of the mortgages.

Q. Is there not a good deal of difficulty in all the Southern States from the fact of the contraction of debts after the war, and is it not a debt problem more than anything else in the South; something like the Western States—Kansas, Nebraska, Colorado, and others—where they borrowed the money to buy the farm?—A. The old original landholders got in debt early. Cotton in 1886 down there dropped very heavily, and they all got involved, and their land has nearly all been parceled out, and the parties who have been more thrifty got them, and those lands in turn are being run out of the hands of the second parties now. I can scarcely hold my property, and I made it since the war. It is a struggle with me, not to make money, but to hold my property. You do not have any idea of it. I have been trying to give you an idea of it. I have not overstated the case at all.

Q. One of the great reasons is the low price of cotton, which is a cash article?—A. There is no business that we can engage in down there that we can make any money out of. I would gladly turn my hand to any business in which there was more money than raising cotton if I knew what it was. I could not go into manufacturing, because I have no money to buy material.

Q. Have you engaged in stock raising down there?—A. Our country is not very good stock-raising country, although I keep cattle there to supply my family necessities. We do not raise any for the market. Our country is not a good

country for pasturage. It is adapted to cotton, and we can get more money out of it than anything else.

Q. Do you raise sufficient produce there in your section to care for your own people, or do you import from the West and other parts of the South?—A. I raise my own corn and forage for the whole plantation, and I raise bacon for my own family, and I keep cattle there to supply the necessaries of my own family. As for my rations, I buy my meat from the West. I can buy it cheaper than 5 cents—cheaper than I can raise it.

Q. Where do storekeepers there in your section get supplies from—what cities mostly—West?—A. They buy groceries very often from Savannah and Augusta. They do not get any farther than that. I do not have to buy corn. When we do buy it, we buy it by the carload, sometimes West, but not much. We bought hay out West, but as a rule we raise that now. We did not use to do it. On one of my plantations there for a long time I raised cotton and bought corn, because I could get 10 cents a pound for cotton, and could buy corn by the carload for 60 cents, and I would put wheat bran with it and it would make a very wholesome and nutritious food for my stock. I can raise my corn, and I raise sufficient to supply all of my plantation needs.

Q. Do you raise there in your section all the mules that you have use for?—A. No.

Q. You buy mules?—A. I can buy Western horses cheaper than I can raise them. For the last 2 years we have been able to buy horses down there for \$40 to \$50.

Q. (By Mr. KENNEDY.) Are the colored people taken advantage of and robbed by the storekeepers down there in that section?—A. I do not think so. I think the general disposition toward the colored people is very kind. I think they are very kindly treated. If the colored man behaves himself, he is treated as well as anybody.

Q. I am not talking about that phase of it. I am talking about orders which are given, backed up by somebody else, for supplies, upon which inordinate profits are charged. Is that true?—A. I do not think they make any distinction between who it is on. I do not think any unfairness is shown, or any desire to take advantage of them on account of their color, none in the world. I know the feelings are very kindly there between the two races of people. If a man does not behave himself, black or white, he catches due reward; that is my experience.

Q. Do these money lenders take advantage of the white people by sometimes charging inordinate rates of interest and taking advantage of circumstances?—A. That is according to the man. He charges according to the probability of his getting his money. He covers the risk on all of them. A good man can go there, where pay is certain, cheaper than a man of more uncertain pay. The people are just the same there as they are anywhere else.

Q. (By Representative LIVINGSTON.) You do not think there is less humanity down there than up in New Jersey?—A. No; I think they are just as kindly disposed there as anywhere else, some good and some bad. The white and black are just as they are anywhere else. I have them on my plantation; some give me trouble and some do not.

Q. Do you have any immigration there?—A. They occasionally change and move about. Now, most of the labor on my plantation—I raise them. Their parents go there and stay, and they stay there. I do not have any trouble, and I do not see any difference respecting them now than when they were slaves.

Q. You have no European immigration there?—A. No; and I do not want it, either.

Q. (By Mr. FARQUHAR.) Have you any particular objections to state against European immigration?—A. No; I have no objections against anybody or anything. I can just get along with the colored people. I know them and they know me, and I am satisfied with their labor. A white man does not obey me any more, and generally puts me to more trouble, and he is harder to please as long as he stays with me.

Q. Have any of these colored people down there acquired land and little homes of their own?—A. It strikes me some years ago they did. I think they have been pretty well all "skinned" out. They have just about followed the small landholder. There may be some. I would not like to state that as a square-cut problem all round. I think that is the tendency; in fact, I do not know everything that has transpired, even in my vicinity. I attend to my business pretty closely. It is only my observation around there.

Q. (By Representative GARDNER.) How large is your plantation?—A. About 4,000 acres.

Q. Is it all arable land?—A. Partly timber; most of it arable land.

Q. And you employ how many men about?—A. I can not tell you exactly how

many there are. I plant about 1,800 or 1,400 acres. I cultivate entirely by wages. The balance of it, the houses are scattered all about, and they rent. Now, for instance, my plowmen and my foremen are about the only hands I have hired steadily by the month. It is understood by all the others that whenever I want them to work I pay some wages, and if they are working anywhere else they are to give me the preference when I want them, and when I get through with them they go back to their work. I suppose there are between 300 and 400. I raised about one-half of them.

Q. They do not work for you continuously?—A. I only hire them for 6 months, until the crops are laid away, and I pay them by the day.

Q. You have houses on the place and tenements, and those people rent them, I understood you to say?—A. Yes.

Q. They rent and work the land on their own account?—A. A great deal of it—what I do not attend to myself.

Q. With the understanding that they are to work for you whenever you want them?—A. When I want them. Of course I can accommodate myself to circumstances. Often they are busy with their crops and I do not call on them. That is understood—they are not to neglect their own crops to go into mine.

Q. I want to ask about the convenience of that method. We have tried it in a small way in New Jersey, and found it did not work, for the reason that on the particular day when we found it necessary to have something done each tenant found that on that particular day his own crop needed precisely the same attention.—A. That might be the case with the white tenants. Mine are colored tenants, and I do not have much of that kind of trouble. They always want work; I can not keep them in work.

Q. Money being scarce, they want money?—A. They want employment. The trouble with me is trying to find work for them. I try to give them what I have. When winter comes and they get out of rations, they come and want credit and want work, and if I can arrange work for them I always do. I have not found them unreasonable. They are reasonable enough with me.

Q. I suppose in that particular feature that the situation is relieved in that the women and children will give their crops the attention needed at that particular time?—A. Yes; women and children work in the field. In fact, I think their husbands make them do a little too much of that.

WASHINGTON, D. C., June 23, 1899.

TESTIMONY OF MR. RICHMAN COLES,

Farmer, Woodstown, N. J.

The commission met at 10.45 a. m., Second Vice-Chairman Gardner presiding. Mr. Richman Coles, of Woodstown, N. J., was sworn and examined as a witness touching agricultural conditions.

Q. (By Representative GARDNER.) You may state your name, residence, and occupation.—A. Richman Coles, Woodstown, Salem County, N. J.; agriculturist, although I am now identified with dairying interests to some extent.

Q. Are you more specially identified with dairying than other branches of agriculture?—A. No.

Q. In a general way what is the condition of agriculture in New Jersey?—A. Well, the condition of agriculture in our section, of course, is not very prosperous, but I do not know that there is any particular complaint that I can make.

Q. In what respects does it differ from former periods?—A. It differs in these respects: The prices are generally lower and wages are somewhat higher.

Q. What are the causes, in your judgment, of the lower prices for products in New Jersey?—A. Our cereal products, of course, have not been in the same demand in foreign countries that they have been sometimes; all other articles are lower in value. I do not know that agricultural products are very much lower in value than productions of other industries.

Q. Has competition increased in your nearest markets, Philadelphia, for instance?—A. Yes; competition is always increasing.

Q. Competition from new sources of supply springing up?—A. From new sources of supply, and if we take the West the low freights will bring it down, so that it does not make very much difference whether we live near the general market or at a distance from it.

Q. Is there any general feeling in New Jersey among farmers that they suffer by reason of low freights for long hauls?—A. There is some feeling that way.

Q. What is the effect, according to your observation, of the continually developing competition from the South on our truck farmers?—A. Among truck farmers there has been quite a good deal of competition felt in that respect. It has hurt our truck farmers quite a good deal.

Q. Is there any competition in the dairy business?—A. Yes; for instance, we are shipping our milk most generally to the Philadelphia market. Part is manufactured in the immediate vicinity, but they are bringing milk from a much longer distance into the Philadelphia market now than heretofore. For almost the same price it costs us to get it 25 miles they will bring it 200—for very little advance in price, and furnish refrigerator cars.

Q. What is the freight on milk from Salem to Philadelphia?—A. Twenty cents a can of 100 pounds—40 quarts—one-half cent a quart; and it is the same all the way to Philadelphia.

Q. In a general way, have you any statement that you could make of the general condition of agriculture in New Jersey; your opinion as to the tendency, whether upward or downward, and the causes for that tendency?—A. I do not know that I would make any extended statement in regard to it. All real estate has been reduced in value, of course, and that seems to make the profits smaller, especially where they contracted for land at a higher price, and now have the interest to pay.

Q. The decline in the price of land has been due to the decline in the price of products, has it not?—A. To a certain extent, but the price of real estate has all fallen at about the same ratio, I think. It would seem so with us.

Q. Is all real estate through your section controlled by the agricultural conditions?—A. Yes.

Q. Salem County lies on the marl belt of New Jersey?—A. Yes.

Q. That has been regarded as one of the richest agricultural districts in the world, has it not?—A. I do not know about that.

Q. And Western competition has driven the Salem County farmer, in a general way, out of the raising of grain, the usual agricultural crops?—A. While they have not abandoned the growing of cereal crops, they are growing less of them than formerly, and have turned their attention to other things. Quite a great deal of berries, asparagus, and tomatoes, for canning and packing purposes, are grown in our county.

Q. As they withdrew from cereals, they turned to small fruits; or those convenient to navigation, particularly water navigation, turned their attention to trucking?—A. To the manufacture of milk in our section.

Q. And has competition caused many of them to withdraw from trucking more and more and turn their attention to milk?—A. Yes.

Q. That is, the new competition from the South?—A. Yes.

Q. So that the New Jersey farmer was driven from growing cereals by the West; is now being driven from trucking by the South, and milk is about all he has left?—A. Milk and cereals, yes.

Q. What is the probable future of that if the refrigerator car and the development of the long haul goes on?—A. We can not always tell what the result will be. It will be necessary to study cheaper means of producing milk. There are no resources left that I know of except to make the milk as cheap as possible; study that part of it.

Q. Is it not presumed that agricultural chemistry has got that down to nearly the bottom?—A. Agricultural chemistry may have, but the farmer does not always follow agricultural chemistry closely in his practice.

Q. What remedies are needed in your opinion?—A. In the first place, we think it is necessary to give agricultural products all the protection that is possible, so that there will be a broader field to work on; import less agricultural products than we are doing now. In fact, nearly everything that can be successfully grown in our country should be encouraged the same as manufactures have been encouraged. We have free sugar, we have free hides; and on the list of imports there are between three and four hundred millions in value of agricultural products that really should be produced in this country. That would help to diversify our agricultural products so that it would be an advantage to us. Our motto has been, as agriculturists, "Give us the same protection that all other industries have in every respect." We would like you to work up the pure-food bill. Every man has a right to make any article that does not injure the community, but he should sell it under its proper name. He should not manufacture oleo and sell it for butter; he should not manufacture articles to mix along with other products and sell them under another name. Our agriculturists are living

fairly well. We have no particular fault to find with regard to it. They might be doing better. But it requires them, as I said before, to study the best possible means to attain the end. That is necessary, I suppose, in all occupations.

Q. What can you say as to the educational facilities in your State?—A. The educational facilities in our State are good. We have excellent public schools, which are all free, text books and all.

Q. What can you say as to the adaptation of the curriculum to the needs of the agriculturists?—A. They need some elements of agricultural chemistry in our public schools. Professor Voorhees got out a very nice little book that is being introduced into our public schools, which will pave the way for higher education in that line.

Q. What is the character of the agricultural labor, generally, throughout south Jersey?—A. The agricultural labor throughout south Jersey is not as good as it was a few years ago on account of the manufacturing associations taking our best help. In our section we depend almost wholly on Southern labor that comes in there. They have better help in some sections than we have.

Q. Is that derived from the permanent population?—A. In some sections of our county they have more of that help, but we have almost none of it with us at all.

Q. That is, the colored population from the South coming north in March, April, and May and going back in the fall?—A. Going back in the fall, some staying all winter. We have considerable colored population right in our vicinity, but it can not be relied on as well as those that come into the neighborhood.

Q. Do you have any difficulty in the fall in holding that help until you are done with it?—A. Sometimes it gets a little difficult. They want to go back home. The worst fault with that help is that though it is fairly trustworthy it is very slow; they have been brought up to slow habits in some way.

Q. If you have almost exclusively that kind of help, you do not meet the question of immigration on the farm among your farm labor?—A. No; although we have considerable help in our section from the intelligence offices in the city; but the majority of it is the Southern help.

Q. Are any immigrants settling and becoming citizens in that part of the country?—A. There are some. Branches of families—a part of them are here—keep coming on and settling with us, but there are very few whole new families that come and settle with us.

Q. What is the effect of that immigration upon agriculture in that section?—A. I do not think that has much effect on agriculture at all, or that it is changing it. There are a great many native-born citizens of foreign parents who are very good farmers and they occupy a great many of our farms now. You understand me—they have not lately come to this country, but were born here.

Q. Why is that—because of greater industry, greater physical hardiness, economical habits of life, or what?—A. They are very economical in their habits, and are most generally very successful.

Q. Work their women on the farms different from Americans?—A. Some of the Germans do; not much of any other. We have only the Germans and Irish with us as a rule. Some of the German women work on the farm; some few of the Irish, not to any great extent.

Q. Are they owners or tenant farmers?—A. They are purchasing. The children of the immigrants are purchasing farms to some extent. A great many of them occupy farms that were formerly occupied by our own citizens.

Q. In your judgment, what is the percentage of foreigners or children of foreigners who own farms, as compared with Americans?—A. A very small percentage of that class of people have farms at present.

Q. They have acquired them, while with the Americans who own farms through your country it is a matter of inheritance generally; not his own efforts, is it not?—A. To a certain extent citizens born of American parents have pretty generally bought their fathers' homesteads.

Q. Have you any instances of American farm laborers whose children have acquired farms by purchase?—A. Yes; we have quite a number of instances of those whose parents were farm laborers acquiring farms of their own at this time. I think it is possible to buy a farm and live on it comfortably and pay for it at the present price of land.

Q. (By Mr. KENNEDY.) Are there any abandoned farms in New Jersey?—A. They say there are, but I do not know of any; none in our section.

Q. (By Representative GARDNER.) What are the selling prices of farms through Salem County generally now—sales occurring mostly, I suppose, in the settlements of estates—public sales?—A. They run from \$40 to as high as \$80. Of course I mean tillable land.

Q. In a general way, how much does the prevailing price of farms exceed the

cost of the buildings?—A. There are a great many of them that will not sell for very much more than the buildings really cost. They were built at the time of high prices. You can put up a new building now a great deal cheaper than you could a few years ago.

Q. What elements are cheaper?—A. Lumber is much cheaper than it was a few years ago.

Q. What has the decline of prices of farms amounted to in the last 12, 15, 20, or 25 years in your section?—A. The decline has been about 50 per cent from its highest prices.

Q. Is there any colonization of foreign population with you?—A. No.

Q. And the only immigrants you have are of German and Irish extraction?—A. Yes. There are several Jewish colonies.

Q. How do the wages of farm laborers compare with former periods, 10, 15, or 20 years ago?—A. They are no higher than they were 10, 15, or 20 years ago.

Q. Are the hours of labor longer, shorter, or the same?—A. The hours of labor have a tendency to grow shorter.

Q. What is the cause of that?—A. To a certain extent it is because the hours of labor have grown shorter in other pursuits.

Q. What are the wages of farm laborers in your section, say the maximum for a good man and the minimum for a poor one?—A. The maximum is \$20 and board. Not very many get that, but there are a number from that down to \$12, and \$10 for office hands—hands employed through intelligence offices.

Q. Is there a difference in wages in the different branches of agriculture?—A. Always a little higher prices are paid for wages among the truckers. The season is short, and they generally pay a little more wages.

Q. They have to work without regard to hours?—A. Yes.

Q. By steamboat and train schedules?—A. Yes.

Q. What is the system of payment of wages?—A. By the month, cash payment.

Q. Is there any of the old system of tenant farming on shares left in your section of New Jersey?—A. Yes; quite a good deal.

Q. What are the terms on which it is conducted now?—A. Generally, if the farmer owns the stock, they farm for one-half, and find half the seed, and generally one-half the commercial fertilizer, but not always so.

Q. How is it where the owner owns everything and the tenant furnishes only the labor?—A. One-third.

Q. Has there been any change in these terms in any period?—A. I do not think there has been any change in these terms; it has always been customary; but since they have been dairying so much (heretofore they only gave the owner one-half of the farm products and kept the stock), since they have got to keeping so much stock, the owner of the farm gets part of the stock, has an interest in that also—I mean the cows.

Q. What is the tendency of agricultural labor, and more particularly the children of farmers, as to remaining on the farm or leaving it for other occupations?—A. A great many of them leave the farms, but our farms are all occupied. If a farmer has 2 or 3 sons, unless he cuts his farm up or buys his neighbor's farm, he can not find room for all his sons.

Q. Some of them must get out?—A. Such as have a tendency for other occupations; but, so far as my observation goes, only now and then one who leaves the farm and engages in other occupation succeeds better than the one left on the farm.

Q. What is the effect of improvements in agricultural machinery upon the number of men employed in agriculture; to have the same amount of labor done and the labor diminished, or does it result in more extensive cultivation or the cultivation of wider areas and hence require the same number of men?—A. It has been the cause of more diversified crops.

Q. What is the general condition of the farmer now, as to his mode of living, general home comforts, interest in literature, etc., as compared with past periods 10, 15, 20, or 25 years ago?—A. His home comforts are continually growing greater. His enjoyments are greater than they have ever been since my knowledge of life.

Q. Are his children better educated than formerly?—A. His children are better educated, because we have excellent public schools. Some are going away to school.

Q. After the public schools, do a greater part of them go away to the normal schools or other places for higher education?—A. I do not know that any greater number of them go away, unless they want to teach; then they go to normal schools. Of course some go off to college; not very many of them; more than did formerly; but our public schools and our high schools are so much better qualified that they do not feel the necessity, unless they want to study a particular branch for a particular occupation.

Q. Does your county send a certain number of graduates, say, two a year, to the agricultural college?—A. Some go, but I do not think the county keeps up its quota.

Q. Do those who go return to the county as teachers and teach agriculture, return to the farm, or go on acquiring a higher education and disappear?—A. Some of them return to the farm, and some have gone on to a higher education and found business more profitable to do.

Q. The influence of the agricultural college on farming in your section is felt many fold greater by the influence that it has on farmers, and the information which it disseminates?—A. Than the education of our sons, yes.

Q. The price of the land having diminished one-half, as you said, has the increase of stock and modern implements equaled that, or has the general result, in your opinion, been a decline in the amount of capital employed?—A. I think the increased amount of stock in our section has brought the farm and its equipment up to a greater value, almost, than it was during the higher price of land.

Q. There are certain transportation lines between Philadelphia and various points in south Jersey, are there not, that are almost entirely sustained by the carrying of agricultural products to market?—A. Yes.

Q. Then, besides the amount of capital employed in agriculture directly, under the head of transportation there is a good deal of capital employed by agriculture?—A. Yes.

Q. How do you think the aggregate earnings of the capital employed in agriculture in your section compare now with 40, 30, 20, and 10 years ago?—A. There have been some periods within the last 50 years when we depended largely upon cereal crops, and there were years when the aggregate earnings of the farm were greater than at present.

Q. How about the percentage of profits on the capital employed?—A. Well, I do not think that the percentage of the capital employed is as great as it was in former years. Our labor costs us more. While it is not very much higher, we do not get the same quality of labor, and the amount of work we get out of it costs us more.

Q. You stated that wages had not increased. Do you mean that wages by the month have not advanced, but wages in proportion to the amount of work done have advanced materially?—A. Yes; that is what I mean.

Q. Have you anything to say as to taxation of agricultural property in New Jersey?—A. As well as I am acquainted with the laws, our tax laws are about as equitable as we can get them. Some officers, in carrying them out, do not properly do their full duty. Everything in agriculture can be seen by the assessor. In some other occupations they are able to hide some of it and it is not all taxed. Some of our assessors do not do their full duty that is required of them by law, so that sometimes, in some sections of the country and some sections of the State, taxes are not equalized properly.

Q. Is it true, as to Salem County, that a great many agriculturists have property outside of their agricultural interests?—A. Yes; a great many have.

Q. They are the owners of the hideable kind?—A. I do not know that it is any more so than the other counties throughout the State.

Q. What have you to say as to the organization of agriculturists?—A. The organization of agriculturists has been following after the same plan as all other occupations that were organized, probably not with as good success as some others, but it was simply for their mutual benefit.

Q. Has benefit resulted from the organization?—A. Yes; there are always some benefits resulting from an organization if it is carried on in a proper manner. It gives the members within the organization some ideas and some protection against others; some idea of how their own occupation is coming along; and they can cooperate together to a certain extent to their advantage. I might say that they do not cooperate together as well as those of a great many other occupations.

Q. Has, in your opinion, the agricultural college with the experiment station in New Jersey been of great benefit to the farming interests of the State?—A. It has been a great benefit to the farming community. I suppose one-half of our farmers do not realize it, but it has benefited them almost as much as those who have realized it and who have taken an interest in it.

Q. (By Mr. KENNEDY.) Can you tell us something about the milk trust formed by the New Jersey farmers?—A. I think there is no milk trust in our section of the State.

Q. Have they not joined with others in the upper section of the State?—A. I do not know anything about that at all. I simply saw that in the American Agriculturist and other papers.

Q. (By Mr. FARQUHAR.) What class of farming business pays in your section of New Jersey?—A. It is an old saying, not to put all your eggs in one basket, and

diversified farming is more sure of success, we think, and I guess everywhere else, although there are some sections of the country, for instance, in Dakota, where they can only raise 2 or 3 crops; but in our section we can grow almost anything that is suitable for our climate, and if you have them grow along all through the season and all kinds of crops, if the season affects one probably they will be successful in the other.

Q. In your crops have you much competition from the South?—A. In early potatoes, yes. We grow a great many early potatoes in our section; 12, 15, to 20 acres on a hundred-acre farm are grown each year.

Q. Is Philadelphia your permanent market?—A. That is our market. We have shippers who ship direct to New York and Boston; also along our river border, along the Delaware; they go over to Wilmington and Chester. From our section the main bulk goes to or through Philadelphia.

Q. Is the percentage of the selling price of products as much as 50 per cent lower than 20 years ago?—A. No. The selling prices of agricultural products are somewhat lower than they were 15, 20, 25 years ago, but there has not been so much depreciation in that as on the land.

Q. Is the competition against your farm products regular or sporadic—changes by seasons?—A. It changes by seasons; for instance, there is a Southern market; if the early crop gets cut off and is not successful, or even if we can have their crop early at the proper season when nothing stops its growth, the glut of the Southern stuff will be over before ours is ready for market, and it is better for us; but if there is delay by cool weather and the glut comes in about the time ours comes in, it makes it pretty hard for us.

Q. Does your section make many sales in the New York market?—A. There are dealers there for the New York market.

Q. Do you make any sales farther north than that in New York State and in Pennsylvania?—A. Yes; there are early potatoes and watermelons shipped all through northern Pennsylvania and New York, and on to Boston.

Q. Are there many engaged in truck farming in your section?—A. Not in our immediate section, but in our county, over between a few miles west of us and the river, and I suppose about 6 miles from the Delaware River and back, it is all trucking and sweet potatoes.

Q. Is that carried on by native Jerseymen?—A. By native Jerseymen, to a large extent.

Q. What is the average wheat crop in your section?—A. I think the average last year was placed at 18 bushels, and the year previous to that, I think, 22 bushels.

Q. You have about the best farming land in New Jersey in that section?—A. We have some pretty good farming land. Some of our brothers from the upper end of the State think they have some very good, too.

Q. What has been the average price of wheat there for the last 4 or 5 years?—A. At present it is about 85 cents; last summer it was about 75 cents; the year before it was somewhat higher, and the summer previous to that it was down to about 65 and 60. The average price for the last 3 years has been advanced over what it was some years previous.

Q. Do you regard that the growing of wheat there is a paying crop?—A. No. It is sometimes necessary that we should grow it on account of the straw. Some say it is a paying crop on account of the straw, although some do not regard it as such. They think they can get along without straw, to a great extent.

Q. Are commercial fertilizers in general use in that section?—A. They use a great deal in our section. Of course, where we have large dairies we make a great deal of homemade manure.

Q. Do you think that possibly the college and experiment station and the general knowledge you gain through farmers' associations have given you an advantage in caring for your manure and determining the plant food for the farm?—A. And also given us a higher grade of fertilizer.

Q. (By Representative GARDNER.) The practice is to sow wheat after early potatoes, is it not?—A. Yes; and other truck crops.

Q. And for these crops you fertilize heavily?—A. Yes.

Q. So that that crop of wheat grows on soil that has been heavily fertilized?—A. Yes.

Q. What would be the crop as near as you can guess at it if you were to follow the method of the Dakotas, say, and grow 12 consecutive crops of wheat without any fertilizer at all?—A. I know it is stated that wheat does not impoverish land very fast, but I do not think we have any land in our section that would grow 12 consecutive crops to any advantage whatever unless it was fertilized.

Q. If a crop following your potatoes yielded 22 bushels per acre, the first crop, what would you anticipate as the yield of the twelfth crop without any fertilizer? Would you expect anything worth harvesting?—A. I would not suppose there

would be; but I knew an old acquaintance—we think that is very hard on land—who had a small lot in a village not very far from us, and he grew corn on it continually for years. He husked the corn out and cut the stalks down and let them lay on the ground. In the spring he took a hoe and chopped these stalks up and plowed them under, and he went on for 12 or 15 years to my knowledge and raised good corn; but I do not know what would be the effect of the wheat crop. If the wheat and straw were all taken off, I think it would reduce it fast.

Q. To prolong that grain experiment you would have to return the straw and turn it under, would you not?—A. Yes.

Q. (By Mr. A. L. HARRIS.) How much fertilizer do you apply to the acre on an average for early potatoes?—A. We do not apply in our section more than 700 or 800 pounds to the acre for early potatoes. There are some sections where they put on 1,000 pounds.

Q. What kind of fertilizer is that?—A. Of course there are different fertilizers. There is a good deal of nitrogen in it.

Q. Superphosphate?—A. Some superphosphate with it.

Q. How much is that worth per ton?—A. From \$20 to \$25.

Q. How many bushels of potatoes do you grow on a field after that treatment?—A. There should be from 150 to 200 bushels per acre. Such a season as this we will not get very much.

Q. Where do you market those potatoes?—A. They are bought up in our vicinity and shipped to Philadelphia and on.

Q. What is the average price?—A. When they first commence to dig them they get probably \$3 a barrel.

Q. How many bushels in the barrel?—A. About 2½ or 2¾—175 pounds.

Q. About \$1 a bushel?—A. And from that on down to \$1 a barrel.

Q. (By Representative GARDNER.) Does not a barrel hold 25 half pecks?—A. The dealers are very apt to get the barrels a pretty good size when they are buying them by the barrel.

Q. Does not a full barrel arranged for heading with cloth hold 25 half pecks?—A. Yes.

Q. Three bushels and a half peck?—A. But there are not 25 half-peck baskets nowadays; they will not hold 25 half-peck baskets.

Q. (By Mr. A. L. HARRIS.) Do you sell by weight or measure?—A. Pretty generally by the barrel.

Q. Range from \$1 to \$3 a barrel, according to the season?—A. Sometimes they go lower than that.

Q. How much on an average do you get per barrel, taking the season through? On an average, do you get \$2 a barrel?—A. Not very much more than \$1.50.

Q. That would be in the neighborhood of 50 cents a bushel?—A. Yes.

Q. Do you plant with a machine?—A. Pretty generally now.

Q. Do you till with the improved plow?—A. We have not any improved plows with us. We use the cultivator and the gang plow some.

Q. How do you dig them?—A. They are most generally plowed out with a potato plow, a plow made for that purpose; sometimes use the diggers, but not very much, in our neighborhood.

Q. That crop is a profitable crop, is it not?—A. If we can get these prices, a good season, and a good crop, it is profitable. We look upon growing early potatoes very well.

Q. Your fertilizer is well paid for by the potato crop?—A. Yes.

Q. That is followed by the wheat crop?—A. Yes.

Q. Then what follows?—A. Grass.

Q. What kind?—A. Clover and timothy.

Q. What is your object in sowing clover?—A. The first year we mow it and the second year we pasture it generally.

Q. What effect does that have upon the land?—A. Clover enriches the land; it always does it good. Timothy is a little harder on the land.

Q. Under that treatment is your land improving?—A. Our land is improving if we have plenty of stock, but just with the fertilizer alone it does not improve very much.

Q. What becomes of your wheat straw?—A. It is converted into manure.

Q. What becomes of that?—A. That goes on the potato crop or on the land.

Q. That is one of the means of improving the soil?—A. Yes.

Q. Do you raise any corn?—A. Oh, yes; corn is planted in clover sod with us.

Q. What yield do you get from corn, on the average?—A. On our best land, 60 to 70 bushels; sometimes more; our poorer land, 40 bushels—shelled corn.

Q. What do you do with that corn?—A. We are generally supposed to feed it out.

Q. In your feeding how much do you get for that on an estimate?—A. We would be supposed to get a little over the market price, although part of this corn has to go to the horses to do the farm work.

Q. How much is the market price of corn on an average?—A. It has been for some years ranging from 80 to 85 and 88 cents a bushel.

Q. You convert a part of your straw into manure. What kind of stock do you feed it to to convert it into manure?—A. In our section usually to milch cows.

Q. Do you raise any beef cattle?—A. There are a few, but very few now.

Q. Are they profitable?—A. Not very profitable of late.

Q. About how much do you get for your beef cattle on the hoof?—A. From 4 to 4½ cents.

Q. Is that profitable?—A. If we do not have to pay too much for them; we have to buy them, you know.

Q. Suppose you raise them and sell them for 8-year-olds at 4½, is that profitable in your county?—A. We think it more profitable to raise heifers; the heifer at 3 years old is worth a great deal more in our section.

Q. Is there any other stock that you raise?—A. We raise some few hogs. There are a great many colts raised in our section. They were so low a few years ago that that industry seemed to drop off, but this last year or two they are coming to it more.

Q. How much is a good, average horse worth now?—A. A good, average horse is worth from \$80 to \$90.

Q. Does he pay for his raising at that price?—A. I have my doubts. They are looking for something fast nowadays.

Q. Do you raise any mules?—A. As a rule, none. I know of a few young mules, but very few.

Q. I would judge from your testimony that farming is fairly profitable in your part of the State?—A. It is fairly profitable at the prices we can buy farm land at now.

Q. Is there not such a thing as land becoming too high for farming purposes, taking the investment into consideration?—A. Certainly.

Q. And your land is still higher, taking the present dollar into consideration, than the product?—A. I think our product is fully as high as the land, taking the purchasing value of the dollar into consideration.

Q. Take an 80-acre farm; what, in your estimation, as a rule, is the profit outside of the satisfaction and comfort of having a farm highly improved?—A. What I mean to say is this: That you can buy a farm at present prices, and with careful attention and close economy you can live fairly well on it and pay the interest on the money.

Q. Suppose you take a small capital and invest it in a manufacturing enterprise. On an average would that pay a better per cent, all things considered, giving the farm credit for all that it should have credit for, than the same investment in agricultural lands?—A. It might. It would depend on whether you were manufacturing a patented article, or something under great protection.

Q. As a rule, are the farmers as prosperous as those who have their money invested in other lines of industry; mercantile, manufacturing, or even banking?—A. Well, we think that banking is the best business there is nowadays.

Q. Are there any failures at that?—A. We have not had any in our section.

Q. Have you any failures in agriculture in your section?—A. Yes; we have them sold out by the sheriff occasionally.

Q. Careful, prudent, energetic farmers, were they?—A. They thought they were, but the great majority of them have been dragged down by the load of years ago, buying at high prices.

Q. You speak of the comforts of the farmer at the present time. I wish you would describe a little further what you mean by those comforts.—A. The farmers in our section—the most of them—have fairly good homes; they have horses and carriages, and they live about as well, generally, as other people. They have a right to live better, because they can grow everything on their farms fresh. Their labor is very severe and very trying. Our milk farmers do not have any rest—7 days in the week, 12 months in the year.

Q. Have you any of the luxuries that the manufacturer or the banker has? I am speaking now in regard to musical instruments, or equipments of that kind.—A. I do not know of any farmers around, where there is any talent for music, where they do not try to have a musical instrument in the house.

Q. Does that go to the dignity of a piano?—A. Most generally an organ, but there are a number of pianos, of course—a great many of them.

Q. (By Representative GARDNER.) You were asked what fertilizer you put on a field of potatoes, and you answered from 800 to 1,000 pounds to the acre. What

do you put on that land besides that commercial fertilizer for that crop?—A. All our barnyard manure is put upon the quantity of land that is farmed that year.

Q. When you plant the field of potatoes, you fertilize highly with a view to follow with grain and grass?—A. Yes.

Q. About how much to the acre do you put on—of barnyard manure besides the fertilizer?—A. We do not get on as much per acre as formerly, because with our best farmers their cornstalks are cut up and fed through the stables, and do not make near as many loads as it used to when they hauled it long.

Q. How many loads per acre do you like to put on besides the commercial fertilizer?—A. Eight to 10 loads; 6 to 8 loads, anyhow.

Q. (By Mr. FARQUHAR.) Is that plowed in?—A. It is plowed in, as a rule.

Q. (By Mr. A. L. HARRIS.) Do you use a spreader?—A. There are a few used, perhaps, but it is generally spread by the fork; and we largely haul that manure out in the winter season when there is snow on the ground.

Q. Have you ever used a spreader?—A. None ever used on my farm, though there are spreaders around there.

Q. Have you noticed the effect of the spreader compared with the spreading by hand?—A. I think if the manure is long the spreader is an advantage, but I think as short as most of the manure is now we can spread it just as evenly with the fork as with the spreader.

Q. (By Representative LIVINGSTON.) You said a while ago the agricultural colleges benefited your farmers; how?—A. Yes; those who have followed it closely and been associated with the directors of the experimental stations have been benefited. And another reason is that they have forced the manufacturers of commercial fertilizers to give us a better grade of fertilizers for the money.

Q. From what source do you get your nitrogen in the fertilizer?—A. From several sources. We sometimes get it from fish and sometimes from nitrate of soda; we use some of that; we use muriate of potash.

Q. What do you put nitrate of soda into?—A. Acid phosphate.

Q. Do you have beds of it up there?—A. No, we have no beds of acid phosphate there.

Q. What does that acid phosphate cost you laid down in New Jersey?—A. I think it cost us \$9 this spring, ground and put in sacks.

Q. What does your State law require that acid to analyze up to?—A. I do not think there is any State law on that. It has to prove itself to be what it is marked.

Q. Suppose it is marked 12, 10, or 20 per cent phosphoric acid, how do you know if you have no inspectors of fertilizer, and no law?—A. We know. All we have to do is to send a sample to the experimental station and they will return an analysis.

Q. Did you ever try the simple plain acid phosphate?—A. No.

Q. What per cent of ammonia does your fertilizer contain?—A. I have not the figures here at present. I buy the ingredients and mix them myself.

Q. Do you subsoil?—A. No.

Q. On that clover sod, when you turn it down, how deep do you run your plow?—A. Six or eight inches.

Q. How many horses?—A. One or two.

Q. What is the average size of your farms in acres?—A. I think the average size of the farms in our county is a little less than 100 acres.

Q. You are all small farmers?—A. Yes, we would be called small farmers in some sections.

Q. You said a man could buy your Jersey farm, and if he was economical and industrious he could make a fairly good living and pay the interest on the price of the land?—A. Yes.

Q. When will he pay the principal?—A. He might be working it off a little at a time.

Q. You think it would be a pretty hard job, do you not?—A. Yes.

Q. What is there in the condition of your State that a man can not pay for the land? I suppose that the rate of interest is a little too high?—A. 6 per cent; and taxes are not very low.

Q. Do banks bear their proportion of taxation in your State on the money they use during the year?—A. We do not know what they do. They ought to, according to law.

Q. What time do you give in taxes in New Jersey?—A. In our county we give them in along in June and July. There are some counties that give them in in May and June.

Q. There is nothing else but the high rate of interest and the burden of taxation on real estate that holds your farmers back from buying and paying for land

at the present prices?—A. I do not wish you to understand me to say that. We need more protection than we have at present.

Q. Protection of what kind?—A. We need to have a higher protection on wool, and we need to have a higher protection on hides. The manufacture by the farmer of wool and the growing of hides is as much an industry as to prepare it and manufacture it into fabrics and should be protected the same.

Q. You mean the raw wool and raw hides?—A. Yes.

Q. How could that help you unless you are a sheep-growing and beef-growing people?—A. We would be greater sheep growers and beef growers if we had that protection.

Q. When you did have that protection in years gone by your farmers were in no better condition, were they?—A. They consider now that they were, years ago.

Q. (By Senator MALLORY.) Will you state what the rate of taxation is in New Jersey on real estate? You have no state tax, I believe?—A. Only the State school tax of about 20 cents on the hundred. Our State school tax last year was 28; our county tax 82. Township taxes vary.

Q. Have you any idea of the average?—A. In our township where I live it was 98 altogether.

Q. That includes road tax?—A. Everything. Some sections are 120; other counties, where they have been building stone roads, have got up to over 200.

Q. You have no idea what would be the average tax; not less than 98?—A. There is no township in our county that has a smaller percentage of tax than our township.

Q. Do you think 150 would be the fair average; between 200 and 98, say?—A. 150. We have not had any of that excessive taxation for stone roads in our county.

Q. Please state, to the best of your judgment, as a man of experience, in New Jersey, what is the average tax in the State? You put two figures, 98 and 200.—A. Well, in the absence of the comptroller's report, which would give the exact figures in every township, I should say 150 was high. Some of the cities are very much higher than our country districts. I should not think the average would reach 150 for the country districts.

Q. How is it you have no State tax?—A. The corporation tax—the corporations pay our State taxes.

Q. The organization of corporations?—A. The corporations—the railroads and other organized companies.

Q. Are they subjected to the tax that everybody else is subjected to?—A. They pay direct to the State.

Q. They do not pay any county or township taxes?—A. Very little. There is a little that is paid into the State and goes to the county.

Q. You mean there is an assessment on railroad property on which a tax is paid direct to the State?—A. Yes.

Q. Who makes that assessment?—A. The State board of assessors.

Q. Who assesses that county tax?—A. The board of freeholders fixes the county tax.

Q. Do you assess the railroad property going through the county?—A. That is done entirely by the State board.

Q. In other words, all corporate property is assessed separately and distinct from the property of everyone else?—A. Yes.

Q. And that suffices to pay all of the expenses of the State, including the legislature?—A. Yes.

Q. To what extent are you able to raise feed for your dairy cattle on your farm, and what proportion must you buy outside?—A. We make an effort to raise everything on the farm excepting a certain quantity of wheat bran.

Q. Do you raise wheat yourself?—A. Yes; but we sell that outright. We could not sell the flour to advantage.

Q. Do you use cotton-seed meal?—A. Some do, to a small extent.

Q. That has not been coming into vogue?—A. Yes; it has come into vogue, but some of them have thought that the stock received some injury. It has to be fed very carefully, we think. We may be mistaken.

Q. What constitutes the principal food of your cattle during the spring and summer months?—A. As soon as they get out on grass we do not give them very much feed; just a little to entice them in, until it gets dry like it is now, and then we give whatever we have. We try to plant corn early so as to have corn as long as possible. The season has been so dry that we have not very much yet, but it will soon do to work on. Until a couple of weeks ago we had ensilage for ours. We had been feeding that. We do not use it in the winter and spring before we turn them out.

Q. Do you furnish any ruta-baga turnips or anything of that kind?—A. Some are grown in our section, and sugar beets also.

Q. In the winter what do you feed them on?—A. We have the silo, and we cut our corn into ensilage, ears and all. That gives us a very good feed; and then we use some bran with it. Some also use what is called gluten feed.

Q. (By Representative LIVINGSTON.) Have you ever used cotton-seed hulls?—A. No.

WASHINGTON, D. C., June 23, 1899.

TESTIMONY OF MR. SAMUEL B. KETCHUM.

Farmer, Pennington, N. J.

The commission met at 10.45 a. m., Second Vice-Chairman Gardner presiding. At 2.04 p. m. Samuel B. Ketchum was sworn, and testified as follows:

Q. (By Representative GARDNER.) You may state your name.—A. Samuel B. Ketchum.

Q. Residence?—A. Pennington, N. J.

Q. Occupation?—I have been a farmer all my life until within the last 4 years. My occupation is now more that of trust officer; looking after estates in my charge.

Q. What is the kind of agriculture mostly pursued in the vicinity of Pennington, Mercer County?—A. Generally mixed agriculture—potato farming and dairying.

Q. Truck farming specifically is not much developed there?—A. Not there. In the lower part of the county—there is more trucking south of Trenton.

Q. As to that locality, what is the condition of agriculture now as compared with former periods, say 20 years, or as far back as your memory carries you?—A. To go back 40 years, I think farming compares with what it was then. Take a period following the civil war for several years, farming generally is not as good as it was during that time. For the last 10 years it has been about on a par with what it was before the civil war.

Q. Has there lately been any material decrease in the number of acres under cultivation?—A. No. Lands have been all occupied and new lands have been cleared up.

Q. As to the number of people employed in agriculture, has that decreased because of the new machinery, or for other reasons, or has it increased because of the more intensive system of farming, or is it comparatively stationary?—A. I think the amount of labor employed is about the same as it was 30 to 40 years ago, because the lands have been developed, wet lands have been reclaimed by underdraining, timber lands have been cut off, more acreage has been brought up, and then our machinery has brought a more intensive farming, more thorough farming, so that we employ the same amount of labor, I should judge, as we did 30 to 40 years ago.

Q. Does the advent of the commercial fertilizer permit you to cultivate each year more acres than you could previously when you had to rely upon your own barnyard manure?—A. Yes.

Q. From where do you get your farm labor?—A. In parts of the county we have some foreigners—a few Italians, men of that class—but the largest part of our labor that comes from out of the State is from southern and southwestern Virginia.

Q. What percentage would you estimate of your farm labor do you employ the year round?—A. I think about three-fourths might be classed as permanent labor the entire year. The balance comes largely from southwestern Virginia.

Q. The permanent as well as the transient is from Virginia?—A. Yes.

Q. Then very few of your young men engage in the vocation of farm laborers?—A. Comparatively few. Of course there are some. Suppose a man has a farm of 100 acres and needs 4 men; he may have a son, and he and his son will employ 2 men. It is owing to the nature of the farm. In the southern part of the county, where it is trucking alone, he needs more help in the summer than in the winter. In the north, where it is general farming and dairying, especially dairying, he needs the same amount of help in the winter as in the summer.

Q. What proportion of the farms of your county are devoted to dairying?—A. On a rough estimate, I should say one-half now make dairying rather a specialty.

Q. Where do you market the product?—A. A great deal at Trenton. Within perhaps a radius of 6 miles most of it goes to Trenton in the form of milk.

Q. What are the prices of milk in Trenton?—A. About 6 months wholesale prices will be 4 cents and for the remaining 6 months 3 cents; double that for retail.

Q. Where do truck farmers market their product in that section?—A. Mostly at Trenton. The dairymen that live outside of hauling distance from Trenton, most of them, ship to Philadelphia.

Q. You have a milk train running to Philadelphia every morning?—A. Yes; right through every day.

Q. Do the young men who grow up in that section remain on the farm, or is a tendency to leave it noticeable?—A. The tendency with our brightest, best young men is to leave.

Q. Where do they go and what do they engage in?—A. Usually go to Trenton. Some enter professions, some mercantile pursuits; some one thing, some another.

Q. Can you give the reason why they seek to escape the vocation of agriculture?—A. Various reasons are given. A good many think it is too slow a way of making money, and some think it is too laborious, and the difficulty that has been experienced in getting good reliable farm labor has led a good many to give it up.

Q. The difficulty of getting good farm labor is an element of discouragement of agriculture?—A. It has been one of the difficulties.

Q. What are the prevailing wages paid farm labor through that section?—A. As near as I know, from \$10 to \$20 a month and board.

Q. (By Mr. KENNEDY.) Does the negro labor that comes from the South readily adapt itself to the improved machinery used in agriculture in New Jersey?—A. No; not many of them.

Q. You do not put them to using machinery?—A. No, but very little—that is, intricate machinery like a binder or anything like that—unless there is someone in the field who can look after it if anything gets the matter with it.

Q. (By Representative GARDNER.) Do you find a percentage of these people can run a mowing machine all right?—A. They can drive a team all right and if nothing gets out of condition they can run a mowing machine.

Q. Can they run a corn planter?—A. I would not want to trust one with a corn planter unless he had been North a year or two.

Q. Does that labor stay North after it leaves the farm, or return to Virginia each fall?—A. With us perhaps the first year or two they will return South about Christmas. We also have a good many female servants from the South, and a great many of them, after being there a couple of years or so, get married and live there permanently. A good many are with us now permanently.

Q. Does the farm labor which you bring up from Virginia remain farm labor, going South in the fall and coming back again in the spring, or does it get acquainted in the North and leave the farm and go into some other vocations?—A. No; I do not know of their going into any other pursuits.

Q. If they come in the spring and return in the fall annually they soon become experienced?—A. Yes; they will. As I say, I would not want to trust them with machinery the first year.

Q. Do you find that those who go South and return, as a rule, return the following spring to the same neighborhood, or do they prefer to get into some other neighborhood?—A. They generally come to the same neighborhood.

Q. Then you get the advantage of the experience that they get on your farm?—A. Yes.

Q. (By Mr. KENNEDY.) Can you state approximately how many of these colored laborers come into your county?—A. No; I could not.

Q. Do they come there by the hundreds?—A. I would not want to say how many hundreds there were on the line of the Philadelphia and Reading Railroad. They frequently come up the 1st of April, and when they get to Trenton Junction there will be almost a car full. By the time they get to Bound Brook they will scatter out at the different stations.

Q. They do not all come at the same time?—A. Not all; but they try to make it a point to be there and go to work the 1st day of April. That is the time of employing help in our section.

Q. You think that many thousands of them come to New Jersey to work as farm laborers?—A. I am not acquainted with the different sections of the State sufficiently to answer that question. If the proportion was the same all over the State as it is in Mercer County, I think it would be perhaps two, three, or four thousand.

Q. (By Representative GARDNER.) When they leave you in the fall and return in the spring, how do they employ; do they correspond with you and employ again directly in the spring, or do they come on to the cities and report to the intelligence offices and get work there?—A. Very few of them are hired through the

intelligence offices. Many of them are employed for the next year when they leave to go South in the fall. If one man is South and coming North in the spring, and he has brothers or one or two friends that want to come North, he sends word to his employer that if his neighbors want hands he will fetch them up.

Q. (By Mr. FARQUHAR.) Is this immigration caused by the lack of white help in your section?—A. The cause of our employing them is the lack of good white help. They are preferable to the foreigner, whom we can not understand and who knows nothing of our ways.

Q. Are there any foreign immigrants that make application for labor in your section?—A. None on the farms that I know of.

Q. How long has this been the practice, the hiring of this colored help?—A. As near as I can tell, it started somewhere, perhaps, about 7 years ago in our section and has been increasing.

Q. (By Mr. KENNEDY.) There must be considerable inducement in the way of increased wages to bring them up from Virginia. Do you gather from them what the difference in wages in the two States is?—A. Well, I have heard them speak of the wages they received at home, but I never put a great deal of confidence in what they said about their wages. There are conflicting reports.

Q. (By Representative GARDNER.) What is the state of literacy among them, if you have observed?—A. Those that I have had employed, both male and female, can read moderately well, and several of them that I have had can write so that you can understand their writing. Their attainments that way compare very favorably with the native colored people we have there, who have the benefit of free schools.

Q. Is the method of farming on shares in vogue to any extent now?—A. Yes; quite extensively.

Q. On the usual terms of one-half or one-third, according to the stock?—A. Yes.

Q. Foreign immigration you have practically none?—A. Very little in our immediate section.

Q. What are the school facilities in your section?—A. Good.

Q. Does it, in your judgment, need adaptation to the needs of agriculture in the agricultural schools?—A. I do not think there is any particular need of that. I am not an enthusiast on introducing the elements of agriculture in our general public schools, for the reason that the majority of our public schools, even in the country, are located in villages and towns where the school is perhaps made up of as many pupils who are not the children of farmers as of those who are. It may be a good thing, but I have not been an enthusiast on introducing that element.

Q. What is your opinion as to the earnings of capital employed in agriculture as compared with former periods, taking the farms at their present value?—A. Going back to 1860, I think it would compare very favorably. To go back to 1865, to 1875, or on later, it is not near as good as that period was.

Q. What have you to say of the taxation of agricultural property in your county?—A. In our township our rate is almost $1\frac{1}{2}$ per cent; it varies from 1.38 to 1.40 or 1.45.

Q. How does that compare with the rate in cities—Trenton, for instance?—A. Trenton, I think, is about $2\frac{1}{2}$.

Q. Do you know of the comparative valuations of country and city property?—

A. The valuations of farm land in the county are higher in proportion than the city property.

Q. Does the New Jersey farmer yet reconcile himself, in fixing the value of his property for taxation, to the shrinkage that has taken place since the war?—A. He does not, especially if his farm is for sale and he wants to sell it.

Q. Does or not, in your judgment, the hardship of taxation result to the farmer by his own persistence in putting a value on his property that he knows to be higher than it would exchange for?—A. I think in some instances it does.

Q. In cities the price fixed is usually the selling price?—A. In Trenton they have a board of assessors. In the country the valuation is fixed by the local assessor, who is elected by the people, and some farm land occasionally will be rated too low, according to location, especially if the assessor wants a vote next time.

Q. Is there or not a prevailing thought that they can not afford to have their farms assessed as low as they believe they would sell for if put up at public sale?—A. Yes; especially if they have in view the selling of their farms. Of course they do not want the price put down on the duplicate.

Q. There has been a material decline in the prices of agricultural products, has there not, within 20 years?—A. Yes.

Q. To what cause do you attribute that?—A. The prime cause I attribute to overproduction. The supply has been greater than the demand.

Q. What had, in your judgment, the prices of the period of which you speak that resulted in booming farm land to do with stimulating that overproduction?—A. The high prices of farm products some 80 or 40 years ago led to the opening up of the immense territory of the West. The markets of the world were ruling high prices at that time and we were enabled to get high prices for all we exported; but it led Russia to develop and England to develop, and altogether after a while we got an oversupply.

Q. What has been the decline in the value of agricultural lands under that process in your vicinity?—A. From one-half to two-thirds almost, with the exception of choice farms—choice locations near the city.

Q. Are choice locations near the cities peculiarly available for dairying and trucking?—A. Yes; there is this advantage: A farm lying within 4 or 5 miles of Trenton will bring much higher prices than 10 miles from Trenton, even if not very productive, because the farmer looks up his customers and takes his milk into Trenton and retails it. He gets 6 and 8 cents a quart—all there is in it—and at the same time he can do a great deal of huckstering of potatoes, eggs, etc., that they grow on the farm; takes them along in the milk wagon, so that he gets all there is in it. It makes that farm worth almost double, in many instances, what it would be 10 or 15 miles away.

Q. The special value of these farms results from conditions under which they can devote them not alone to agriculture, but they offer facilities of entering into retail trade with their products?—A. Yes; and having a local market which they can reach that way.

Q. Is there a decline in the productive condition of the soil in New Jersey, in your judgment?—A. No; I do not think there is.

Q. You think it is being kept up?—A. Yes; that is, the most of farms. Of course there are exceptions.

Q. What have you to say as to the organization of agriculturists?—A. I think farmers' organizations are a good thing and have been of great benefit.

Q. The farmers' organizations have then in New Jersey been a means of dissemination of information, derived from the agricultural colleges and other sources, among your farmers?—A. Yes; they have been of great benefit in that line.

Q. Have they, in your section, been of any advantage in marketing crops?—A. No particular advantage in my section.

Q. Have they been of advantage in the purchase of fertilizer and other supplies?—A. Yes.

Q. (By Mr. KENNEDY.) Is it a fact that there is a successful organization of dairy farmers in New Jersey to control the output and price of milk?—A. There is an organization that affects the extreme northern counties, connected with the Five States Milk Association, with headquarters in New York. I do not think it has accomplished much yet. I think the organization is hardly in working order. Last week I met a gentleman from the northern section of the State, a large farmer, who is interested in that, and he told me that they were not yet in condition to test it really and know whether it was going to be of any benefit or not. That is the basis from which I answer that question.

Q. (By Representative GARDNER.) Do you know whether there are some lines in New Jersey where there is underproduction to which more land might be devoted?—A. No; I do not know that I do. One crop might bring a high price this year and a great many farmers might go into it next year and make an excess and down would come the prices.

Q. In a general way, what has been the effect of improved agricultural machinery in New Jersey on labor, wages, and the profits of the farmer?—A. I do not know how farmers could exist and go on farming without it. It has been a great benefit. We employ as many men as we did, but we are farming more extensively and it would be impossible to go back to the old methods.

Q. It would be impossible so long as you are in competition with other areas which used it, but I presume the question contemplates the entire absence?—A. If the whole country and the world was to abandon improved machinery we might possibly then go on the same basis we are now.

Q. Have you studied theories as to the ways in which markets for the American agricultural products might be extended?—A. I have my views about that. I do not know that I would say extended out of our own country, but I think the American farmer is, after all, dependent on a good home market, and if the supply of agricultural products in this country and the demand can be brought to any ways near an even balance, I think that farming would be as good as any other business, as good as anybody could expect. When we get outside of our own country we have to go into competition with cheap labor of other countries.

Q. Then the increase of city population increases the farmer's market?—A. Yes;

very materially. When our potteries in Trenton were in full blast it was no trouble for the farmer to take a load of produce and get the ready money for it.

Q. And even the farmer boy who leaves and goes to the city becomes a consumer of farm products and to that extent aids the farmer, does he not?—A. Yes.

Q. Taking into account our improved machinery and the conveniences, commercial fertilizers and all that, what, in your judgment, is the comparative cost of production of a crop now under the new conditions, and under the old, before you had either?—A. I think the comparative cost is about the same as it was in 1860.

Q. Assuming that there is a gain in the machinery and fertilizer, where does the loss occur that balances that?—A. Our farm labor costs us a great deal more than it did in 1860; and in 1860 commercial fertilizers were just beginning to be used, were not used one-quarter as extensively as they are now. We were compelled to use it because our soils were becoming exhausted. Now we have to supply that deficiency.

Q. Are wages higher?—A. Yes.

Q. By the month?—A. By the month and by the day.

Q. And the hours; how much shorter?—A. The tendency is to shorten. Many diversified interests come in. A trucker has to make large hours at certain seasons. The dairyman who retails milk or ships to Philadelphia—the train goes early in the morning—has to get around very early in the morning. These two classes of men have to make very long hours, especially in the summer, and they do not get off from their time what they used to; but with other classes of farmers who do not ship milk, but follow the old lines of raising cereals, the tendency is to shorten hours.

Q. Is it not about universally true that the farm hand of to-day is determined to work more deliberately and comfortably than he did 20 years ago?—A. They are much more independent in their work than they were back 20 and 30 years ago.

Q. What, in your opinion, is the effect of the good road movement in New Jersey on the agricultural interests?—A. I can not see that good roads will be of any great benefit except to the farmers that are adjacent to the large cities. To them they are undoubtedly a benefit.

Q. What do you call adjacent? What is the hauling distance to market in your neighborhood?—A. Well, take a dairyman that runs his milk into the city, and who has to make a trip every day; and take the man who raises grain, for instance, hay, which is one of our great staples; the man who carts his crop of hay to Trenton—the average farmer sells, say, 30 loads of hay—has to make 30 trips over that road to Trenton, and the milkman has his 365.

Q. I notice through Burlington County, people above Riverton, over about Mount Holly, drive to Philadelphia with their truck, some of them as much as 18 miles certainly.—A. We have very few that haul that far to Trenton markets. The radius for that market is about 6 miles. With hay, grain, and potatoes they will run in for perhaps 12 miles. On the good-roads question, it is a help to the farmers living along these roads who come to the market frequently. For farmers living off from them a little distance, who do not go to Trenton frequently, it does not materially increase the value of the farm.

Q. What is the variation in transportation charges from your vicinity to either Philadelphia or New York within any period fresh in your memory?—A. There has been a very little change. The rates on some things to New York were increased a few years ago, especially on live stock.

Q. From all the indications now apparent, what is your opinion as to the future of agriculture in New Jersey?—A. I think the outlook is favorable. One thing that has made it a great burden, many bought their farms 20 or 30 years ago when the price of land was up, paid about one-third down and gave a mortgage for the balance, or one-half down and a mortgage for the balance, and the money they put in that was swept away. Lands are down now. If a man buys a farm now he is in a very different condition from the man who bought a farm 30 years ago. My own opinion is that in our own country our supply and demand will equalize itself, perhaps in the present generation, we might say, and when that comes to be the case I think the outlook is good. Our best western lands are taken up, and our population is increasing so that, after all, when we compare figures the amount of our exports is not so very much compared with the whole amount that we grow. If we can get that near equalized (I think it will come before many years), the outlook is very good for the farmer. I would not advise a young man to buy a farm without any money, but if he can pay one-third or one-half down and is willing to work, I do not know of any occupation that the average young man would have a more certain way of making a living from than he would by buying a farm.

Q. (By Mr. KENNEDY.) That advice, I suppose, applies to the young man who has been reared on the farm?—A. Yes.

Q. Do you find in Trenton a sufficient market?—A. For some distance around Trenton; all the goods from that section of the country, and most of the hay and milk.

Q. Do you not think the New Jersey farmer should have some one to do his buying and selling?—A. One of his own class as a commission man instead of the regular commission man? How long would it be until he would be as bad as the original or professional commission man?

Q. It would depend a good deal on just what he could make out of it. You could arrange among yourselves for a reasonable commission. Do you not think there is a great deal of money lost by not having a man on the market knowing what the products are worth?—A. The method among the commission men in New York to a great extent is that they buy the goods that are sent there themselves and make returns for what the market price is that day. Very largely the commission men at the present time in New York, on articles that can be held, are the purchasers, the jobbers.

Q. In your farmers' meetings there have you taken up that question?—A. No. In our section we have scarcely anything to send to the New York market because we are fortunate in being near a market that is oftentimes better than the New York market. Let our potteries be in full blast in Trenton and we have no use for the New York market.

Q. Would the same amount of money put into farming yield as much as if put into mechanical or manufacturing business?—A. It might not yield as much and it might yield more. If a young man adapted for farming should buy a farm, would study it, and give his close attention to it, he perhaps would succeed more than if he put his money into mechanical pursuits. On the other hand, a young man not adapted for farming might succeed best the other way.

Q. To a young man raised on a farm, an ordinary farmer's boy, are there more inducements to stay at farming than start in any other kind of business?—A. For myself, I think the inducements at the present time are as good for him to remain on the farm as to go into the city.

Q. Take it the 12 months round, do you think the farmer does any harder work than the mechanic working 8 to 10 hours a day in the city?—A. A great many of our farmers do, especially truckers and the dairymen. I do not think the average labor on the farm the year through is any harder than that of the mechanic who works 10 hours; but put it down to 8 and it makes a good deal of difference.

Q. (By Senator MALLORY.) Hour for hour, do you think they work equally hard?—A. It is owing, of course, to what kind of mechanical labor a man is engaged in.

Q. Machinist or molder?—A. I think the machinist's labor would perhaps be as hard or harder than the farmer's, the year round.

Q. Do you think farming is more exacting than mechanical life, or is it easier?—A. I might answer that question by saying, anything is exacting if followed out thoroughly, farming as well as mechanical arts.

Q. But you say the farm hand is getting more independent, more conservative of expending his energy?—A. The tendency of our best farm labor, such as we had 30 or 40 years ago, has been to leave the farm, especially our American laborers, and go to the city. One reason for that was that they could get higher wages than the farmer could pay. Another reason, especially in different manufacturing, such as the large wire works, which manufacture millions of yards of wire cloth and things of that kind, his family and daughters could go to work. In the potteries they employ hundreds of girls. They could get work and get fair wages, and the family could spend their evenings at home together and have these social advantages and earn more money than they could on the farm. These things have drawn our best American labor away from a radius of 30 or 40 miles of the city.

Q. You have plenty of help the whole year round?—A. Yes.

Q. Do you take into account the fact that most of these mechanics do not get over 8 or 9 months' work, at presumably higher wages than the farm hands would?—A. Mechanics' wages are higher because very few work by the month, but work by the day of so many hours.

Q. To spread the mechanic's greater wages over the 12 months, is not the farm hand in about as good condition as the mechanic?—A. I think he is.

Q. With all of this, cheap, fresh vegetables, lay by, leisure, and everything else, is he not in better condition than the one who seeks the mechanical trade?—A. I think that is true. But after they get in the city with their families it is a gay life for the young people, and you can not get them to return to the farm. They will starve almost, but they will not go back.

Q. The allurements of the city are really the reason the young man leaves the farm, not because his task is harder and not as well paid?—A. Not always the allurements. There are ambitious young men who want to make money faster than they can make it on the farm; young men who wish to enter professions are the pushing young men.

WASHINGTON, D. C., June 24, 1899.

TESTIMONY OF MR. A. C. TRUE,

Director of the Office of Experiment Stations, United States Department of Agriculture.

The commission met at 11 a. m., Second Vice-Chairman Gardner presiding. Mr. A. C. True was sworn as a witness, and testified concerning agricultural experiment stations and colleges, as follows:

Q. (By Representative GARDNER.) Please state your name?—A. A. C. True.

Q. Occupation?—A. I am director of the office of experiment stations, United States Department of Agriculture.

I might say that under the call which I received to come before the commission I have prepared myself to speak especially on topics which are included under Nos. 23 and 24 of the commission's topical plan of inquiry on agriculture, technical education in agriculture, and the agricultural experiment stations, and I shall have something to say on the adaptation of the public school to the needs of the agricultural people. I take it for granted that as I proceed in my remarks members of the commission will put in questions wherever they desire special information, and if I am able I will give it.

Just a word as to my competency as a witness on these subjects: The office of experiment stations, with which I have been connected in various capacities since its foundation, is a sort of clearing house for agricultural education and experimentation in this country and abroad. We receive there the reports and bulletins of all the agricultural colleges and experiment stations and from many foreign countries, and we make a business of reviewing all that literature for the purpose of knowing its contents and publishing as much as may be of general advantage to our people in this country. Besides that, we have made, within recent years, personal visits to every part of the United States except our new island possessions, and also to many of the countries of Europe. I have been myself a number of times to all of the States and Territories in the United States except Alaska, and I have also visited Europe for the purpose of studying questions relating to agricultural education and experimentation. So that, in a general way, I think I am in a position to look at this matter broadly, and I hope I shall be able to bring out some information which will be of use to the commission.

First, let me call your attention to the fact that there has been within the last half century a great world-wide movement for the organization of technical education in agriculture and scientific research along agricultural lines. It is very important, I think, that our people should understand that the work we are doing in this country is simply a part of what is being done the world over, and that the great commercial nations, with which we are more and more coming in competition, are every year increasing their efforts to perfect their system of agricultural education and investigation.

The movement abroad, in some respects, has reached its highest perfection in France, Germany, and Belgium, where agricultural education has been quite thoroughly organized, and includes schools of different grades from the university down to the elementary school. And now such countries as Russia and Australia and Japan are developing quite complete systems of agricultural investigation and education, and even in countries that we have counted as among those that never move in progressive lines there is a movement in this direction. In Egypt there is at least one very well organized agricultural college, and in connection with it agricultural experiments are being carried on under competent direction. Recently the Sultan of Turkey has called on the Secretary of Agriculture to recommend some scientifically trained expert along agricultural lines who might advise him how to organize agricultural education and experimentation in the Turkish Empire.

In this line, as in other lines, we must always remember that we are meeting an ever-increasing tide of competition and that we can not afford to be behind

the rest of the world in any way in the organization and perfecting of our schemes for technical education in agriculture and for scientific and practical experimenting in agricultural lines.

Coming now to the United States, we may say in general that we have three agencies for agricultural education and research. We have the agricultural colleges and schools, the agricultural experiment stations, and the United States Department of Agriculture. The United States Department of Agriculture is, in the main, a great agricultural experiment station, working along both the higher lines of scientific research and more practical lines, and giving out a large amount of information for the benefit of the people. I thought that very likely the commission would call before it some representative of that Department who would speak particularly of its work, so it is my purpose not to say anything about it in detail to-day, but to confine myself to the system of agricultural education in this country and the agricultural experiment stations.

Briefly speaking, our system of agricultural education includes agricultural colleges, agricultural schools which are of a lower grade, the farmers' institutes, various plans of university extension, as it is now called, such as home reading circles and farmers' clubs, which pursue courses of study under the more or less direct supervision of the agricultural colleges; and besides that we have a movement, now rapidly gathering head, for the introduction of nature study into the rural schools, somewhat after the same plan as has been introduced into the city schools, but with a choice of subjects more directly relating to agriculture.

Speaking first of the agricultural colleges, they are organized under what is known as the land grant act of 1862. This is an act which is very broad in its scope, and for that reason the system of institutions which have grown up under it includes a wide range of colleges and universities, and much misapprehension has arisen in the public mind regarding these institutions because they are loosely classed together in the public press and otherwise, oftentimes, as agricultural colleges. Now, the fact is that in this country we have only one purely agricultural college, and that is located in the State of Massachusetts, at Amherst. In 27 States and Territories the colleges are organized as agricultural and mechanical colleges, not always having exactly that name, but they are colleges in which, along with agriculture, there are courses of instruction relating to the mechanical arts and other subjects like domestic science, and in many cases some shorter courses, so that in these 27 States you have institutions ranging all the way from those which have 2 or 3 courses of study to those which have 12 or 15 different courses of study.

Q. (By Representative LIVINGSTON.) How do you class the Mississippi College?—A. The Mississippi College is classed as agricultural and mechanical—that is, it has courses in agriculture and mechanic arts especially.

Then, in 20 States, these land-grant colleges are the State universities, in which there is a department or school of agriculture, but of course these State universities take in every subject that comes within the scope of education, as far as their means will permit. In all these institutions we have different kinds of courses for agriculture—the regular 4 years' college course, a shorter course, commonly of 2 years' duration, special courses, as in dairying, etc.—and there has been a great tendency, as far as the agricultural side of these institutions is concerned, within the past few years toward specialization, both in the dividing up of the subject of agriculture into different branches which are taught by different teachers, and in the offering of more special courses in different agricultural subjects; and this, I think, is strengthening the agricultural course and bringing it into line with the courses given in other subjects, and enabling it more fully to meet the needs of different classes of students.

You may be interested in one or two of these special lines of work. For instance, there is at the University of Wisconsin a special dairy school, which has already sent out about 800 trained butter and cheese makers, and has also taught between 1,000 and 2,000 young men butter making on the farm as distinguished from that in the creamery. There is also at that institution a short course in agriculture which this year had 190 students in attendance. In this case they are working directly for the interests of the farm, as you will see by this statement which the dean of the college, Professor Henry, makes:

"We have found places on the farms this year for more than 60 young men, and 20 more will probably find employment within the next week. These young men secure from \$3 to \$5 or \$10 more per month because of their training with us."

Another instance of this special school work is in Louisiana, where a school for training sugar experts has been in operation for a number of years at Audubon Park, New Orleans, in connection with the experiment station, and more recently at Baton Rouge, in connection with the State University, that has proved useful

and is meeting with outside approval and with the support and financial assistance of the Sugar Planters' Association.

We have in this country, at present, land-grant colleges in all the States and Territories except Alaska; and in some of the States, especially in the South, there are separate institutions for the colored people, so that the total number of such institutions, according to the statistics for 1898, collected by the office of experiment stations, was 64, of which 61 maintained courses in agriculture. They had, in all, resources of funds, lands still unsold, farms, buildings, apparatus, machinery, libraries, and miscellaneous equipment to a total value of something over \$53,500,000, and the income of these institutions, derived from the land-grant act of 1862, from the United States appropriation under the act of 1890, from State appropriations, from fees, and from other sources made a total of a little over \$6,000,000. The value of the additions which were made to the buildings and the equipment of these institutions in the single year 1898 is estimated to be \$2,800,000, showing a large relative increase and indicating the strength which these institutions have in the public regard, because a large part of this money came from the State appropriations.

The number of persons teaching in these institutions was, in 1898, 2,611, and in the colleges of agriculture and mechanical arts 1,722 instructors were employed. The total number of students in these institutions in that year was reported to be 31,658, and, in the courses of agriculture alone, 4,181.

Now, it would not do to measure the influence of these institutions on agricultural education and the promotion of the intelligence of our farmers, by the instruction they give in exact facts regarding this art; it will not do to judge the influence of these colleges in that direction by the number of students in agriculture, because these institutions, as I shall try to show you a little later, are in many ways going out beyond the class room to exert a much wider influence on agricultural progress in this country. But I think it is something that we ought to note carefully as an encouraging feature that we have such a large number relatively of students who are actually pursuing college courses in agriculture, for we are thereby, it seems to me, doing a great work in training the men who are to be the leaders in agricultural progress. We are sending out every year a body of thoroughly trained young men along agricultural lines whose influence, without any doubt, will be very great in promoting the progress of agriculture in this country.

We will consider next the schools of agriculture of lower grade than the colleges, and here we shall find that we have simply the beginning of a movement. There is connected with the University of Minnesota a school of agriculture of high-school grade, having a course of study and a faculty organized separately from the college of agriculture in the university, and giving instruction of a distinctively lower grade. This school, last year, reported an attendance of 275 young men and 60 young women. It is also affirmed by the managers of this school that nearly all of its graduates returned to farm homes, and as one branch of that institution there is a dairy school, which has in attendance about 100 young men who have had some previous experience in butter and cheese manufacture, and who have come to get a more technical knowledge of this subject.

A similar school has recently been started in the University of Nebraska and this year has an attendance of 60 boys, reported to be directly from the farm and with the intention of going back to the farm. The schools for colored people, the Hampton Institute, in Virginia, and the Tuskegee Institute, in Alabama, under Booker T. Washington's wise management, of which we have all heard so much, are developing agricultural courses along these high school lines. Then we have a school under the Jewish auspices at Doylestown, Pa., endowed, as I understand it, by the Baron Hirsch fund to a considerable extent, which has a farm school on the European pattern, I should judge, though I have not had the privilege of visiting it. They take the boys to live on the farm and instruct them in agriculture along practical lines. I also understand that the Miller Manual Training School, in Virginia, gives some training in agriculture along this line. This, as I have stated, is only a beginning. In my judgment, every year shows more conclusively that we need in this country to develop secondary schools for agriculture as they have been developed to a considerable extent in the leading countries of Europe. Now, there are two ways in which I think this may well be done. I think we ought to have a number of special schools after the plan of those schools in Minnesota and Nebraska. They might be begun in connection with the land-grant colleges, but they ought to be extended so as to have a number of them at different points in different parts of the State. They can be run, of course, as secondary colleges at comparatively moderate cost and the expenses of the students can be made smaller than in the colleges, and they would be nearer to the students' homes; but even if that should be done,

I think that in addition we should have the introduction of what I would call outline courses in the theory and practice of agriculture in the high schools in or near the rural communities. I do not think that our people outside of the cities fully understand that the cities are constantly developing their high schools along the lines of manual training and technical education. In Washington, for example, we have a business high school as a separate institution, and we are going to have a manual-training high school. In many high schools in the smaller cities, we have courses which directly relate to the various lines of business and industrial arts. Now, I think the same thing ought to be done for agriculture, and, in my judgment, it is a comparatively simple matter at least to make a beginning of this work. Many high schools in the cities where the high-school system is well organized already have at least one teacher who is chosen because of his ability to teach natural science in certain branches. That teacher might just as well be a person who had received instruction in scientific agriculture in the land-grant college, if you will, because there, of course, he gets instruction in the natural sciences, which is just the same as he gets in any college, and he receives instruction in technical agriculture besides. He could offer an outline course in agriculture as an optional study, if you will, that would enable the boy going from the common school to the high school, as many of them do to finish their education, to take up at the same time, in his high-school course, such a general survey of modern scientific information relating to agriculture as would enable him when he went back to the farm to further the movement that is going on for the uplifting of agriculture along these lines. It would enable him to understand more fully the bulletins sent out from the experiment stations and the Department of Agriculture, and, in a general way, it would give him an outlook toward comprehensive agriculture which would be of the greatest value to him. He could get all that without going farther from home than he now does to the high schools located in his own township or near there.

Now, a similar thing to that along another line has been done in some States for the advantage of the high-school teachers; for example, the State of New York gives to every high school that organizes a teachers' class with a certain number of students a subsidy, varying, according to the number of students, say from \$500 to \$1,000 a year. That enables that high school to get a teacher who has had some instruction in a normal school, and he, in connection with his other duties, organizes a teachers' class and gives them an outline course in teaching. That is doing a great deal in New York State to raise the grade of teachers in the public schools, and has been found a comparatively inexpensive plan. I think the same plan might be applied to the teaching of agriculture in the high schools under the auspices of the State.

Passing now, and considering briefly the farmers' institutes, which we may call the adult farmers' school of agriculture: these are organized in different ways in the different States. In some cases they are under the general management of the agricultural college or experiment station. More frequently they are under the direction of the State board or commissioners of agriculture, and in a few States there is a special State officer known as the superintendent of farmers' institutes, who has that general management. There has been a very rapid increase in the number of institutes annually held in this country. There are, I am sorry to say, no exact statistics available regarding these institutes, but I have collated them as well as I could, and I have estimated that institutes are regularly held now in about 30 States, and that during the past year some 2,000 institutes were held, the total attendance at which was about 500,000. These institutes are passing through an interesting stage in their development. When they were first organized the farmers seemed to like best to hear the local men who had had experience in their immediate vicinity—some successful farmers—and they did not care as much about outsiders; but nowadays the demand more and more is for expert talkers at these farmers' institutes, men who can not merely state what is within their own experience, but who have had opportunity for some wide study of agricultural problems, and so in one or two places at least there is the beginning of a movement to organize a special corps of institute workers. They have, thus far, largely drawn upon the colleges and experiment stations; but these men, I must say in their behalf, are getting overworked, and so now there is a call for men who will devote their time more largely to the special work of the institutes. I think myself that this is a thing which ought to be encouraged; that we ought to have in this country men corresponding to what they call in France traveling professors; men who can be connected with the central office of the farmers' institute in the State, and who can have time to go to agricultural colleges and experiment stations, or come to Washington and see what is going on in the Department of Agriculture as well as look around and see what the needs of the farmers are in

their own State. Then it should be made possible for them to disseminate this information by oral communications at the farmers' institutes and other farmers' meetings.

Some of the States in which the institute movement has been most successful are the following—a few instances to show how the movement is developing:

In Wisconsin there are now annually held 120 institutes with an average attendance of over 50,000 persons, and 60,000 copies of their annual institute bulletin, in which the best addresses are grouped together, making a book of over 800 pages, are annually distributed, and a copy put in every school library in the State. For this work the State gives an appropriation of \$12,000 annually.

In Massachusetts 125 institutes are held, with an attendance of about 18,000 farmers.

In Minnesota 50 farmers' institutes of 2 or 3 days each are held, with an attendance of from 300 to 1,000 people at each institute, and 15,000 copies of their annual report are distributed.

In Indiana an attendance is reported of over 25,000, an average number of 273 persons in somewhat less than 100 institutes.

In Michigan institutes are held in nearly every county and the total attendance is reported to reach about 120,000.

In Pennsylvania some 200 institutes are held.

In Ohio 235 institutes in 88 counties were held, with an attendance of about 90,000.

In New York some 250 institutes are held in a single year.

Pass on, now, to consider briefly what may be called university extension work on behalf of the farmer, a part of which is included in what the colleges do for the farmers' institutes, as already shown.

We have an attempt in Pennsylvania and some other States to organize a regular course of home reading for farmers. The Pennsylvania State College was the first to do this in any thorough way, and its work may show what can be done in this line. They have at present enrolled at the Pennsylvania State College between 400 and 500 persons who are pursuing these courses at their own homes. A syllabus of the course is sent out to each of these persons and they are recommended to read certain books and asked to write answers to questions, and these answers as they come in, in many instances, show a surprising degree of proficiency. That work is growing rapidly, and it has already taxed the resources of the college to carry it on. Besides this, we have at times had what may be called traveling schools—that is, instead of the ordinary institutes, we have the instructors in the colleges and workers in the experiment stations going out and taking up some particular line of instruction for, say, 3 days, in a special locality, so that those in attendance get a little more systematic survey of the subject than at the ordinary institute through addresses. This is just in its beginning in this country, but has been attempted abroad to a considerable extent. For example, in England a number of traveling schools for dairying are put in operation each season. A dairy outfit of the modern kind is taken along on the train and on the cart finally, and the teacher in charge not only makes an address, but he shows how these instruments or apparatus are to be worked, and helps the farmer in this way to get an idea of the more modern methods.

Lastly, under the head of agricultural education, we will consider agriculture in the elementary schools. This has been undertaken in some European countries to quite an extent, but the outcome is as yet problematical. The one great difficulty thus far, as in this country, has been to find teachers who are properly trained for that kind of work, because it requires a special training and especial adaptability to succeed; and then the general demand for the introduction of new studies into the elementary schools growing out of the general broadening of human knowledge makes it a very difficult matter to determine how far any special subject like agriculture can be safely and wisely introduced into the common schools. In some cases it is done with considerable success abroad. I remember, for instance, going myself to a school in a little village in Belgium, where the teacher, as in Europe in such schools is almost universal, was a man, who was that day giving instruction on milk to children 12 and 14 years of age. He was doing it in good shape, and they were much interested, and trying to get out of it all they could. They told me he was a very unusual man. His whole soul was in his work. He was secretary of an agricultural club of the village, and he was trying to introduce a modern dairy, besides his onerous duties as general schoolmaster. He was one out of a thousand. That shows that under some circumstances, at least, something can be done in this line, but, generally speaking, I do not myself believe that the formal teaching of agriculture can be introduced into the common schools, and that seems to me to be certainly true

under the present condition of our common schools. What we need to do now is to reform our country schools along the modern lines of elementary instruction, just as we have the city schools, and we shall be busy for some years to come in getting the common schools into as good condition along these lines as they ought to be. One thing which can be done, and which will have considerable bearing on agriculture, is to introduce into the common schools the teaching of nature, to use a phrase that is becoming common—that is, to have the teachers in these schools as a part of their regular work lead the scholars to observe the natural objects and phenomena about them, and thus to get a start along the line of modern thought relating to science, and to see in an elementary way how this is related to their practical affairs. If that can be done in the rural schools generally, of course the subjects which would naturally be selected by the intelligent teacher would very largely be subjects related to agriculture. If the teacher was to teach about a bug, for instance, the natural thing in the country would be to take a bug which was prominently known to the people there as a bug helpful or injurious to agriculture, as the case might be; and any intelligent teacher in the course of instruction would point out the fact that it was beneficial or injurious to agriculture; and so in regard to a wide range of subjects relating to nature. This movement has begun in a very successful way in the State of New York. It has spread into Indiana and Maryland, and possibly into some other States. It seems to me to be the coming movement for the improvement of rural schools in the direction of benefit to agriculture. In New York the State makes an appropriation of \$35,000 for university extension work to the college of agriculture connected with Cornell University, which is the land-grant college. A portion of that money is to be spent in simple experiments to be carried on in different parts of the State, and under such appropriations the college of agriculture and the experiment station connected with Cornell University have carried on several hundreds of experiments with potatoes and fertilizers and such other things as the farmers themselves could manage; and these have been distributed quite broadly through the State. But a good deal of the money is used in the preparation and dissemination of leaflets on nature subjects, which may be used by the teachers in preparing simple lessons for the scholars in the elementary schools, and then the instructors in the agricultural college go about the State to attend the teachers' institutes and farmers' meetings to explain this movement and to help on in the work.

They report that this year, under this plan, instruction is being given to some 10,000 farmers and about 25,000 teachers, and presumably, of course, to the scholars under the control of these teachers. Now, the only difficulty about this movement is that it is so popular that the work imposed is an embarrassment to those in charge of it, and, as would be natural, the city schools see in it an opportunity to improve their course of study, and so the demand for these leaflets has come to a considerable extent from the teachers in the city schools, showing that they are alive to the subject. I speak of this because one of the greatest difficulties in such movements grows out of the conservatism of the farming population. I had myself an experience covering a period of years as a teacher in one of the State normal schools of Massachusetts. We trained our teachers, among other things, to give lessons on nature subjects. In Massachusetts the schools are under the control of the local board, and we found that when the teachers went out into the rural schools and undertook to introduce these nature studies the school board said: "Oh, no; we do not want these new-fangled studies. Readin', writin', and 'rithmetic is good enough for us." This is a matter that you will have to contend with in extending this movement for the introduction of nature study into the common schools. You will have to overcome the conservatism of the mass of the people in rural regions.

I have gotten through now with what I had marked out to say about agricultural education. If there are any inquiries, I might pause briefly there.

Q. (By Senator MALLORY.) Do I understand you to advocate the introduction of these practical lessons in agriculture in the common schools in urban as well as rural districts?—A. No; I do not think we can urge that agriculture ought to be taught specifically in the urban schools, and yet it is very difficult to make, of course, an exact division. I think agriculture might well be taught in a great many places that we might call cities, which are intimately associated with rural communities, but in our large cities, like Philadelphia and New York, I doubt if they would find it expedient to introduce the teaching of agriculture.

Q. Where would you draw the line between urban and rural schools?—A. I do not think any exact line could be drawn.

Q. That would have to be left to each particular case?—A. Yes; to each particular case.

Q. There would be danger, I suppose, of rather overloading the curriculum with practical work in having it in the city schools, because there is always, if I am not mistaken, a movement to bring in practical mechanics, industrial arts in some of the schools.—A. They teach things relating to the industries of the cities. What I urge is, in the high schools in and near the rural communities, there should be teaching relating to agriculture.

Q. How are you going to draw the line?—A. I think that would have to be determined largely by the local conditions. There are cities of 50,000 to 60,000 inhabitants which really are rural centers surrounded by agricultural population. Take, for instance, a city like Des Moines, Iowa, where the agricultural interests of the State are so prominent. I have no doubt in the high school in Des Moines there are quite a large number of students who have come from the rural schools to finish their education. It would then be very appropriate, in such a school as that, that an optional course should be formed in agriculture for the benefit of these students. They could do it without any considerable expense, because, as I said, they already have at least one teacher who is equipped along scientific lines, and if they got a teacher from some agricultural college he would know just as much science, and he would be able to give instruction in agriculture besides.

Q. (By Mr. FARQUHAR.) Will you please state the substance of the law of 1862, the land-grant act?—A. It is a law which granted each State and Territory 30,000 acres of land for each Representative or Senator in Congress, the proceeds from the sale of which were to constitute a fund to be held by the State and devoted to the maintenance of colleges in which agriculture and the mechanic arts would be taught, but in which other subjects, not even excluding the classics, might be taught.

Q. Do you recollect which State first took advantage of the act?—A. I do not. Colleges have been organized in all the States and Territories which could take advantage of the act.

Q. Before the act of 1862 how many States had what we call State agricultural colleges?—A. Only a very few. The college of Michigan was the first college; established, I think, in 1835; Maryland had made some movement in that direction; Pennsylvania likewise, and so in possibly 10 or 12 States there had been a movement.

Q. In the early part of your discourse you mentioned that France, Germany, and Belgium had made great advances in agricultural education; why do you except Great Britain?—A. Great Britain has been backward in that respect. She has no thoroughly organized agricultural education or experimentation. There are a few agricultural colleges; and she has in recent years given grants of money to a number of institutions, but there is no regular system. She is behind, but she is beginning to wake up to see, as in regard to technical education generally, that this is one of the problems in England nowadays.

Q. I suppose in Great Britain—if they have not organized systems of agricultural education, how do you account for the fact that the farmers are able to pay £3 to £5 rental annually and get crops off that pay them? This is a practical view, independent of the educational features, is it not?—A. I should say, in large measure, that is due to the market right at hand—at their doors. England has imported a very large portion of her agricultural material of all sorts, but along lines which call for intensive farming, market gardening, and, to a certain extent, the raising of fine stock and industries which require a large amount of practical skill, patience, and systematic effort, her farmers have the advantage, though it is not certain how long they will retain that advantage. I should judge from what I read they do not feel secure in that position.

Q. The point is this, you say that Great Britain has not systematized its education in agriculture, and yet practically this result we know, that farmers raising cereals in Great Britain pay rent from \$15 to \$25 per acre annually and make it pay. How does the British farmer learn these scientific principles?—A. He has learned through long years of the necessity for careful culture, and then he has taken advantage to a considerable extent. I would judge, of the information which has been given him through what has been done on the continent of Europe. You will find that the reports of the experiment stations in France, Germany, and Belgium are being constantly translated and made available to the English farmer. Much valuable information has also been given him by the experiment station at Rothamsted, in his own country, which has been at work over 60 years. But, on the other hand, in some things he has not been able to hold his own altogether. The farmer in Denmark, who took up with the scientific side of dairying and with the help of his Government organized the business of dairying on a scientific basis, has been able to go into the English market with his butter and

drive out, to a certain extent, the Englishman himself. The Danish butter, I understand, is rated higher than any other butter on the English market.

Q. And so with respect to Canadian cheese. I do not think the Canadians are very far advanced in agricultural education, but Canadian cheese can sell in Liverpool and London markets against the best Dunlop.—A. But in Canada there has been of recent years very systematic and thorough work in agricultural education and investigation. They have an admirable system.

Q. I thought in Canada, on account of the sparseness of population, it would be difficult to bring education in among the Canadian farmers?—A. I do not mean that large numbers of Canadian farmers have actually gone to colleges, but they have good agriculturists and good experiment stations, the reports of which have been widely disseminated in Canada.

Q. To go back to the British farmer question; do you not think that the three great societies of agriculture in England and Scotland, through lectures and positive experiments on their farms, without colleges, have really brought British agriculture up to its present high state, so that these farmers, renters, can pay these high rates of rent?—A. I think these organizations have had an important part in it.

Q. Do you not think in these schools you are speaking of now, that there has been a good deal of lecturing and use of the class book and the study of formulas and all that, and not enough real practical work on the farm carried on by the students in the agricultural colleges?—A. Perhaps, in a general way, I should agree with you, but not probably in just the sense you think; that is, without doubt, the general plan of teaching in the agricultural colleges and schools of this country has been not well organized. One thing, I may say in that connection, that the Association of Agricultural Colleges and Experiment Stations is doing now is to study the methods of teaching agriculture with a view to their improvement; but when I say that, I do not think we will have to go back to the old system of manual training in the schools, which has prevailed in Europe in connection with agriculture, as with other subjects. I do not think that it is the best plan to have the boys go to a school and spend a considerable portion of their time in working on the farm. The farm connected with the school, in my judgment, should rather be used just as a laboratory is used in connection with the teaching of science, to show certain things and to show how certain principles are to be applied to practice. Now, that will not be always done by the ordinary methods which the farmer would use on the farm, but the student, if intelligently instructed along these lines, can go back to the farm and apply these. Of course, he will incidentally get a certain amount of practice if the teacher is wise, which will enable him to carry out these things practically.

Q. Is there not really among the agriculturists of the country a considerable aversion to what they call "book learning" instead of practical lessons in agriculture, and is not that the greatest obstacle you have to overcome?—A. Yes; it is a very great obstacle. At the same time you may say, on the other hand, there are more farmers every year who read and profit by the literature which is available to them. Of course, nobody wants to claim too much for reading or acquiring information in schools, but I think we may fairly claim that as accurate information is obtained the farmer has more and more taken advantage of it.

Q. In various States of this Union, more especially in the States that were cultivated by black labor, we have the problem of a naturally impoverished soil. Even with the fertilizers and the known accessories that belong to agriculture it is hard to raise a profitable crop. Do you think that any of these lands can be reclaimed or profitable crops raised without the use of scientific agricultural means?—A. No. I do not think so, using the word "scientific" in its broad sense.

Q. I mean the everyday practical knowledge; that he has to acquire a knowledge of his soil and to diversify crops. Do you not think that is the largest problem we have to meet to day?—A. It is a very large problem, especially in the South and east of the Alleghenies.

Q. Now, do these experiment stations in the South, at Hampton and Tuskegee, cover anything like the problem of reclaiming these lands? Do you think that the style of education there is going to be helpful or is it sentimental?—A. I think the education in agriculture is decidedly practical. Of course, it has not gone very far, but the experiment stations and agricultural colleges in the South are teaching a great deal along this line, and the farmers should listen to what they have to say. Of course, in the South the greatest difficulty grows out of the conservatism of the farmer, which increases in proportion to his ignorance. The colored man has it deep into his mind that it is no use for him to try to raise anything but cotton. That is the only crop on which he can get money advanced, and so

he is unwilling to venture beyond that with which he is already familiar; but I think things are reaching such a stage in the South that he will be compelled to venture, and when he has once ventured he will find that he can live for an indefinite length of time if he does not get his advances; and if he is not at the mercy of the men who make advances of money on crops I think he will be a great deal better off year by year if he does not grow so much cotton. There are thousands of farms in the South where the profit on the better part of the land is more than eaten up by the loss on the poorer land, where cotton is grown under the present methods.

It was my purpose, if there are no further questions, to take up now the agricultural experiment stations, about which I have not said anything material thus far. Experimenting along agricultural lines began in this country in a regular way with the establishment of agricultural colleges, but it was only organized definitely as an experiment-station movement just about 25 years ago, when the first regularly organized experiment station was started in the State of Connecticut. About the same time a similar thing was done in California, and stations began to be formed here and there in other States, until in 1887 we had 17 experiment stations in 14 different States. In that year Congress passed what is known commonly as the Hatch act, which gave to each State and Territory annually \$15,000 a year for the maintenance of an experiment station, which, as a rule, must be in connection with a land-grant college. The only exception is in those States which had State experiment stations organized before the passage of this act. Now, these early stations were largely occupied in organizing the control of commercial fertilizers and demonstrating the necessity of the usefulness of basing the purchase of such fertilizers on the manufacturers' guaranty of their chemical composition, but the stations made also sufficient scientific investigations to indicate that with broadened facilities and resources they might render much more service to the agriculture of the country. The work of organizing new stations under the Hatch act was therefore taken up with enthusiasm, and they were soon in operation in every State and Territory. The basis for this rapid development of experiment-station work had been laid by the agricultural colleges previously established under the land grant act of 1862 in most of the States and Territories. As the Hatch act made the stations departments of these colleges, it was comparatively easy to find in their faculties men competent to undertake agricultural investigations, while their buildings, scientific apparatus, and farms furnished a sufficient equipment to make it possible to begin experimental inquiries as soon as the funds for their maintenance were provided. The lines of work had already been marked out to a considerable extent by kindred institutions in Europe, by our older stations and by the United States Department of Agriculture, which already contained within itself a great experiment station through the work of its different scientific divisions. The method of publishing accounts of agricultural investigations through widely distributed reports and bulletins containing the scientific and technical details of the work or concise summaries of its practical results had already been established. It was possible, therefore, for the stations organized under the Hatch act almost immediately to undertake useful investigations and to begin the publication of information based on systematic observations and experiments.

During the past 10 years more than \$10,000,000 has been expended in the maintenance of the experiment stations in the United States. Of this sum about \$7,000,000 came from the Federal Government and \$3,000,000 from State sources. This seems, perhaps, a very large sum to expend for agricultural investigations, but it will not appear unduly so if we bear in mind that during the same period the United States produced agricultural products valued at \$30,000,000,000; in other words, we have spent \$1 in the effort to improve our agriculture and increase the output for every \$3,000 of product, which I think you will say is not a very large sum to expend in that way.

The number of publications of these stations, including 3,000 bulletins and 500 annual reports and exclusive of press bulletins, has reached 3,500. The bulletins of the stations are now regularly sent to more than 500,000 farmers, and it is estimated that about 5,000,000 copies of these publications are now annually distributed. This, I may say, is in addition to the distribution of between 6,000,000 and 7,000,000 copies of documents from the Department of Agriculture.

The experiment stations are conducting a wide range of scientific research in the laboratory and plant house and an equally large amount of practical experimenting in the field, the orchard, stable, and dairy. Practically all the stations are keeping a record of meteorological data, while 9 are making special studies of problems relating to meteorological phenomena and climatic conditions. Twenty-four stations are at work upon soil investigations, its geology, physics, and chem-

istry, or conducting soil tests with fertilizers, or in other ways. Sixteen stations are studying questions relating to drainage and seepage or to irrigation in the field or greenhouse, and with orchard, garden, or farm crops. Forty-eight stations are making analyses of commercial and home-made fertilizers or are conducting field experiments with fertilizers. At least 17 stations either exercise a fertilizer control in their respective States or make analyses on which the control is based. All stations are studying the more important crops, either with regard to their composition, nutritive value, methods of manuring and cultivation, and the best varieties adapted to individual localities, or with reference to systems of rotation. Thirty-six stations are investigating the composition of feeding stuffs and, in some instances, making digestion experiments. Thirty-seven stations are conducting feeding experiments for milk, beef, mutton, or pork, or are studying different methods of feeding. Twenty-five stations are investigating subjects relating to dairying, including the chemistry and bacteria of milk, creaming, butter making, or the construction and management of creameries. Fifty-two stations are doing chemical work and 37 are studying methods of analysis. Botanical studies occupy more or less of the attention of 37 stations, including investigations in systematic and physiological botany with special reference to the diseases of plants, testing of seeds with reference to their vitality and purity, classification of weeds, and methods for their eradication. Forty stations work to a greater or less extent in horticulture, testing varieties of vegetables and large and small fruits, and making studies in varietal improvement and synonymy. Several stations have begun operations in forestry. Thirty-four stations investigate injurious insects with reference to their restriction or destruction. Nineteen stations study animal diseases and the methods for their prevention or cure. At least 5 stations are engaged in bee culture and 7 in experiments with poultry. One or more stations have made investigations on miscellaneous subjects, such as the following: Technology of wine and of olive oil, bleaching of nuts, preservation of fruits and vegetables, gaseous fermentation of canned goods, draft tests of farm implements, road-making experiments, cane, sorghum, and maple-sugar experiments, oyster culture, etc.

That summary is, I think, enough to indicate something of the breadth on which our stations are organized. We may classify their duties roughly under 4 general heads: *a*, they take part in certain police duties such as are connected with the control of fertilizer inspection, of dairy products, etc.; *b*, they study the natural conditions and resources of the State by making something of a survey of the soil, of the plants, etc.; *c*, they conduct demonstration experiments in which they show how things, which have been worked out by science or through practical experiments can be adapted to local conditions; and then, finally, *d*, they conduct scientific investigations with reference to finding out new truths and new applications of old principles. The stations are now organized in all the States and Territories under this Hatch act of March 2, 1887, and work has been begun in Alaska under the direct supervision of the Department of Agriculture through the office of experiment stations. We have a very successful experiment station in operation in the Hawaiian Islands under private auspices, but having for its director a man formerly connected with the Department of Agriculture and the Louisiana experiment station.

Separate stations are supported in some of the States, so that the total number of stations in the United States is 54, not counting branch stations, of which there are a number. Of these, 52 receive the appropriation provided for in the act of Congress above mentioned. The total income of these stations for the fiscal year 1898 was a little over \$1,200,000, of which \$720,000 was given from the national Treasury; the remainder, nearly \$500,000, came from State sources.

Q. (By Senator MALLORY.) Is there any revenue at all from the experiment stations?—A. Yes; they get from their farms a small revenue. I have noted that the sales of farm products of the stations in 1898 in the United States amounted to \$85,356.25. Of course we can not experiment to make money, and can not expect to turn in much.

In addition to this, the Office of Experiment Stations had an appropriation of \$35,000 for its work last year, which included \$5,000 for the Alaskan investigation. The stations added to their equipment in 1898 buildings, libraries, apparatus, implements, live stock, etc., to the value of over \$176,000.

There were employed in 1898 689 persons in the work of administration and inquiry, divided as follows: 75 directors, 148 chemists, 71 agriculturists, 10 experts in animal husbandry, 77 horticulturists, 39 farm foremen, 21 dairymen, 50 botanists, 46 etymologists, 26 veterinarians, 20 meteorologists, 11 biologists, 11 physicists, 6 geologists, 19 mycologists and bacteriologists, 7 irrigation engineers, 15 in charge of substations, 23 secretaries and treasurers, 10 librarians, 46 clerks.

There are also 21 persons classified under the head of "Miscellaneous," including superintendents of gardens and buildings, apiarists, herdsmen, etc. 305 of the station officers do more or less teaching in the colleges with which the stations are connected.

During 1898 the stations published 406 annual reports and bulletins. Besides regular reports and bulletins a number of the stations issued press bulletins, which were widely reproduced in the agricultural county papers. The mailing lists of the stations now aggregate half a million names. Correspondence with farmers steadily increases and calls on station officers for public addresses at institutes and other meetings of farmers are more numerous each year. The station officers continue to contribute many articles on special topics to agricultural and scientific journals. A number of books on agricultural subjects, written by station officers, have been published during the last year.

The individual stations are brought into intimate relations with each other and are made to constitute organic parts of a great national system of agricultural research through two general agencies—the Association of American Agricultural Colleges and Experiment Stations and the Office of Experiment Stations of the United States Department of Agriculture.

The Association of Colleges and Stations holds annual meetings in different parts of the country, at which questions of general policy and management of the stations are discussed and papers on special topics connected with the work of the stations are read. The proceedings of this association are published by the Department of Agriculture. The next meeting will be held at San Francisco on the 5th of July, 1899.

The Office of Experiment Stations, organized in October, 1888, in the Department of Agriculture, examines the work and expenditures of all the stations, publishes popular and technical summaries of their investigation, collects and disseminates information regarding the work of similar institutions throughout the world, suggests lines of inquiry, aids in cooperative enterprises, and in general aims to assist the stations in developing and strengthening their work. Since its establishment this office has published 10 volumes of the Experiment Station Record, comprising over 100 numbers or 10,000 pages, over 60 bulletins, about 40 Farmers' Bulletins, and a card index of Experiment Station Literature, aggregating some 18,000 cards. Nearly 1,000,000 copies of the publications of this office alone are distributed during one year.

The American experiment station as it exists to-day is the most complete and comprehensive system of agricultural research which the world has ever known. Its publications reach farther and come home more closely to great masses of our farmers than is the case in any other country. If any farmer in the United States is not acquainted with the latest information which agricultural science has to give him regarding the means for improving his art, it is because he has neglected to avail himself of the public agencies created for his benefit.

I will speak now of some of the results of the station work under separate heads:

As to what stations have done to defend the farmer against fraud: The stations largely, especially those east of the Mississippi River, have been engaged in the investigation and inspection of commercial fertilizers under State laws. The fertilizer business involves millions of dollars and the stations have largely prevented the sale of fraudulent goods. In the State of New York alone, over 900 brands of fertilizers were examined during 1898 and even then the station did not get around with its work. In Connecticut, where the inspection has been very efficient, the business amounts to a million dollars in the year, while in Pennsylvania it is estimated it has reached \$4,000,000.

The stations have also done much to expose extravagant claims for fertilizers, showing the advantage of farm manures, cotton seed, etc., and instructing farmers how to mix their own fertilizers; and by testing the varieties of grain, vegetables, fruits, etc., the stations have warned farmers against extravagant claims for new varieties. Other matters inspected by the stations are nursery stock for fungus diseases and insect pests; seeds, adulterated food, especially dairy products, butter increasers and preservatives, concentrated feeding stuffs; quack medicines for stock, especially hog-cholera remedies; they have also exposed frauds in creamery construction and equipment and dairy apparatus.

Then they have done much to remove obstacles to agricultural industries. A very large feature of this work has been the investigation of injurious insects and diseases of plants, the value of which is now very widely acknowledged; such important work as that on the rot of grapes, apple scab, San Jose scale, gypsy moth, potato rot, potato scab, smuts in wheat and other grains; of course the Department of Agriculture has shared in this as in many of these lines of work.

It is hard to separate stations from the Department in such enterprises. By discovering an effective curd test the Wisconsin station has provided a means of detecting tainted or defective milk at cheese factories, a matter which has caused a loss of from \$100,000 to \$200,000 each summer in Wisconsin alone.

The agricultural colleges and stations have been largely instrumental in securing State laws for the inspection of fertilizers, nursery stock, dairy products, falsified foods, and feeding stuffs, creamery glassware, paris green, and for the suppression of plant diseases and injurious insects. They have also aided in the passage of laws establishing farmers' institutes, fixing a milk standard, organizing associations for the promotion of agriculture, quarantining animals for contagious diseases, sale of oleomargarine, the apportionment and measurement of water for irrigation, State aid for highway improvement, etc.

Then they have aided in the development of existing methods, crops, or industries, in their several States. I can only give you a few examples of the work done in this line.

In Louisiana, by developing new methods in the sugarhouse, previous losses in sugar making were either reduced or entirely removed, and by improving the cultivation of sugar cane and the selection of new varieties the industry has been considerably helped; and the Sugar Planters' Association has recognized that by contributing to the support of the stations to a considerable extent.

In Connecticut the chemical studies and elaborate field experiments of the Connecticut State station, in cooperation with tobacco growers, have given very important results. The quality of the Connecticut wrapper-leaf tobacco has been decidedly improved and hence this tobacco commands higher prices than any Northern-grown wrapper leaf.

In New York the animal industry and dairying have been improved by investigations made by the New York State station on ensilage, waste products of manufactures for feeding stuffs, processes of cheese manufacture, and elaborate tests of dairy breeds.

In Missouri the investigations on the draft of wagons with broad tires have shown their advantage in nearly all conditions. This seems to be a thing which the League of American Wheelmen have thought a good deal of. They published a large edition of the station bulletin on the subject at their own expense.

In New York also the station connected with the Cornell University has made a very careful investigation on the care and preservation of farm manure and the effects of careful tillage.

The Connecticut Storrs station has been notable for its studies on the nutritive value and digestibility of forage crops; and it has carried on a large number of cooperative experiments with fertilizers, also cooperative experiments on the effect of nitrogenous food materials on milk production.

Ohio, by some feeding experiments, seems to have shown that much more stock food per acre can be secured in Ohio from corn than from sugar beets, and they have also had a good deal to do with showing the superiority of shallow over deep cultivation of corn on Ohio soils.

The Mississippi station has done a very important work for the South on the development of the growth of forage plants and the live-stock industries, along with which went a demonstration of the value of cotton seed and products for stock.

Of the stations in the irrigated regions we have an example in Utah, where important work has been done in improving the methods of tillage with special reference to the conservation of moisture, and by studies of alfalfa at different stages of growth, etc.

In Vermont we have special investigations on the chemistry and physiology of sap flow as related to the maple-sugar industry.

In California a large amount of work has been done in the distribution of seeds and plants of improved varieties, in helping the wine industry and the olive industry by investigations on the raising of grapes and olives, and in the making of wine and olive oil.

In Oklahoma effective investigations have been made on the culture of Kafir corn.

In Rhode Island there have been important investigations on the feeding and breeding of ducks and geese.

In Nebraska, the station has had a good deal to do with promoting the growing of alfalfa and winter wheat instead of spring wheat, by which the State has got to be a large producer of wheat, raising some 50,000,000 bushels in 1897. Its investigations of subsoiling in that region have been very important, and have resulted in increasing the yield of corn in some cases from 10 to 30 bushels per acre.

In Arkansas, some practical experiments on economical methods of producing pork and beef in connection with the raising of cotton, have been made with a special view to the improvement of the worn cotton soils.

Lastly, we come to the higher work of the stations, which relates to the new methods, crops, or industries introduced by the stations. There is time to give only a very few examples.

The Wisconsin station has been instrumental in introducing a variety of barley known as the Manshury barley. This increased the average yield several bushels per acre in Wisconsin with a result worth millions of dollars annually to the State alone. This station and the Minnesota station have been largely instrumental in introducing the growing of rape in these States, and it is now grown on thousands of farms to the advantage of the farmer. The Wisconsin station was fortunate enough, after several other stations had made imperfect successes, to perfect a reliable milk tester—the Babcock milk tester—and that has very largely revolutionized the business of dairying in this country.

The Pennsylvania station, and many other stations, have recently been engaged, as you doubtless know, in investigations on sugar beets. This together with what work the Department of Agriculture has done, has shown definitely where good beets for sugar can be grown, so that we do not need to work on that problem any more. The question of manufacture now remains for other people, working along economic and commercial lines.

The Maine station has shown that apples can be raised successfully in Aroostook County, and now thousands of barrels of apples are shipped out of that county annually.

Storrs station, in Connecticut, has made very important original investigations on problems connected with the nutrition of men and of animals, working out the apparatus and methods of experimenting, which can now be adapted to experiments with all sorts of farm animals, and the Department of Agriculture has recently taken up that work in Pennsylvania, and we are going further than anybody in Europe has gone in studying certain problems connected with the nutrition of men and domestic animals.

In Ohio a method of watering greenhouses by subirrigation has been originated, which it is claimed will largely increase the product and make the crops less subject to disease.

In Florida the introduction of the velvet bean seems to have been a great thing for the State, resulting in the saving of thousands of dollars on fertilizers. It can also be used as a forage crop. Individual orange growers say they save as much as \$1,000 annually by the use of the bean. Cassava is a new crop, and seems to be especially adapted to the sandy soil of Florida. One factory for the manufacture of starch from cassava has been built, and it seems that starch can be made quite cheaply from this plant.

The California station has been engaged in soil investigations, especially on alkali lands, and these have been along lines not previously attempted, and a great deal of information has been obtained, which has brought into agricultural use large tracts of land which before were thought to contain alkali in such proportions as to make them useless. This has been an important result.

Speaking of Kafir corn, which was introduced into Kansas by the Department of Agriculture and taken up by the Kansas station, in 1898 over a half million acres of this corn were grown on Kansas land, a value of about \$6,000,000.

Q. (By Representative GARDNER) Does it mature in Kansas all right?—A. I think so. I am speaking generally now; there may be localities where it will not. That is, of course, a dry-soil plant, and that is a great advantage for certain regions of Kansas.

Let me speak briefly of a few hindrances which the stations have in their work, but from which, however, they are yearly escaping more and more. There has been to a considerable extent a failure to understand the real purpose of the stations, and there has been disappointment that they have not undertaken, I might say, more farm operations. It should be borne in mind all the time that the act under which the stations are operating has been framed with reference to the needs primarily of institutions where science is to be used for the benefit of agriculture, so that the stations are to work, so to speak, from the scientific end to the practical, and not to carry on farming operations for the sake of showing what good farming is, after the manner of the model farm or anything of that sort. Ignorance of this fact has often been coupled with a failure to appreciate the needs and requirements of scientific work on behalf of agriculture, so that many have supposed that the workers in such institutions could engage very largely in outside work, such as lecturing, teaching, etc. Now, if the stations are to do their best work, the men engaged in them must give their time very fully to their investigations and must be allowed to pursue these investigations according to the methods

demanding by the investigations, and must not be hampered by outside duties; and a failure to appreciate that by the people and boards of management has often hindered their work.

But there is a general hindrance due to political influence working too actively in the organization of these stations, and it is well that the people should understand that and safeguard these institutions against it. In most of the States the board is appointed by the governor of the State, either with or without the consent of the legislature, and these boards have such terms of office that the membership can be more or less shifted for political purposes, and it has been done too largely. Of course every one can see that this is not the field in which political action is proper, safe, or wise.

Now I want to say in that connection that I am not one of those who take a narrow view of the field of political activity. I think there is a wide field where political influence may properly exert itself, but when it comes to the management of educational and scientific institutions it is impossible for me to see how we can have a good state of things until these institutions are completely rid of personal and political influences and considerations.

Then there have been, as a result of many causes, shifting policies in the management of these institutions, so that the officers have changed too frequently, and that has been a great hindrance to efficient work. We must have men who will stick to the work of agricultural experimenting long enough to accomplish the best work. Another difficulty arises from a lack of proper organization of the stations; the different workers have oftentimes been too independent of each other; at other times there has been too much meddling on the part of the board of management, who should confine their work to general matters. Then at the outset, and, to a considerable extent still, there is a lack of thoroughly trained men for this work. We are making this up every year, but that has been one of the difficulties. The haste for immediate results has been a considerable hindrance. As soon as the stations are established, farmers and others want something to show at once. In most lines of experimenting with which I am familiar we can not determine much in 1 year or 2 years. It takes time, and if you hurry the thing too much you spoil it; and, connected with that, there has been a demand for too many kinds of work. The stations have a certain amount of money, and there are all sorts of questions, a thousand problems in any State, and of course it is not wise for any one station to take up more than a few and work them up thoroughly; but the demand for a little work here and a little there has, in many cases, spread the work out too much.

On the other hand, there are many hopeful indications looking to the strengthening and improving of the work of the stations. Every year they have a better equipment and better trained men; they divide their work more thoroughly among specialists and introduce new lines of work in that way. Then there is being made yearly a clearer distinction between the educational work which the college can properly do and the experimental work which the station ought to do. Finally, we have in an increased measure the cordial support of Congress and State legislatures and the people. I think it is very remarkable how the appropriations for experimental work have been made in Congress without demurrers and how those of the State legislatures have been increased from year to year, evidently with the backing and approbation of the people; and there are many evidences that farmers and people generally approve the work of these stations.

Now, if I may be allowed to sum up in a few words the general results of the movement in this country for agricultural education and research, I would say first, that it has given us a body of trained leaders and experts, so that we are prepared as we have never been before for advanced work along these lines; secondly, we have an up-to-date American literature on American agriculture the like of which has never been seen. Reference has been made to the work done in England, and it is only a few years since we were compelled in this country to depend very largely on English works on agriculture for our agricultural literature. This was unfortunate in many ways; but now we have a literature of our own which is up to the times and from an American standpoint. As a part of this some 50 books have been published within the past few years whose authors are college and station men. Thirdly, there has been a free distribution of a vast amount of accurate and useful information. When you have made all the allowance that you can fairly make for crudity and misinformation which the station and Department publications may from time to time contain, you can still say that a very large amount of accurate and valuable information has been disseminated, and this has been more thoroughly done in the United States than it has been in any other country. This is a special feature of the work which our foreign friends comment upon when they come to have a knowledge of it. In the

fourth place, I think we may fairly claim that the colleges and stations have been an important factor in breaking down the traditional opinion that agriculture is of necessity a nonprogressive art, and this is a work the effects of which will accumulate as the years go by. Fifth and lastly, they have been an important factor in making the state of the ignorant, shiftless, and nonprogressive farmer worse than it used to be. I think this work is also cumulative, because it is becoming clearer every year that if a man is to be successful in agriculture, as in other arts, he must be progressive and seek up-to-date information and ideas.

Q. (By Senator MALLORY.) With reference to this movement of experiment stations, are any of these men appointed by the United States Government?—A. No. The experiment stations are State institutions, each under its local board.

Q. (By Representative GARDNER.) The distribution of the agricultural colleges over the country is shown in your statement, is it not?—A. Yes; generally.

Q. Is there one in every State?—A. Yes; one in every State; at least each has a college in which agriculture is taught.

Q. And an experiment station?—A. Yes.

WASHINGTON, D. C., June 24, 1899.

TESTIMONY OF MR. GEORGE K. HOLMES,

Assistant Statistician, United States Department of Agriculture.

The commission met at 2 p. m., Second Vice-Chairman Gardner presiding. Mr. George K. Holmes, Assistant Statistician in the United States Department of Agriculture, being first duly sworn, testified as follows:

Representative GARDNER: You may proceed in your own way.

The WITNESS: The agricultural element is the largest one in our population. In 1890, 8,500,000 persons were employed in gainful agricultural occupations of all sorts, out of 22,750,000 persons employed in all gainful occupations. Of these 8,500,000 agricultural workers for gain 3,000,000 are agricultural laborers, or those who work for wages, while 5,500,000 are farmers, who constitute the proprietor class, including not only owners, but proprietor tenants.

I mention these numbers not because they are new to you, but to suggest to you to bear in mind how important an element in our population this agricultural one is.

Now, let me proceed to a consideration of the wages and earnings of this labor. Since 1866 the Department of Agriculture has collected statistics of the wage rates paid to agricultural laborers in all of the States and Territories, and the statistics have been brought down to 1895. In the last-named year an agricultural laborer on the average received \$17.69 per month, without board, during his actual employment. This is a decline of \$1.49 from the average of 1893, when the financial depression began and when the farm laborer's wage rate was higher in this country than at any time since 1869, when it was \$19.49 in gold.

I have taken the Department's grouping of States—and I think that the names of the groups will sufficiently indicate where they are—and have computed the average wage rate for each of these groups, giving proper weights to each State in each group with regard to the number of agricultural laborers living in it. In the Eastern States the average wage rate per month without board in 1895 was \$29; in the Middle States, \$23.80; in the Southern States, \$12.71; in the Mountain States, \$30.04; in the Pacific States, \$31.68.

The Department has also collected statistics of the wages of farm labor with board, and I have taken pains to subtract the rates with board from those without board to ascertain how large or small the farmer's allowance for the cost of the board of an agricultural laborer is. The result is that in 1895, as an average for the United States, this allowance was \$5.67; and at no time covered by the investigations of the Department has the allowance been higher than \$7.05 in gold in 1869.

To a person unaccustomed to agricultural conditions throughout most of the country this allowance for board seems exceedingly small; but it is partly accounted for by the fact that in the South it is mostly the custom to feed farm laborers, if they receive board as an element of wages, by issuing rations to them consisting of hardly more than a certain amount of corn meal and bacon. This ration is a cheap one, the allowance for which in the Southern States is \$4.08 per month, and brings the average for the whole country down to the figures that I have given to you, \$5.67.

Here are 8,000,000 workers, using the figures for 1890, having we do not know how many dependents upon them in their families—but very likely 8,000,000 to 10,000,000—who are receiving but \$17.69 per month without board, and then only when actually employed; and I could hardly use figures or other statements better to show how low is and must be the economic condition of this large population group.

I have been able to compute the actual earnings of these agricultural laborers. Of course you understand the distinction between wage rates and earnings, and I want to be sure that I am not misunderstood when I say that I have computed the wage earnings. I took from the last census the average time during which these persons were out of employment for the year 1890 and subtracted it from one year, in order to find the time of employment. This probably gives us a larger period of employment than these farm laborers actually had, because I think that the census figures of idleness are too low in all occupations, especially in the occupation of agriculture. But, however that may be, I have multiplied the wage rate per month without board into the time of employment, which appears to be 11.35 months as an average for the United States and hardly below 11 months in any one State. As the computation stands, the actual earnings of the 8,000,000 of agricultural laborers of this country in the year 1890 amounted to \$645,500,000, or an average of only \$215 per individual during that time.

This is the lowest-paid labor of all the great occupation groups in this country, and the income would hardly seem sufficient to provide subsistence for a family. Of course, it may be that the laborer has a garden, or that he has the privilege of getting his firewood from his employer's farm—and these things are frequently done, and when so are a considerable element of income—but even with considerable allowance for this addition to the total income of the farm laborer, it is a poor one and makes his condition, it strikes me, a lower one than that of any other great class of workers.

In the South his computed individual earnings for 1890 are only \$147 in North Carolina; \$140 in South Carolina; \$162 in Alabama; \$176 in Mississippi, and \$158 in Tennessee.

If the number of these laborers in the whole country were not so large no such aggregate earnings as \$645,500,000 could be shown; but even this sum, as large as it may appear at first, is not as large as the earnings of persons engaged in trade and transportation.

I have been fortunate enough to obtain an estimate of the actual earnings in 1890 of each large class of workers for hire—and by large class I mean the large groups given by the Census Office. These estimates were made by some experts in Washington for a special purpose, and have never been published. Of course they are only estimates, because it would be impossible to ascertain the actual earnings of any large class of persons, especially for the entire wage-working population of the United States; but I am informed that wage-rate averages in the Department of Labor records were largely used for the purpose, with some allowance for idleness.

Well, as I have said, the agricultural laborers received \$645,500,000; persons engaged in trade and transportation received \$745,000,000, or \$100,000,000 more, although their number is given as only two millions; persons engaged in domestic and personal service, their number being about four millions, received \$943,000,000, or \$300,000,000 more than the agricultural laborers did; while persons engaged in manufacturing and mechanical industries received \$2,197,000,000. The number of persons last named is about five millions. It therefore appears that the persons engaged in manufacturing and mechanical industries, who are about a third of the wage earners, received nearly half of the entire earnings of labor during the time covered by this estimate, while the agricultural laborers, who are about one-fifth of the wage earners, received less than one-seventh of the total earnings.

This is the first detailed estimate of the earnings of all of the labor of this country—the first estimate of any kind, except the very roughest—and it may be interesting to you to pursue the subject somewhat further, for the sake of comparisons with agricultural laborers.

The allowance of actual yearly earnings made by these experts is \$235 to fishermen. Please remember that the actual ascertained average for agricultural laborers published by the Department of Agriculture for 1890 was \$215. Well, the persons engaged in domestic and personal service received, it is estimated, \$237; the persons engaged in trade and transportation, \$340; various unclassified pursuits, including lumbermen, quarrymen, stock raisers, woodchoppers, etc., received \$372; miners, \$420; while lastly, the persons engaged in manufacturing and mechanical industries received, it is estimated, \$445. That is the highest average given by

these experts to any one of these large classes of occupations, and of course, does not include board.

Now I want to turn away from this subject to the kindred one of the income of the farmer.

The farmer, you will remember, is known to us as the agricultural proprietor, whether an owner or whether a tenant for money rental or a share of the crop. In all these cases we understand the proprietor to be a farmer in this country. He is not a man in any case who works for hire.

Now the product of agriculture in the United States in 1889 was reported by the enumerators of 1890 to be worth \$2,500,000,000. I am not saying that they told the truth about this, but of course there was no willful misrepresentation. The general understanding is—and I may say in regard to this that I have the opinion of the special agent who had charge of agriculture in the census of 1890, Mr. Hyde—the general opinion is that this statement of the value of agricultural products by the census of 1890 is too low. These values are very difficult to ascertain, and there were not only underestimates but omissions. Mr. J. R. Dodge, formerly statistician of the Department of Agriculture, estimated the value of the farm products in 1889 to be about \$3,500,000,000, after allowing for some duplication, but this estimate is merely an estimate, and not being acceptable as sufficiently founded upon facts, it is safer to use the census figures with the understanding that they are certainly too low. Let us see how this sum was distributed.

We are able to determine several of the recipients of this product, and approximate, in some cases quite accurately, the amounts that they receive. The wages of the 3,000,000 agricultural laborers during the 11.35 months while they were employed, as I have stated before, was \$645,500,000.

The enumerators of the census reported for each farm the value of the commercial fertilizers that were used on the farm during the agricultural year, and their value was \$38,500,000.

Then, again, it was ascertained in the census that the mortgages on the farms occupied by owners amounted to about \$1,000,000,000, and the interest on these mortgages was \$76,750,000. How much of the product of agriculture went to pay the interest on crop liens has never been ascertained, but I have made inquiries of scores of cotton planters and cotton dealers and other persons who are familiar with the conditions of cotton raising, and I have estimated that the interest on the crop liens in the South, and these are mostly liens on the cotton crop and very little on any other crop—amounted to \$120,000,000 in 1890. This is at the rate of 40 per cent on the debt for the year, and all cotton men tell me that this is a moderate estimate.

The taxes that farmers paid in 1890 are of unknown quantity, but I have taken the average tax rate on all property at its estimated true value for that year, as reported by the census, and this was 0.73 of 1 per cent. At this rate of taxation on the farmers' entire capital the amount of taxes paid by the farmers of the country in 1890 was \$116,666,000.

Now, before I state the remainder of this distribution of the product of agriculture, I ought to say that I am going to give you the result that I am aiming at in two forms.

In the first place, I am going to allow the farmer a theoretical interest on his farm capital after deducting the mortgage interest that I have already allowed, and then see how much of the product there is left for the payment of wages to the proprietor farmer. Then I am going to allow the farmer wages before allowing him interest on his farm capital, and see whether he has any product left for the payment of interest to himself.

In the first instance I allow the farmer a theoretical interest at the rate established for farm mortgages by the census of 1890, which was 7.7 per cent, and after deducting the mortgages on the farms occupied by owners this rate of interest multiplied into the remainder of the farmers' capital, as stated by the census, amounts to \$1,050,000,000. After taking the foregoing items of distribution from the value of the products of agriculture there remains only \$410,000,000 to go to nearly 5,500,000 farmers, and this gives them only \$6.83 a month for 12 months as an equivalent of wages.

Let me now reach a conclusion in the other alternative. I will allow wages at the rate of \$22.61 per month for 12 months to the nearly 5,500,000 farmers and that exactly absorbs this remainder of \$410,000,000, so that, assuming that our statistics are not so very far from the truth, it appears that if you allow interest to the farmers on their farm capital they earn substantially no wages; and, on the other hand, if you allow them no interest they receive but \$22.61 per month as wages.

This is a rather bold way in which to attack this problem, and one of which I do not fully approve, in view of the inaccuracy of some of the statistics.

The value of farm products as reported by the census being unquestionably too low, of course the remnant of product allowed for the earnings of the farmer after the allowance of interest is made is too small, but I am inclined to believe that, as faulty as the statistics of the value of farm products may be, it is nevertheless probable that one of these alternative conclusions is at any rate significant of too much of a competition.

Now the question naturally arises, why is the farmer in this situation? This is a question that has been agitating the farmer's mind for a considerable number of years, and has interested students, scholars, and economists, and political and social agitators, and has received many sorts of answers. Probably I can give you nothing new in the way of answer myself, but I want to say briefly that my explanation is that the farmer and farm laborer do not produce enough wealth, as measured in price and exchange, to make the situation any better than it is.

It would seem that the application of unskilled human labor, even with the aid of the very excellent and labor-saving machines and implements that are used in agriculture, fails to produce wealth enough per capita of workers to afford the payment of better wages, and to return to the farmer after the sale of his products enough to pay him both full interest and good wages on the one hand, or, if we allow him no interest at all, not enough to return to him a respectable compensation for his labor.

It is in evidence from census returns that the agricultural product in the latest census year was only \$293 for each farmer and farm laborer. In this computation I have not included the wives and children of farmers and farm laborers, unless it has been the case that they received wages for labor on the farm. As I have said before, it is confessedly a low valuation of farm products that the census has reported, so that the average I have just mentioned is one that is too low.

The various parts of the country differ materially with respect to the average value of the agricultural product per worker, and I have had some computations made for the five geographical divisions established by the census of 1890, in order to see how the different regions vary.

The lowest per capita product—and please bear in mind that when I say “per capita” in connection with this matter, I mean per capita of farmers and laborers engaged in agriculture—the lowest per capita product is in the South Atlantic States, where it is only \$177. These are cotton, and to some extent, tobacco States.

The next group of States in order is the South Central, with an average of \$211. These are also cotton States, and to some extent, tobacco States.

The States of neither of these groups are exporters of grain nor of animals and dairy products. Of course there are minor exceptions to my sweeping statement, as, for instance, the exportation of cattle from Texas, but my statement is, I believe, substantially true.

Upon coming to the North, the agriculturist produces a higher product in value. In the North Central States, which contain most of the great corn and wheat States of the Union, and which are prominent as producers of live stock and animals and dairy products, and States also where agricultural machines and improved implements are much more in use than in the South, in these States, the product per individual is \$362, or more than twice as much as in the South Atlantic States.

Next in order of product per worker are the North Atlantic States where the amount is \$380. These are the States of more dense population, with more diversified agriculture, with the more numerous cities and large towns, and with the better local markets.

Last among the groups of States is the one called the Western, for which the average agricultural product is \$519. This is the largest of all, and if our theory, together with the information that we have in a general way with regard to agriculture and horticulture, holds good, then it is this highest product of agricultural wealth in the Western division of States—which includes the Pacific States—that permits the comparatively high rate of farm wages in that part of the country. The statistics of the Department of Agriculture show conclusively that the highest farm wages are in the Western group of States, and that the Eastern States stand next, and these are the groups of States that stand highest in the value of the product of agricultural wealth per worker.

A larger value is produced in manufacturing than in agriculture, namely, \$806 per worker, and wages are very much higher in the manufacturing industries than they are on the farm. There must be a product of wealth before the wages can be paid, and other things being the same in different industries, wages can go up only as the product permits them to go up.

Now the fact is that the farm prices of most of the agricultural products are

and have been for years declining. Without regarding it as necessary to mention exceptional years, I may say that the prices of most of the principal products on which the farmer depends for his income have been declining. I would except most of the meat, dairy, and poultry products; but notwithstanding these important exceptions, the farmer has had to face declining prices, and in order that he might hold his footing he has needed to depend upon reducing the cost of production, upon facilities and cheapness of transportation, upon an increase of product, and upon combinations with his fellow farmers to keep up or increase the farm prices of his products.

That his product has increased per acre, generally speaking for all agricultural products, is very doubtful. The statistics that we have show small changes, one way and another, but I doubt that these statistics are precise enough to enable us to place much dependence upon fine distinctions. They are principally trustworthy in pointing out distinct movements one way or another, or as indicating stationary conditions; but the statistics of agriculture in this country do not indicate any distinct movement towards intensive agriculture, although that movement is taking place, it is well known from observation in special directions.

So much for the farmer's dependence upon increased production in order to increase his income.

Transportation has done great things for him.

One would hardly need to say more than that the freight rate on wheat per bushel from Chicago to New York had decreased from 33½ cents to 12 cents since 1867, to express strongly the enormous decrease in freight rates on agricultural products in general and to show how important this reduction has been to the farmer.

If I need to reinforce the statement that I have just made with regard to the freight rate on wheat, I will mention corn. The all-rail rate on a bushel of corn, on the average, from Chicago to New York was 36½ cents in 1858, and it declined to 11½ cents in 1897.

A reduction in freight rates, which has been going on all over the United States and across the oceans, has given the farmers a new problem to solve. It has given them a world market for several of their largest, and in the aggregate, most remunerative crops, and for their cattle and swine.

This reduction in the rates of transportation has created millions and millions of competitors for our farmers.

It has made them competitors with one another, and perhaps this is of as great importance as the fact that foreign competitors have been created. The Eastern farmer, when he found himself placed in competition with the West, had to change and diversify his agriculture materially, and has been able to save himself only because of the density of population and the proximity of cities and towns, and by the use of fertilizers which he has saved and prepared himself.

It may be that this gradual extension of the area of competition and of the number of agricultural competitors has largely been the cause of the falling prices of those products whose prices have fallen and of the prevention of the further increase of the prices of those products that have increased in price. And yet, were it not for the present means of transportation, the farmer would be living in the ways of the backwoods.

I will turn now to say only a few words with regard to another dependence that I mentioned that the farmer might have for increasing his net income, and that is through decreasing the cost of production.

It is difficult to form an opinion with regard to this. The most that we can do is to draw inferences, because little is known with regard to the cost of producing any agricultural product except cotton.

We know unstatistically that the farmer has increased the use of machines and implements, and that he is using better and more labor-saving machines and implements than he ever used before, and we think that we know that the human labor element in agricultural production is a diminishing one relative to the amount of the product.

I have been allowed to get some information from the office copy of the report of the Department of Labor on hand and machine labor, and I will make a few comparisons for you.

First, let me compare the raising of 1 acre of corn in 1855 with the same acre in 1894. In the former year the shovel plow was used for marking the rows and for cultivating, the hoe for planting, and a peg in husking by hand. The stalks were cut with knives, and cut for fodder with an old-fashioned cutter turned by hand, and the corn was shelled by hand.

In contrast with this is the raising of the same quantity of corn (40 bushels) on the same area (1 acre) in 1894, with the use of the best implements, machines, and methods. The plowing was done with a gang plow and corn planter; a

machine for cutting and binding stalks, a combined husking and fodder-cutting machine, and a steam cornsheller were used.

The increased effectiveness of labor when aided by machines is clearly brought out in this comparison. Machines and improved implements in raising corn reduced the human labor cost per bushel from 35.77 to 10.57 cents, or 25.20 cents, or 70.5 per cent, and reduced the time of human labor from 274 to 41.3 minutes, or 84.9 per cent.

A comparison of the Department of Labor schedules discovers the following reductions in the cost of human and animal labor, per bushel, caused by the use of machines and implements: Corn, from 12.58 to 8.27 cents; wheat, 19.17 to 10.18 cents; wheat (another pair of schedules), 20 to 5.60 cents; oats, 8.88 to 4.07 cents; rye, 21.01 to 17.20 cents; barley, 12.94 to 8.54 cents; Irish potatoes, 5.99 to 2.72 cents.

The reduction of the time of human labor, per bushel, is as follows for selected pairs of schedules: Corn, from 58.1 to 22.7 minutes; wheat, 183.2 to 10 minutes; oats, 90.6 to 10.8 minutes; rye, 151.2 to 60.4 minutes; barley, 116.2 to 6.8 minutes; Irish potatoes, 21.7 to 10.4 minutes.

Q. (By Senator MALLORY.) Does that mean the minutes of human labor which are given to each bushel?—A. Yes; from the very beginning of the year, from the time of the plowing to the harvesting and stowing away of the grain in the granary. My last statement pertains to human labor. In the previous case it included animal labor.

There is a great difference in results between the time when, as ascertained by the United States Department of Labor, 20 minutes of human labor were required to husk a bushel of corn by hand, with the use of a husking peg, and 102 minutes to haul the stalks required to produce a bushel of corn to a barn and cut them into fodder, and the time, as at present, when 17½ minutes are sufficient to haul the same stalks to a husker and, by the use of a machine operated by steam, to husk the corn and at the same time cut the stalks into fodder; and there was a transition from one agricultural age to another when a man ceased to expend 100 minutes of labor in shelling a bushel of corn by hand, and employed a steam sheller by which a bushel of corn is shelled in a minute and a half. When farmers reaped their wheat with sickles and bound the straw by hand, hauled the sheaves to the barn and thrashed the grain with flails, these operations, applied to one bushel of wheat, required the labor of 1 man for 160 minutes, whereas this work is now done, by the use of a combined reaper and thrasher, operated by steam, with 4 minutes of human labor.

Whether the numerous savings in agricultural labor have, on the whole, enabled the farmer to save to himself a larger net income, I am unable to say.

It may be that the effect of all this has gone into lower prices, perhaps partly into higher wage earnings of farm laborers—for it is a fact that the wage rates of farm labor have, on the whole, been increasing ones. But if the farmer is able to extract from his product, above the cost of production, a larger income than he has heretofore been able to extract, it is not an increase of which he is sensible.

But in any discussion of this I should insist that the much increased quality in the general standard of living and in the farmers' living should be taken into account.

This is a new age to the farmer. He is now, more than ever before, a citizen of the world. Cheap and excellent books and periodical publications load the shelf and the table in his sitting room and parlor. He travels more than he ever did before, and he travels longer distances. His children are receiving a better education than he received himself, and they dress better than he did when he was a child. They are more frequently in contact with town and city life than he was. They have a top buggy, and a fancy whip, and a pretty lap robe, with a fast stepping horse, whereas their father had an old wagon and a less expensive horse. The farmer's table is better, too; his food is more varied, and more of it is bought by him and less of it is raised on his farm.

Now, all this costs money, and if the farmer has nothing more to show for an increased net income, if he is receiving one, than his advanced standard of living, it is, after all, a good deal of a return.

In recommendations that you may make with regard to trusts, I beg that you will bear in mind the immense agricultural interests of the country. The farming element constitutes one-third of our population, and, while the capital owned by this fraction of our population is small, compared with that invested in manufacturing and mechanical industries, yet after all it is numbers of people rather than dollars of wealth that are entitled to primary consideration.

A trust is not restricted in its nature to an association of men who are millionaires and manufacturers of refined sugar, or of cottonseed oil, but it may include common, everyday farmers, dairymen, and fruit growers, and, as a matter of fact,

these men have been organizing trusts and conducting them more or less successfully, and are anxious to do so, in all parts of the country and in some cases upon a large scale.

There is a trust movement among agriculturists which has obtained a successful foothold after many failures, and the fundamental reasons for this movement I will briefly state.

Farmers are so numerous that they are frequently and severely subject to competition with one another in the disposal of their products; and, probably more so than with any other class of producers, are naturally at the mercy of the middlemen, or the men who buy directly from them and dispose of the farm products to wholesale dealers or consumers.

The farmer is more or less isolated; he lacks capital; unaided and alone he is generally unable to reach consumers directly; and so, operating independently, he is compelled to accept the services of the middleman and the middleman buys from the farmer practically upon commission, and sells for cash or upon short time; and thus, without furnishing much, if any, capital himself, compels the farmer to supply the capital for his operations and makes the farmer suffer for losses by bad debts or any other causes, to say nothing of the frequent dishonesty of the middleman and his false reports with regard to the prices he receives if he sells upon commission.

You may call to mind some neighborhood in which tobacco is produced. It is visited by perhaps one or two tobacco buyers. They are in tacit, if not express, agreement as to the prices they will pay, and since practically the individual farmer can not reach a tobacco warehouseman or manufacturer in any other way he is compelled to accept what these buyers offer.

The farmer, acting alone in his dealings with men of concentrated capital and power, as is generally the case with the men and associations that buy and handle his products, is in a position that is economically weak, and I believe that it is fair to say that one of the reasons why the farmer has been and is discontented is because he has fought the battles of production and trade single handed.

Before proceeding to state the extent to which farmers have carried the trust idea and are disposed to carry it, I want to state what my understanding of a trust is. I should define a trust to be an association of individuals, partnerships, or corporations for the purpose of regulating, maintaining, or raising prices or rates, or for the purpose of regulating the management of the undertaking, in which purpose there is a considerable degree of success, but not necessarily that of a monopoly. Whether the operations of such an association should be of large dimensions before it may properly be termed a trust, is a question; but apart from this the essential principles are the same, whether the association controls the hop crop of Oneida County, N. Y., or the hop crop of the United States; and any law that may be formed by the United States or by any State I should suppose would be unable to draw the line at any particular place with regard to the extensiveness of the operations of the association.

The Department of Agriculture has endeavored to obtain the names of the associations of farmers in this country that are commonly termed cooperative, and among these associations are many that are virtual trusts. For instance, there is a milk-producers' union that supplies Boston with milk. Until some years ago the milk market situation in Boston was this: The buyers, that is the dealers in Boston, had an association, and although a milk producer in New Hampshire may have been selling to a dealer under contract directly and nominally with him, yet, as a matter of fact, the farmer was dealing with this association of milk dealers, because each individual dealer was acting in agreement with the combination of dealers, while the farmer had to deal with this combination unaided.

The farmers were at a great disadvantage, contracts being made under such unequal conditions, and in the course of time they formed an association for the purpose of dealing in a body, through their representatives, with the representatives of the Boston milk dealers.

As the business is now carried on, representatives of both organizations meet every year and agree upon prices for the remainder of the year. This arrangement is satisfactory to both parties, and the individual farmer finds himself in a position much better than the one which he previously held when making his bargain alone. He has back of him the entire combination of farmers that supply milk to Boston.

To give another instance of an agricultural trust, let me mention the comprehensive and successful one of the California fruit growers. They were compelled to form a trust for the purpose of getting remunerative prices, for the purpose of

suppressing competition among themselves, for the purpose of getting lower freight rates, and for the purpose of finding responsible customers in the East and elsewhere.

As the matter stood, an orange buyer, for instance, would go to an orange grower and offer him a certain price for the pick of his crop. The fruit grower, not being satisfied with the offer, would decline it, and the buyer would decline to buy, just as subsequent buyers would decline to do, because they were able to go to neighboring orange growers and obtain the oranges they wanted at the low offer that they had made. The result was that the fruit growers, without knowing what the market was or was to be, without knowing trade conditions and through freight rates, and without being able to obtain low freight rates on small shipments, were eventually compelled, in their own interest, to form what are known as "exchanges."

The fruit growers of Santa Clara Valley, for instance, have formed a trust for the purpose of suppressing competition among themselves as well as for the purpose of having an expert manager to become acquainted with the conditions of the market and make their sales for them. And so there have grown numerous fruit associations all along the Pacific coast, embracing oranges, lemons, various citrus fruits, grapes, and English walnuts, and all the other fruits for which California has become famous; and these associations are coordinated by a central exchange in San Francisco, so that the entire fruit business of California is in the hands of a trust. It is not called a trust, but it has the essential elements of a trust, its objects being, among other things, to suppress competition among fruit growers and to regulate and perhaps raise the price of fruit.

Q. Is that fact established, that one of their objects is the suppression of competition?—A. Well, it is one of them.

Q. Or to secure the benefit of good prices by combining?—A. It is to combine all their fruit, you know, and make a sale of the fruit of all members or many members at the same time.

Q. In suppressing competition, it does not lessen the product, does it?—A. No; not necessarily. I do not understand that they undertake to lessen the product.

Mr. FILLMORE MOORE: They discourage the production of inferior fruits by establishing a standard that does not allow inferior fruit to be put on the market.

The WITNESS: There is no other such immense fruit trust in this country, but there are similar ones in Florida, and in various parts of western New York, New Jersey, Ohio, Michigan, and in nearly all of the other fruit-growing States.

For many years, at irregular times, cotton planters have held conventions with the express object of limiting the production of cotton and of raising its price.

These conventions have never accomplished anything, although their purpose has been practically to form a trust of cotton planters, with the object of controlling the cotton market. It is not necessary to state why their intentions have failed, but there may come a day when their intentions will succeed, and when that day does come we shall have a gigantic trust, and just as distinctively a trust as that of the cotton-seed oil manufacturers.

I mention these as some of the more prominent instances of the trust movement among farmers and to show how extensive it is becoming.

Whatever legislation is to be enacted with regard to trusts must necessarily apply to this farmers' movement, and I beg to suggest that it should not be enacted without a recognition of the fact that this movement has been beneficial, in no unreasonable sense, to a large fraction of our producers.

Now, I should like to say a few words with regard to cooperation among farmers. This has been and is an extensive movement. The Department of Agriculture has obtained the name and address of nearly every cooperative association in this country that is maintained entirely or mostly by farmers. The list contains the names of many about which there is some doubt with respect to their cooperative character, but, with some uncertain allowance for this element, it is probable that farmers are now maintaining in this country about 5,000 cooperative organizations, not including irrigation associations. These include cooperative insurance, cooperative buying of farm and family supplies, cooperative selling of farm products, the maintenance of cooperative stores, small factories and shops, many hundreds of cooperative butter and cheese factories, cooperative elevators, warehouses, lumber companies, milling companies, cotton-ginning associations, telephone lines, and so on through a long variety of undertakings, and in addition to these there are thousands and thousands of irrigation canals and ditches in the arid regions.

Cooperation among farmers has, it is true, often been a failure, but it has at the same time, especially recently, been unquestionably successful, and the failures and successes indicate in what respect some small legislation might be helpful.

If anything can help the cooperative movement among farmers it would help a movement which, if well conducted, is conducive to their welfare. It tends to eliminate the middlemen, makes the farmer more of a capitalist, tends to make him save, cultivates his knowledge of business, makes him more self-reliant, and perhaps, most important of all, unites in one interest both capital and labor.

I suppose that it would be beyond the province of the United States to legislate on the subject of cooperation, but it would be permissible to recommend to the States to outline more or less in detail some legislation with regard to the subject. The difficulties that the cooperative undertakings of the farmers have encountered have been incompetent management, dishonest management, and lack of capital. Now, it is impossible to legislate honesty and ability into mankind, but the law may prescribe certain requirements which will bar out the incompetent and the dishonest. For this purpose I would suggest that a cooperative association, when incorporated, should be subject to the supervision of a State officer or commission such as that to which banks and insurance companies are subjected; that is, a supervision consisting of an examination of accounts and with a publicity of the business. This, I believe, would protect many a cooperator who does not know how ill the business of his association may be conducted until it is too late, and until the collapse follows.

I desire to say but a few words more, and these relate to the crop-lien system of the cotton States. By way of description, I will simply remind you that it is largely the custom of cotton planters and their tenants to use their credit with the neighboring merchant for the purpose of obtaining their plantation and family supplies in advance of the maturing of the crop, and this credit is often obtained even before the cotton seed is planted. The trouble with this system is, that it permits the planter and his tenants to live in the future, to be improvident, to be hopeless with regard to their situation; and it is the direct cause of the enormous production of cotton in this country, with the constant tendency towards overproduction; and is the cause of 5-cent cotton and 4½-cent cotton.

Now, the cost of raising cotton has recently been determined by the Department of Agriculture to be 5.27 cents per pound, and the price of cotton at the plantation has latterly gone below this. The reason for this is that the merchant, in order to cover the credit that the planter and the tenant have asked him, and to feel financially sure of covering that credit in case of partial crop failure, is calling for the production of cotton, cotton, and more cotton.

I will not say that it will be a wise thing for any cotton State suddenly to extinguish this privilege of credit against the future crop, but I believe that it would be well, in the way of a beginning, for the States to limit the credit to a certain percentage of the value of the cotton produced, this percentage to be a diminishing one year by year. This would gradually compel the planter to produce the principal portion of the supplies used on his plantation, and would practically and eventually prevent him from purchasing his bacon in Chicago, his wheat flour in Minneapolis, his hay in Iowa, and his corn in various parts of the West. As all persons know, who are familiar with the cotton situation, this is what the cotton planter should avoid doing; and I think I may safely appeal to the member of this commission from Georgia to sustain me.

Let me summarize briefly the three points that I attempt to make. First, I claim that any legislation aimed at the destruction or regulation of trusts will apply to numerous farmers' organizations mainly having the object of marketing farm products. These associations are an outgrowth of the economic necessities of the times; they intend to make remunerative prices for farmers, and, as far as now appears, they have not abused their intentions; they try as much as possible to do away with the middleman, who, as he conducts himself to-day, is one of the leeches of American agriculture. While I object to the suppression of these agricultural trusts, I have not the slightest objection against their regulation. Indeed, I believe in the regulation of trusts and of corporations. I was reared in a State that was the pioneer in the regulation of corporations—the State of Massachusetts; and, in accordance with my political rearing, I should like to see the business of trusts and corporations compelled to be thrown open to the light of day rather than to be indiscriminately suppressed.

My second point is that industrial cooperation should be strengthened by legislation that will promote honesty and efficiency of administration, and this by means of examination and publicity of accounts and manner of doing business.

My third point is that that curse of the cotton States, the crop lien system, should be gradually extinguished by limiting the credit that may be placed on the cotton crop to some certain percentage of its value, and by making the limit a diminishing one year by year until some low minimum ratio between the credit and the value of the crop shall be reached.

Q. (By Representative GARDNER.) You made a deduction from statistics on the wages of farmers, in which you stated that if interest were not allowed the wages would be equal to about \$22.50 a month?—A. Yes.

Q. In that calculation are such items as rent for buildings that he keeps—his living comes out of the farm—taken into account?—A. The rent is taken into account in the form of interest; but it is doubtful if farmers, in reporting the value of their products to the census enumerators, have included living. I doubt that very much. They may have done so to some extent.

Q. You stated that there was no general movement in the direction of intensive farming in the United States. Is it not true that the consensus of action among agriculturists at this time discourages that movement in this way, that they advise against the expenses for mineral fertilizers and other expensive methods of intensive farming, and advise the cultivating of less soil and keeping it up for crops to plow in?—A. I think that that is their plan, although I do not profess to be familiar with the general policy of the experiment stations with regard to that.

Q. (By Senator MALLORY.) I understand you, in your plan of organization of cooperative associations of farmers to advocate the placing of the control in the State authority. Do you think that Congress could not exercise any such power over those corporations so chartered or organized as are engaged in interstate commerce?—A. Well, I suppose so. I do not profess to be capable of giving you a legal opinion on such a subject.

Q. Would it not be better, if it were possible, for one power to exercise that control than for 40-odd?—A. I should rather think so, because the States will not go into the movement universally. There might be a pioneer or two. And as between the two, I should prefer that Congress should do it.

Q. You spoke of the advisability of the legislatures of the cotton States limiting the percentage of liens contracted on the crop. Would not a difficulty in that arise from the character of the legislatures themselves in those cotton States? The majority of the legislators in the cotton States are generally cotton raisers or connected with the cotton raisers.—A. The cotton men are beginning to realize in the South that they are the victims of a bad system. I have heard them say so time and time again—the cotton men I have met in the last 8 or 10 years.

Q. They say they are forced to it. A witness testified to that here a few days ago. He said he had deliberately tried to get out of it.—A. They tried that in Alabama. They had a proposition to get out of it, not to modify that crop-lien system. They had to give it up. The legislature could not pass the act.

Q. I understand your objection to this lien system is not merely that it causes an overproduction, but it is also a very exorbitant drain upon the resources of the farmer?—A. It is dreadful. The rate of interest on the liens on the cotton crop of the South, it is safe to say, probably averages 40 per cent a year. All cotton men will agree that it is at least that. The store system of the South is a sort of a peonage; that is what it amounts to with the cotton planter.

Q. And it has created with successive years a prospective debt to the producer?—A. Yes; they are a year behind; at least a year behind.

Q. So, in fact, the only way to stop the store-lien system in the South is to shorten the production of the crop and make better prices, or a price system of some kind, or a longer time in the payment of those liens?—A. You can not shorten the production as long as the merchant can say to the cotton planter, "You have got to raise so many acres of cotton this year," and that is what they are doing.

Q. As a statistician, do you think that a matter of 500,000 bales from America make a very appreciable change in the Liverpool market as meeting the world's product?—A. That is a difficult question to answer. It is a good deal more of an economic question, not merely with regard to cotton, but with regard to an export surplus. It is a good deal of a question as to what determines the home price. But we do export enough, I think we all agree, to determine the home price.

Q. Would you not suggest a remedy this way, as a statistician, that instead of depending upon the Liverpool market we should manufacture it right here and then export the manufactured goods, holding the American wages at home?—A. I would like to see that done, of course. I believe in home production, and it has grown enormously. The number of cotton manufacturers and cotton planters has increased enormously.

Q. And not lessened on the part of New England?—A. I think not; not so far as I am aware.

Q. (By Mr. A. L. HARRIS.) You spoke about the cooperative marketing of milk at Boston. Have you any statistics in regard to the price the producer has to sell his milk for and the price that the consumer has to pay for it?—A. I am not aware that our Department ever went into that. We each of us know how

much we pay in our own cities—how much we have to pay for milk—but we have no statistics so far as I am aware.

Q. You have never made any investigations?—A. No.

Q. You say you are not certain that the enumerators are able to get the full value of the product of the farms when the farmer gives in his product for the year?—A. It is doubtful if they do. It is probable that they omit to include the farmer's garden, which is worth \$25 or \$50, and omit to give certain products on the farm; and sometimes he does not, we reckon.

Q. He is more apt to give what he sells?—A. Yes; but there may be a duplication, because the farmer may include so many hundred bushels of corn and at the same time include the steers he sells that he fattens on the corn. He may do that more or less, and there is a duplication on that to some extent, but nobody knows to what extent. You can not draw any very fine distinctions.

Q. Has the Department ever made any calculations as to the average cost of producing a bushel of wheat?—A. Some years ago, about 1893, the statistician of the Department made an investigation of the cost of producing wheat and corn; not the present statistician. I do not know whether they are generally regarded as trustworthy or not.

Q. Can you tell what they were?—A. No; I do not remember what they were; and the method of the investigation and the form of the schedule and all that, are not known to-day. So, in the absence of having information in regard to the schedule and the method of conducting the investigation, I do not like to say or express an opinion as to how trustworthy the figures are.

Q. (By Senator MALLORY.) Relative to this proposition of limiting liens on prospective crops, what is the method by which the liens are made now?—A. Well, the farmer makes up his mind as to about how much credit he wants and the merchant says, "Well, you produce so many acres of cotton," and the merchant sees that he gets a good margin against a possible crop failure.

Q. And your idea is that the merchant should not be permitted to advance only a certain amount?—A. That will compel the cotton planter to produce his own bacon. He should not be obliged to buy his bacon in Kansas City or Chicago.

Q. Not only that, but would it not probably diminish the amount produced?—A. Yes, it probably would; it would raise the price of cotton to the farmers, probably, at least, to the extent of compensating him for the cost of producing.

Q. Have you thought of the practical method by which that could be accomplished: what kind of a law could be enacted to put that restraint upon the freedom of the merchant to contract?—A. Well, I should say a simple law of perhaps one section would be sufficient for that, just limiting the percentage of incumbrance that can be placed on a crop prospective or actually in the ground, and I should have that a diminishing percentage year by year.

Q. Will there not be a question as to whether the legislature would have that power?—A. They might mortgage a crop before it goes into the ground, as they do now, because they have the permission of the legislature. It could not be done at common law.

Q. (By Mr. FARQUHAR.) You seem to be pretty hard on the middlemen. How is it possible for the agriculturists to get along without the middlemen?—A. The agriculturists can not get along without the middlemen. The middleman is a necessary link between the producer and the consumer not only in agriculture, but in all industries. But what I would like to see done is for the farmer to become his own middleman. The service performed by the middleman must be performed by somebody. Of course distribution must take place, whoever does it, and the farmer should do it himself.

Q. (By Mr. KENNEDY.) You want the farmer to make the profit and not have somebody else have it all the while?—A. Yes; that is the California plan.

Q. (By Mr. FARQUHAR.) Owing to the perishable condition of fruits, would it not be a difficult thing to assemble all those productions together into a central point before distributing?—A. Yes; of course the cooperative nature of the movement with respect to the assembling and marketing of fruits has its limit. At the same time it has been developed to a great extent all up and down the Atlantic coast all the way from New York City to Florida and all along the Pacific coast it has been developed to a great extent in the truck-garden business and the fruit business.

Q. (By Representative GARDNER.) Has not this been its utmost development along the coast: To reach the New York market the farmers have organized into associations or unions. By getting together they have been more able to make proper arrangements of transportation at more opportune times, probably through cars, where before it had to be changed from car to car; and then any such bargains as they were able to make with one or more markets are not discounted for

handling their products, because they come in large quantities; they are the products of the union and not the products of individuals. Is not that the sum total of the advantage they have received up to the present time in the markets?—A. Those are the principal points of advantage so far; yes. I do not think they have raised the price of farm products—truck gardening.

Q. But they have reduced the cost of transporting them?—A. Yes; by having carload lots and by dealing with a great railroad corporation as a big body of farmers.

Q. What has been the result of the observation, if there has been any by the Department, of these associations extending credit to their members?—A. They advance cash. These associations of farmers require cash for sales. They do not buy on credit at all when they conduct a buying business.

Q. Are there not some that buy for their members on credit?—A. I know of granges that have gone into that business—the Farmers' Alliance people.

WASHINGTON, D. C., April 8, 1898.

TESTIMONY OF REV. PITT DILLINGHAM.

Principal Calhoun Colored School, Calhoun, Ala.

The commission met at 10.45 a. m., Vice-Chairman Phillips presiding. Rev. Pitt Dillingham was introduced at 8.20 p. m., and testified concerning negro labor in the "black belt" of the South and its education, as follows:

Q. (By Mr. A. L. HARRIS.) You may state your name.—A. Pitt Dillingham.

Q. Your occupation?—A. Principal of the Calhoun Colored School, Calhoun, Ala.

Q. Now, without interrogatories, you may make such statement as you have in your mind in regard to the condition of labor in the "black belt."—A. I would like to say to the gentlemen of the commission, to begin with, that perhaps it was a little rash for me to accept the kind invitation to speak this afternoon, but feeling that it was doubtful whether I should have any other opportunity I used it. It would be possible, of course, to bring you later a carefully written out, detailed statement. I am on my way North, and coming to Washington and going to see Dr. Curry, I found him profoundly interested in the question of the nation's taking hold of the education of the colored people. On going to see Commissioner Wright, I was told of this Industrial Commission and of the subcommission having to do with the condition of agriculture and agricultural labor, and I at once felt that I would like to know what was to be done in the study of agricultural labor in the black belt. I find, by going through your topical plan of inquiry on agriculture, that the questions which you ask are the questions which we would like to have asked down there, and the only thing that we hope is that you are not going to pass us by. We feel that the time has come when it is possible to turn on the light and make an investigation in regard to some of these matters bearing upon the condition of the new American citizen in the black belt; in other words, it is no longer a race question; it is no longer primarily a political question; it has become a sociological question and a labor question. We find at last it has entered into the universities. You find economists devoting their attention to this question. In connection with this, those of us who are living down there and trying to do something feel deeply the fact that so far, even though a generation has passed since the nation emancipated the colored people, practically nothing, really, has ever been done by the Government in the way of careful inquiry into the conditions of this new citizen. We realize, too, that this is a very complicated question; that it can not be answered by any one man. We feel that if this commission should find it wise, if they should see their way to conduct investigations which would throw light upon the conditions of agricultural labor in the black belt, it would have a value which it is rather difficult to estimate. I believe you are likely to underestimate rather than overestimate its possible good consequences. In other words, to meet the very thing that Dr. Curry was speaking of this morning, the question of whether or not the nation is going to feel any responsibility in regard to this matter, it seems to me that an inquiry conducted by this commission in regard to agricultural labor in the black belt will perhaps do more than anything else. It will bring home to the mind of the nation the urgency of the situation and the nation's responsibility.

I said that I would try to give some facts in regard to the condition of things, as we see them, in Lowndes County especially. I ought to say that if there is any

reason why I have a right to say a word here this afternoon, it is simply because I have been living for some five years in this county, which is a typical black belt county, one of the blackest in all the black belt, the county selected by Mr. Booker Washington when the Calhoun Colored School was started some seven years ago. I am not here to tell you about the school except as it bears upon this question of agricultural labor. The reason why the school was started there was because, in the first place, the cotton belt is where the negro is—that is, an immense per cent we know are down there. In the so-called black belt you have the highest percentage of colored as against the white—something over 60 per cent. The desire, therefore, was to get into the black belt itself, and getting there we got at once into the agricultural South, and we found the field hand of the South. When the school bell was rung, it was rung out over a farm as well as a schoolhouse. We wanted to give agricultural education, and we were thinking of what we could do to help the State of Alabama, among other things, in bringing some kind of elementary agricultural education to bear in the country districts of the South. Then, if I mention one other fact, you will see our situation. Besides conducting this school, we have around about us at the present moment some 70 families of negroes who are buying lands, 50-acre farms, at an average of about \$7 an acre, on 3 years' time at 8 per cent interest. In other words, we have really a sort of farm village. At the center there is a graded school, running from kindergarten up through the primary and grammar grades, giving also agricultural instruction and training for the boys and domestic instruction and training for the girls. We are working for the farm and home, trying to turn out farmers and farmers' wives. We are saturated, as it were, with this agricultural situation. We have, for seven years, been coming up against all the facts of that situation in one way and another, all the disagreeable and hard and trying facts, and all of the hopeful ones, and are feeling exactly what we understand to be the feeling of every man, whether a Northern or Southern man, every educated man who thinks about the situation, and that is that the condition of things is bad, that it is urgent, that it is dangerous.

I say that without being pessimistic, because the peculiarity of the situation as we see it is the combination of two things—we see the urgency, we see the danger. At the same time we see the hopefulness of the situation if only reasonable stimulus and help and guidance can be given to that great body, those millions of colored people down there, children of the tropics, right at home. We say, in other words, the nation can do just as it pleases. It can have a body of intelligent, tax-paying, industrious, thrifty citizens, or it can have God only knows what in the far future. We do believe, as a result of our 7 years' work down there, that there is a very hopeful way out, which we have actually tried, which we see being used right under our eyes. Take simply our county, with 28,000 colored people and only 4,000 white. Suppose you ask, Are the colored people going up or down? I can not tell you, and for this reason: I can tell you of individuals who are going up and I can tell you of individuals who are going down, but when it comes to the proportions going up and down, I can not answer the question. I wish I could bring it home to you our feeling that the time has come when we should be assisted by the nation in getting at the facts concerning the negro. Our situation is simply typical. In some way the nation should undertake to assist in the inquiries. We have, so to speak, a sociological catechism for our county which we have worked out. We have a book of landowners among the colored people, all those who are buying or have bought land, and it is an encouraging book, but there is great need of a body of statistics that has not as yet been gotten.

We are speaking in a very general way, of course, when we say the situation is bad and urgent. We sometimes talk about the "Big Four" in Lowndes County. The "Big Four" to us is the farm, the home, the school, and the church. We say that the home is the foundation of the nation. We say again, you can not have a home without a property basis for it. We say again, it is not enough simply to have the individual home; you must have a neighborhood of homes, and these homes must have a community center. You must have homes where you can hear the school and church bells ring, and the school making this community center must be a school and the church must be a church. I am reporting to you from a county that is very much worse than many of the counties in the South. Farms, homes, schools, and churches are what make civilization: make Christian civilization, and American civilization. Now, what is happening to these institutions? We see a distinct danger of Africanizing. You remember Prof. N. S. Shaler pointed out some time ago that there were certain districts in the cotton belt which he said were in danger of being Africanized. That is what we see. We see what are called homes, what are called farms, what are called schools, what are called churches; but they are not. They are not homes, they are not farms, they are not schools, they are not churches. At the present moment it can not be said in any sense that they amount to much, or that in particular

the American school system exists in our county. What is the American school system? When you have no schoolhouse, and when you have no teacher, why call it a school system? If you must take a little old, tumble-down log hut, with no desks or blackboard or map or text-books, except a blue-back speller here and there, and the man who teaches can hardly count his cotton weights, and school only lasts three months a year, can you say that is an American school system? Even if exceptions for the better exist, this condition of things bears as heavily on the poor whites as on the negro. We live in the land of one-room cabins, mere crop-mortgaged cotton peasants. I will not go into details about the homes. Probably they are sufficiently familiar to you. We simply have the worst probably that there is in the way of one-room cabin living. What is the matter? The two questions you have asked, your topical plan of inquiry in regard to labor, "sufficiency of public-school facilities," No. 22, and No. 23, "adaptation of public-school curriculum to the needs of agricultural people," come very close to what is the matter. These questions seem to us of startling consequence for the agricultural regions of the country in general, with heavy additional weight for the black belt, because we see no way out for the colored people of the South except through agricultural education.

Agricultural education, combined with "small holdings" of land, is to us the way to get from under the crop-mortgage system. Can we get from under it? Well, we actually see individuals coming out from under it. They are raising their food and buying land, and this largely because of the stimulus that comes from having a school in their midst, giving agricultural instruction and training. You all know where the negro was at the time of his emancipation. He was literally in the air. That is where the nation left him. He had not a square foot of ground. He was hungry. He had no loaf of bread. He had no land to get it out of. If he had had the land he had no plow, and if he had had the plow he had no mule to pull the plow, and if he had broken up the ground he had no seed to put in it, and if he could have gotten his crop started he had no hoe to cultivate it with, and if he had been able to cultivate it he had no basket or bag to pick the cotton bolls into. He had a shirt to his back, and probably an old pair of plow shoes. However, in spite of all this, we regard the crop-mortgage system as a step up. It meant a beginning of free contract. Free contract meant that these men had found, as they say down there, "a man to go on." That is how they have been going ever since, getting an "advance," and giving the year's crop as security; eating their cotton before they pick it; living under a credit-price system out of the store, getting their food over the counter, then finding at the end of every year they have eaten up all they have earned, and that a small or large balance is against them.

Within the last three months (you know we have had two of the severest seasons the South has ever known) one noticeable thing has happened. The negroes who are buying land, although they are having a very hard time, are not discouraged. Of those that are not buying land, many get discouraged, and the small white farmers or renters are getting discouraged also, and some of them are leaving their farms and going onto the railroads and into the cities.

To come back to the question of the general condition, and what agricultural labor has to say about it, we offer our farm village as an object lesson, for what it is worth. It is not enough, we are sure, to teach the individual, or to secure an individual home and farm, but there must be a neighborhood of farms and homes grouped about a civilizing center, school and church, etc. There is such a neighborhood in Lowndes County, endeavoring to lessen the difficulties of the farmer's life, to overcome its poverty and its isolation. We believe in the sort of education that will give a property basis to the negro's manhood, and enable him to make something of himself. Our hope is to plant these neighborhoods and stimulate the growth of them in our county: give an object lesson, and let it work as far as it will. We look to the farm village in particular to protect the life of the child. This goes to the root of matters, for the child is going to drift into crime unless something is done. In our county at present things are going pleasantly so far as the race question is concerned. One reason why I speak as I do is because white and colored people are working together at Calhoun. Mr. Cheanutt, a Southern white man sold one of his plantations to us. Now he is supervising the buying of the colored people, and is practically the agent of the school, working with us. He believes land owning is the way out for both races in Lowndes County. Only a very short time before Calhoun was founded there was a race war in our county. That means there was actual organized fighting, and a very considerable fight it was. It grew out of an exceptionally aggravating case of arrest. Lowndes County has had its full share of lynching, and one or two summers ago we had an aggravated case which caused a lynching not very far from us, and some of the men—not all of them by any means, but some of the men—who had taken

part in that race war, came to Calhoun's colored farmer, John W. Lemon, a graduate of Hampton, and said: "You lead us, we are ready." And what did he say to them. There was his opportunity. He got those men together and said: Now just look at the situation, and see what it means. What was the situation? Well, a woman, the wife of a colored man, had been ordered out into the field; she claimed she was sick; the husband then said to the man who ordered her out that she should not go; that she was sick. The white man went for his shotgun. When he came back the black man was ready with his gun, and shot the white man first. Then finally came the lynching. The black man was hung up and riddled with shot. "What," now said Mr. Lemon, "is the real trouble? Is it not the crop-mortgage system, and the control of the labor of your wife? On the 1st of January you mortgage not only your labor but the labor of your wife, and the man has a right to the labor of that wife in this case. Is it not better to get down to the root of the trouble; to get land and homes, instead of fighting and setting all things back? Are we not to go out from under that system, so you can say whether your wife should go to the field or not?" I mention this as a typical case. We want to promote kindly race feelings. This story hints at what is actually taking place around us. It can not be thrown into statistical form, but I think it was worth while, really, to send the group of people to Lowndes County—the eighteen people, black and white, educated blacks and whites working together in an agricultural settlement; worth while for our farm village to help stave off the possible race war that might spring up in our county.

We find the one thing that enables the black man to pull himself together and do something, is to give him the motive and the ambition which the white man requires both North and South; the chance to get a home. The other day, before I left the South, I visited and held a meeting on the Chesnutt plantation, and on the La Grande plantation. The farmers and their wives were present. We asked a carefully prepared series of questions, for instance, in regard to their farms: How far are you along in breaking up your land? How much new land have you taken in? How much cotton are you planting? How much food are you planning for? What is your advance going to be this year? Here is the point: We found these men were not only very hard at work; they had not only broken up the old land in good season, but were taking in new land; they not only were planning to be sure of plenty of cotton, but they were planning for food as never before. And, furthermore, they were all seeing how low they could bring down the advance. They were seeing the meaning of thrift; that, no matter if they raise three times as much cotton as now, unless they raise their food and unless they learn how to save, there is no way out.

Q. (By Mr. SMYTH.) You mean by advance, the advance of these men who will rent these lands; the merchant and the landlord?—A. Many of the men who are buying land have to get an advance, and they get it from Mr. Chesnutt, or through him.

Q. Is the party who advances land to the tenants the landowner or the merchant?—A. We have both cases. We have some absentee landowners, and merchants who are also landowners. The largest landowner near us is both a merchant and a landowner.

The problem with the negro farmers is to learn how to raise their food and how to save. This is admitted to be the leading question of prosperity in the agricultural South—diversification of crops and raising of food, and the habit of thrift; breaking, in short, with mere cotton raising. Now, these colored farmers on the Chesnutt and La Grande plantations we found were learning to save, and actually thinking of food raising as a part of this. In a Review article which appeared a little while ago there was a statement to the effect that the colored man was a failure as a farmer, saying also that he was a failure largely because slavery had existed and produced mere black muscle. Slavery did not produce the brain essential to our modern farmer. In a way this is only too true. But it seems to me that to realize this fact is to realize the need there is that now the nation should do something and the States should do something to teach that man to be a farmer.

We have a farmers' conference meeting each month. It is a school in farming for the older people. The economic gospel is, raise your food and buy your land. The black farmers of our farm village are now buying some 3,600 acres. Only the other day a man wanted to sell 1,000 acres adjoining one of our plantations. So the opportunity to get land grows. At the same time I will say frankly there are landowners around us who probably do not altogether sympathize with the selling of land. In other words, they take it that the land buying stands in the way of the renting system. There are certain conflicting interests. The best tenants are the men who want to buy land. The point is this, however: these very men say their land is growing poorer all the time, and the people are growing poorer. This is a double fact. It tends to create a certain unrest and discontent. Under

its influence the boys and girls are beginning to drift to the cities. It is an easy thing to get to the railroad, and you can play the tramp on a freight car until you get to Washington or Philadelphia. So the negro can help fill the slums of the northern and western cities, to say nothing about the black city slums in the South already forming.

One word in regard to the definite proposition which I have been asked to submit to this Industrial Commission. Are you going to investigate the condition of the colored man as an agricultural laborer? I do not mean colored men in general, but the agricultural condition of the negro. Can you investigate that as a part of the general agricultural question? If so, can we in any way cooperate, and can you in any way help us? It seems to us that carefully selected small areas, thoroughly examined from this agricultural point of view, would yield results. These areas should be typical ones, selected in the different States, representing different sections of the cotton belt. I am thinking especially of cooperation with such settlements as Calhoun and with the other schools, such as Hampton, Tuskegee, etc., that are actually in the South itself. Some money would be required, but money alone would not answer the case. Expert supervision would be still more necessary, and what we should want the experts to furnish us with would be two things: in the first place, a catechism covering the limits of the inquiry to be made, and also a certain amount of testimony, taken by the expert himself on the spot, to guide and supplement the testimony taken by the various schools.

I should like in the time that is left to answer any question, rather than to go on talking in a general way.

Q. (By Mr. A. L. HARRIS.) You may state the extent of this credit system of which you speak.—A. It reaches throughout the entire agricultural region. I will say that during the last month the bitterest word almost that I ever saw written against the merchant was written for a county paper in Alabama by a poor, white farmer who represents the small, white, farming class. Any study of the condition of agricultural labor in the Black Belt should include the white renter of that region.

Q. (By Mr. SMYTH.) Does the advance lien system, as we call it in South Carolina, extend generally throughout the cotton belt?—A. Yes.

Q. (By Senator DANIEL.) What is your proposition for the relief of the people; educational?—A. Yes.

Q. Who is to furnish the money for this education?—A. The nation should help.

Q. (By Mr. SMYTH.) You mean in the way of agricultural training schools?—A. Yes; and I am thinking especially of elementary agricultural training in the common schools, such as they have to some extent in Ireland and at this day. Elementary agricultural education is given in the country districts. Many a little school-house has its plot of ground, where the staple crops of the district are cultivated by the children. Russia and Austria are doing similar things.

Q. (By Senator DANIEL.) In your observation of the colored people what do you think is the general effect of the public school upon them?—A. I am afraid it tends to unfit for the real struggle for existence; that it is only too true and perfectly natural that the men coming out of slavery think of education simply as something to save them from work, especially work with their hands. This is to a degree the tendency of the public-school system as it is to-day in the country, both North and South. As to the South in particular, and the colored boys and girls alone, I am reporting; it is not my own observation, but I am speaking of the observation of educated and friendly white men and of educated negroes, who have spoken to me about the same thing. They say that instead of lifting up work of the hands, dignifying it, the public school tends to make them think they can get through life without work, in particular without hand work.

Q. Ordinary public school education tends to divert a man from work in some cases rather than to encourage him?—A. I think it does.

Q. What do you say is the average intelligence of these ordinary country or farming people in Alabama; do they show a disposition to learn?—A. They do. We have boys who walk 8 miles a day to come to school.

Q. Do not you believe there is more intelligence in these American black people than in any other black people in a civilized country in the world?—A. I think so.

Q. Most of the intelligence they got, they got in slavery?—A. I think slavery was a school in several ways.

Q. (By Mr. A. L. HARRIS.) Please state the condition of your school?—A. We have had about 800 students on an average during the 7 years. We have 18 workers there, about one-third educated blacks from Hampton, and the rest educated whites from the North. But Calhoun's life is peculiarly a neighborhood life. We are trying to build up a neighborhood with an institutional object lesson at the center. A farm, a home, a school, a church make this object lesson.

Q. Under what control is this school?—A. It is a corporation under no denom-

national control. It is seeking in every way to work in conjunction with the State, so far as the State finds it possible to work with us.

Q. From what source do you obtain funds?—A. Voluntary contributions almost entirely.

Q. Is your farm owned by the corporation?—A. By the corporation.

Q. Does your corporation engage in buying land and selling it?—A. No; that is done by individuals.

Q. To what extent does your curriculum go in education?—A. Elementary work. We begin with the free kindergarten and go up through the grammar grades. Our students run from 5 years to 21 years. We only attempt elementary education.

Q. Have you any graduates from your school?—A. We graduate a class of 10 this year. It is a mixed school.

Q. (By Mr. SMYTH.) Not in color?—A. No; all black.

Q. (By Mr. A. L. HARRIS.) What is the condition of your graduates after they leave your school?—A. Very promising, indeed. There is only one of our graduates so far about whom we have been disappointed. But the others all promise well and are taking hold. For instance, some are buying farms. We have 4 or 5 students who are already becoming landowners. That is the ambition of all. The largest colored church in our part of the county is now taken care of by one of our graduates. He is a level-headed preacher of righteousness and of vital Christianity. Then again, during the last year our students have reached about 300 pupils in the county public schools.

Q. What is the comparison between those in your locality who are not educated and those who have gone through your schools?—A. Very marked. Of course, in a way our students are on trial still, but the energy and determination that they are showing, the industry, and the idea they have of what they want in the way of homes and farms, and of higher ways of living, is encouraging.

Q. Are they industrious after getting through?—A. They are all, so far, looking toward work, and they are trying to win a home by working and saving.

Q. Do you educate them to the proper use of the hands?—A. In the use of the hands. The manual training room has just come up as a part of our repair shop. We are teaching agriculture. Farming and domestic training figure as one-half, and the larger half in some ways. Some of them when they come to graduate say: "The book seemed to us at first the great thing. We found it to be a great thing, but now work looks just as large as a part of education."

Q. What is the disposition to go on with their education after leaving the schools?—A. Good, so far as we can see. Most important of all, they are not only trying to go on with their education but are trying to educate those around them in some way.

Q. How many of these schools have you in your State?—A. I do not know anything that is exactly like our settlement and farm village work. I would rather stick closely to our own experience in our county. I do not know enough about other schools.

Q. You have other schools in the State?—A. We are trying to establish branch schools in our own county.

Q. (By Senator DANIEL.) Is it not true there is a State manual labor school for the colored people in Alabama?—A. The Tuskegee Normal and Agricultural Institute, at Tuskegee, Ala. Its president, Mr. Booker T. Washington, is one of our trustees.

Q. Is that the only one?—A. There is one at Huntsville.

Q. (By Mr. KENNEDY.) Was it the influence of that school that started up your school or was it Hampton that led up to yours?—A. Hampton and Tuskegee together.

Q. (By Senator DANIEL.) What is the condition of agriculture down there as carried on by the white people in that county? How does that compare with your experience and observation, with those colored people?—A. The small white farmers are in the same boat with the colored farmers, so far as the crop-mortgage and the credit-price system go, and their effect on land and people.

Q. (By Mr. SMYTH.) Is the whole agricultural industry depressed?—A. It is depressed.

Q. How do you account for that?—A. That is a pretty big question, but I believe the South must have a new agriculture, and that means that she must for one thing take care of her soil, feed it, and then take her food out of it.

Q. (By Senator DANIEL.) What can you raise there besides cotton in Lowndes County?—A. Corn is a leading crop after cotton; oats rank next.

Q. Can you raise corn down there in competition with the corn that comes from the West?—A. No; I do not think so. We have not carried our experiment far enough to know.

In regard to the ideal of farming it seems to us that one thing is very desirable

and possible in the cotton belt, and that is "sufficiency farming" as a basis of family life, done with family labor. They can raise food enough. They need not compete with the West in raising corn.

Q. It would not be economy for a man to go into raising that product for putting it upon the market for sale, but for home consumption it will pay?—A. That is the point. The ideal we try to encourage is simply that of a competence in the home, so they can have enough to build and furnish a decent house to support and educate their children and have enough for a rainy day, and enough for old age. The only highly organized industry in the cotton belt is the cotton industry. There is no market yet for other things.

Q. Cotton is a cash crop?—A. It is a cash crop.

Q. How much do you raise to the acre in Lowndes County?—A. We have shown the people on our farm how you can raise a bale of cotton to the acre instead of a third of a bale of cotton, the average yield for the county.

Q. By intensive farming?—A. By intensive farming and by mainly using the cotton seed as fertilizer. When it comes to corn—our experiment last year was to show them that instead of getting 15 bushels to the acre, which is the average crop, they could just as well get 25 bushels. We believe very much in the effect in the South of the leguminous plants, beans and pease. Now that the new facts have been discovered, and we know the power of these plants to put nitrogen into the soil, we believe very strongly in the building up of the soil through that. Nature in the bottoms, of course, by her overflow, keeps certain lands up. All the rest of the land is "skinned." The moment our men begin to own a little land, a little bit of dirt as they say, they do not want that washed down and sent off into the Gulf of Mexico, and they begin to think also about feeding it. They have been taking out and putting nothing back, and now they are beginning to feed it and trying to feed themselves out of it. Our practical salvation there in agriculture is to develop just that. We must feed ourselves out of it, the land under our feet.

Q. (By Mr. A. L. HARRIS.) How many acres of cotton can 1 hand till, take care of?—A. The average farmer has about 25 acres; that means about 8 bales of cotton. They do not get that as an average; the average is a little lower.

Q. That you mean to say is the total income of your small farmer?—A. Yes, with a little corn added.

Q. What part does the landlord get of that?—A. Lands in our county rent all the way from \$2 to \$3 and \$3.50 an acre.

Q. Is it a cash rent?—A. It is both custom rent, or cotton rent, and cash rent. The cash rent is growing.

Q. How much is the custom rent on the share system?—A. The share system has largely gone out among us. It did exist at one time to some extent, and involved one-half. But it dropped to one-third, and the people went out of it.

Q. (By Mr. SMYTH.) Was it not practiced very much on the principle of one-third for the land and one-third for the man and one-third for the labor?—A. Where you furnished your own stock that would make a difference.

Q. If the landlord furnished the machinery, he got two-thirds?—A. When he did, he got two-thirds, but in our county it gave away to the renting system.

Q. (By Mr. PHILLIPS.) Do the native white people cooperate with your educational efforts there?—A. We have, among other friends, Mr. Chestnutt, already referred to, who is a very important white man for us in that county. He is not a rich man nor an educated man, but he is a fine type of a good American, intelligent and honorable. He owns considerable land, and he is working with us. It grows constantly more friendly. One of the pleasantest things down there is the fact that we get along so well with our white neighbors. From the beginning the gospel has been to the colored people there that the way out for one race in that county is the way out for both races. And one of the things that Mr. Chestnutt did that was helpful was that he emphasized that. He says, "I, as the result of my experience (he had been a renter for a great part of his life), know there is no way out for the white man as a renter. I found the way out myself by buying land. And I also believe that there is no prosperity for the white people in our county except as the colored people are built up, and there is no prosperity for the blacks except as the whites are built up." That sentiment is growing.

State of Massachusetts, County of Suffolk:

I swear that the statements made by me of my own knowledge in the foregoing report of my testimony before the Industrial Commission are true, and that all other statements I believe to be true.

PITT DILLINGHAM

Sworn and subscribed before me this 16th day of November, 1899.

[Notarial seal.]

JOHN D. BRYANT, Notary Public.

WASHINGTON, D. C., May 4, 1899.

TESTIMONY OF MR. LE GRAND POWERS,*Chief Division of Agriculture, U. S. Census.*

The commission met at 10.55 a. m., Vice-Chairman Phillips presiding. Mr. Le Grand Powers, of Minneapolis, Minn., appeared and testified as follows (the topical plan of inquiry on agriculture being followed):

Q. (By Mr. A. L. HARRIS.) You may state your full name.—A. Le Grand Powers.

Q. And your residence?—A. My legal residence is Minneapolis, Minn.; at present I am stopping here.

Q. State your occupation or business.—A. For the last eight years I was commissioner of labor of Minnesota; at the present time I am one of the five chief statisticians of the Census, having charge of agriculture.

Q. Is this the first time that you have been connected with the Census Department?—A. Yes.

Q. During the time you were labor statistician of Minnesota did you give much of your time to the subject of statistics regarding agriculture?—A. I gave a large part of the statistical work of the department to that subject. In Minnesota the bureau of labor, unlike that of some of the States, has two functions—the enforcement of laws and also the collection of statistics. So far as the statistical work was concerned I gave a large share to agriculture.

Q. Did that take you over the field of agriculture?—A. Certain parts of it; not the whole field.

Q. You may state whether there has been an increase or decrease in the number employed in agricultural labor in your State in the last 50 years.—A. Minnesota was just beginning to be settled 50 years ago. I think possibly that under this subdivision of the plan of inquiry I might make a general statement, with your permission. I would say, in speaking more directly to the first two topics, "1. Increase or decrease in number employed in agricultural labor in the several States during the past 50 years." "2. Comparative condition of those so engaged;" that in the United States, as a whole, in 50 years the agricultural population has a little more than doubled. From 1850 to 1890 the population engaged in agriculture increased from substantially thirteen millions and a half to twenty-seven millions, and the following changes took place among the farm families: The farm owners, who in 1850 constituted a little over 50 per cent of the farm families, increased until they became a little over 60 per cent; the other sections of the farm population that in 1850 were slaves, wage laborers, and tenants had decreased from about 48 or 49 to substantially 40 per cent of the total number of farm families. To the extent represented by these figures the ownership of farms had increased and the dependent forms of farm labor had decreased. Of these dependent forms, tenancy had increased very markedly and the other two had decreased to a very great extent. The slaves had vanished. They represented in 1850 about 19 per cent of the farm families, giving them the same number to a family that was the average of the whites. The wage laborers that in 1850 constituted somewhere in the neighborhood of 16 per cent of the farm families had been increased by the emancipation of the slaves, but although thus increased, at the end of 40 years, in 1890, the relative number of families engaged, for wages—that is, the head of the family engaged for wages—had so decreased that it was less than either one of those classes in 1850. The tenants represent, as a whole, an improvement above the condition of the farm laborers, from which they have risen. There is possibly an exception to be made to this statement. Some of the negro farm tenants in the South doubtless represent a lower industrial level than the average farm-laboring family—farm-wage family—of the North. As showing further what that increase of farm ownership has been, I will state it in another way which will more fully exhibit the improvement which has taken place among the farm families, so far as it relates to tenure. In the history of the United States down to 1850 there had been settled on the farms a total population of thirteen and a half millions, and of the families in that population substantially one-half were farm owners. The next 40 years saw another thirteen millions and a half added to the American population, or the same as from the settlement at Jamestown down to 1850; and out of that second thirteen millions and a half five out of every six families added were those of farm owners.

Q. (By Representative GARDNER.) That improvement was not due to the improvement of conditions of those engaged in agriculture, but rather to immigration and the taking up of public lands in the West under the homestead act?—A. The first 150 years of this country had seen immigration from Europe just the

same as the last 40 years; but while during that first immigration only a small portion of the farmers were able to become farm owners, the second one did see a large proportion of them rise to ownership. Of course, the more liberal land laws assisted these people who came here to rise. They had never been farm owners in Europe. They were there wage laborers. We are now, as I understand it, discussing whether the conditions on the farm have improved. They have improved. It matters not why they have improved, or how they have improved, providing there has been that improvement. I will agree with you that one of the causes for that improvement has been our improved land laws, which give the owner, which give the slave, which give the farm laborer a chance to rise which he never had at any time before 1850. As showing further this improved condition, I will mention the fact that on the frontier to-day, even in the semiarid regions of the West, there is a greater percentage of the people who try to make homes who succeed than in central New York at the beginning of this century. In the early settlement of central New York a great body of the land was taken up under contract. Not one-fourth of the men who thus took up land and made clearings ever perfected title to the same. Further, the chances of a man who is in debt paying off that debt on a Western farm are at least ten times what they were in central New York at the beginning of this century.

Speaking of 3, the effect of improved machinery on labor, I would say that the introduction of improved machinery, in my opinion, has been an important factor in the elevation of labor. It has called, first, for greater intelligence on the part of the workingman on the farm; it has stimulated that, and it has otherwise improved the intellectual status of the American farmer. It has thus been one of the great factors in this general upward movement which we have alluded to. It is a greater factor for good even than the land laws, however valuable they may be.

Q. (By Representative LIVINGSTON.) Is improved machinery general throughout the United States upon farms, or is it local?—A. It is more fully employed, I think, in the central West than in any other part of the country.

Q. Is it to any extent in the South?—A. I think it is not in the South, and I think that the fact that the Southern labor has not ever used that machinery is one of the factors that have left that section to one side of the progress that has come to the North.

Q. Why is it not used in the South?—A. I should say it is largely because the help, the negro, is neither industrially trained nor educated in the knowledge of books.

Q. To express it flatly, you mean to say that the labor in the South is not fit to use improved machinery?—A. I do not think it has been educated up to its use.

Q. You know nothing about practical agriculture in the South?—A. Nothing, in one sense of the word. My impressions I have given you, and they are nothing more than impressions, concerning the South.

Q. (By Mr. NORTH.) Do you mean to imply that agricultural machinery, which is used in the West generally, is not used in the South in similar kinds of agriculture?—A. I think that quite possibly in the same lines of agriculture it may be used, but not to so large an extent. For example, corn raising in the South is more limited than in the North, and for this reason machinery, I take it, does not become so great a factor as it is in our Western States in corn raising.

Q. Is it economically possible to use this machinery on small plantations?—A. Not all of it.

Q. Is not that the true answer to Colonel Livingston's question?—A. That fact in part explains this difference.

Q. (By Representative GARDNER.) Are the farms in the South as large as they are in the North, outside of the great grain-raising country?—A. They are; but I understand that many of the original large plantations are now divided up into a great many small ones. The South used to have more large plantations than the North.

Q. (By Representative LIVINGSTON.) Is it not true we have by 50 per cent the largest plantations in the South?—A. I think you have.

Q. (By Mr. FARQUHAR.) In the production of cereals in the South, how many bushels do they raise compared with the great Northwest, where this machinery is used?—A. As a whole they raise much smaller crops than in the Northwest.

Q. Can you give any comparison?—A. I can not.

Q. Under the present Southern cultivation, is there any need for labor-saving machinery?—A. I would not say no need; there has been none introduced; I should say there was need of it.

Q. (By Representative LIVINGSTON.) Is it true that there are a great number of Southern plantations better fitted for machinery than anything you have outside of your prairies?—A. I think there are.

Q. Why don't they use it?—A. I should lay it to the help more than anything.

Our machinery is the creation of the thought and labor of many. It is the result of the work of countless farmers, who are the real inventors; and until you have educated all the people to a knowledge of mechanical science, practical and theoretical, so that they can grasp the elements of the problem, they are not in shape in any given section, either to introduce, or devise, or improve, or adjust to their locality the highest grade of improved machinery. That is true of any art. And if the Southern negro is the equal of the Western farm owner, with whom is the center of the invention or introduction of this machinery, then there is a misunderstanding on my part. I think that he is not. Whatever his good qualities or his bad qualities in this inventive quality, he is not the equal of the men who stand close to the soil in the same relation in the North; and here is one reason why there has not been the introduction and application of machinery to the great staples of the South as there has to those of the North. I do not say that machinery can not be applied to the staples of the South. I believe that it can and will ultimately be so applied, but it will be only when the average Southern negro workman has attained to a mechanical education equal to that now possessed by the white machine-using farmer of the Northwest. When the cotton grower of the South has the same grade of intelligence and knowledge of mechanical principles as the wheat raiser of the North, you will have the same progress in machinery, and with that the same larger general advancement. The question is one of race fitness, educational, and industrial as well as book knowledge. Industrial education cuts a larger figure than any other. I here refer to that form of industrial education for which Booker Washington is agitating.

As to causes of irregularity of employment: The greatest irregularity of employment in the North, particularly in the Northwest, is found where the farmers are engaged in raising one or two staple crops to the neglect or exclusion of any wide system of diversified industry. They are engaged in the busy season in cultivating these staples; when that is over many become idle. There was of that irregularity far more in the early days of the West than there is to-day, because the great central States of the North, where over half of our products are raised, are tending naturally and inevitably, though slowly, toward a diversity of crops that keeps the men engaged on the farms for a greater relative proportion of the year; and thus irregularity of employment, owing to this change, is decreasing.

Speaking to 5, the transient labor in poor seasons, I will say that this is, for the reasons above given, decreasing. The average number of days employed in the year, I would say, is steadily increasing wherever the farmers are developing a wide system of diversified farming.

The tendency of agricultural labor to seek other employment has many factors. Sometimes when we educate boys we educate them just enough to take them away from the farms. Our so-called agricultural colleges sometimes educate them in wrong lines. I think that is true of half of our agricultural schools. I am glad to say that in the Minnesota Agricultural College they are educating the men to stay home. When they leave the school they are educated to a love of farming; they go back and become important factors for the elevation of the farmers. They aid in spreading abroad a knowledge of the science of agriculture, the elements of success. Thus the sections to which they go become doubly imbued with this spirit of improvement and progress. Judging from the result of this school work in Minnesota, I think that so far as the tendency in agriculture to seek other employment needs a remedy it will be found in a wider education of the farming people in the science and practice of the highest agriculture. We need on the farm a wider knowledge of the factors of business success. It is not true that any fool can make a success of farming under any and every condition. The widest success in farming is found only where there is intelligence, foresight, and energy. These are the elements that make success anywhere. As the farmers are educated in all these virtues and comprehend that the farm does give an opportunity for their exercise, any undue movement to the cities will be checked and held in abeyance.

Crop sharing is the old method of tenancy as a rule in the Northern States. It is the most satisfactory method of tenancy where the tenant has only a small amount of capital. There is, however, a tendency at the present time, where the tenants are improving in general status, for them to assume the risk and pay a cash rental. When our farms were worth but very little, the land and the capital invested were small, and almost any man could become a tenant. To-day, in sections where farm lands are valuable and the capital invested is large, it takes a man of some wealth and some capital to become a cash tenant; and the most desirable tenants are those with that capital, and they prefer, as they have business sense, to take a cash rental instead of the older, primitive, and lower form of a share of the proceeds.

Q. (By Representative GARDNER.) What is the general basis throughout the country of rental by crop sharing?—A. Where a tenant furnishes the implements and machinery and live stock, he usually receives one-half of the product. If the man who owns the farm furnishes all the stock, implements, and seed, the tenant only has one-third. In the latter case the tenant is a man who has no capital and simply puts in his labor. He receives a small return. It is otherwise where the tenant puts in the capital and seed and has his implements, horses, and tools, and part of the stock. He receives a larger share of the product.

Q. (By Mr. A. L. HARRIS.) Is the tendency to tenancy increasing in this country?—A. That depends upon what form of tenancy you refer to. The tenancy that involves large holding of land by capitalists of great wealth and a permanent tenant class practically never existed in this country except in New York and some other parts of the East. That form of tenancy came to an end in 1846 by the adoption of the constitution of New York in that year. Up to that time there was a large permanent tenant class. Farms were leased for long periods of time, 100 years, 3 generations. Tenants could not become farm owners. The system bred discontent, and in 1846 the question of farm tenancy became an issue in politics and defeated Silas Wright for governor and elected Young. A new constitution was adopted in New York also in 1846. That forbade leasing farm lands for more than 12 years. That was the beginning of the end of the permanent, fixed, tenant class in New York.

Q. (By Mr. NORTH.) Was that the barn burning period?—A. Yes; and Delaware County was declared by Governor Wright in a state of insurrection during the period. In certain parts of Illinois and some other sections of our country there are a few large tracts of land operated by tenants who never have a chance to buy the land they till. The land is owned by capitalists, who will not sell the same. Those places are, however, few in number. Tenancy, except in these few isolated places, is a step toward farm ownership. Many men are able, in the course of a lifetime, to accumulate enough money to own a farm free and clear. They seek in their old age to retire from farming. They surrender their farms to some one first as a tenant. That is very frequently their son or daughter or son-in-law or some relative, and very frequently it is a hired man who has been with them a series of years and whom they trust. That man takes charge of the farm, is a tenant for a while, and then ultimately becomes the owner. That phase of tenancy is larger than it used to be, and is increasing in every portion of the country. It is more markedly increasing in the West, because originally the farmers there were all young men. Land was cheap and all were owners. But when those first settlers become old, land rises in value and all is settled, and it becomes necessary for the young man who wishes to rise in the world to begin life as a tenant. But the drift of that tenancy is upward. This you will find by noting the average age of the owners and tenants. In the census volume on Farms and Homes it is found that the farm families whose head or chief members were under 25 years of age are very largely tenants; of those over 45 years of age nine-tenths are owners. If you include men unmarried and married, owners, tenants, and wage laborers, you will find that the males only 25 years of age who are owners make up but 3 per cent of the total agricultural workers, while as you go down in life that per cent rises until it becomes very great. The average young man works as a farm laborer on his father's farm or somebody's else farm; his father dies; he may succeed his father on the farm; if he does not, he may start on some other farm as a tenant, and if he succeeds he may buy the same; and it is becoming more and more common for him to start as a farm laborer.

Q. (By Representative LIVINGSTON.) Under the share system what protection has the landowner as to the saving and caring for his farm land?—A. The character of the tenant.

Q. It depends entirely upon the character of the tenant?—A. Yes.

Q. If a farmer looks after some other business and leaves the land in the hands of the crop sharer, does the land as a rule deteriorate?—A. If he is some relative to the man who looks after the land, its quality may be held up. If he is a stranger, it has about an even chance to deteriorate. About 25 or 30 years ago there was a tendency on the part of rich farmers to buy up adjoining farms and then lease them out to tenants, and in doing that they had to take all sorts of tenants. Their farms were so generally deteriorating that they found it to be unprofitable, and they went to selling their land; it was better for them.

Q. Would you recommend the share system for the farmers generally all over this country?—A. No. Wherever the system is introduced with a view of making a permanent tenant class, it is making a failure. There is a natural check to-day upon the growth of tenancy, except where there is a legitimate relation between the family, where the father is giving over to the son or someone whom he wants as a successor, paving the way to an owner. The share system is a detriment to

the farming interests. That is the check that exists in nature on the undue growth of the tenant system in this country.

Q. How are farm laborers cared for generally? What privileges or helps do they get besides their wages?—A. In our section the average farm hand lives with the family of the employer, in the same house, boards at the same table, and is one of them.

Q. Does the married hand board there?—A. Yes, of course; but as a rule more married men get their homes and live in them with their families.

Q. When that man lives by himself, is his house and garden furnished him free?—A. As a rule, if he works by the year or by the month. But you will note this, that the number of married men among the farm laborers is relatively a diminishing quantity. I mean to say that there are less than one-third the relative number of married men, heads of families, apart from that of their employer to-day that there was in 1850.

Q. Is the tendency of agricultural labor to seek other employment due to want of good living, as a rule?—A. Yes.

Q. Or is it the fact that they do not want to do manual labor?—A. I would state the situation a little differently. Let us see some of the facts. One man to-day on a farm out in the West raising cereals for food can produce as much wheat or corn on an average as ten men did in New England in 1850. A given number of men on the farm, as a rule, can produce as much food as twice their number could 50 years ago. Something must be done to give the extra men employment, and that extra employment comes in manufacturing, transportation, and other industries. If our agriculture had not made this improvement by which a certain number of men can raise far more food products than their fathers, there would be no possibility of supporting the life of such a great number of people as are engaged in transportation and manufacturing. Our progress on the farms in the line of increased productivity of labor renders it possible to sustain life for great numbers, and the progress of these others in turn helps the farmer. There comes a natural sort of adjustment between the life on the farm and the life in the city, and this excess drifts where it can find work.

Q. If I understand, you are willing to charge largely this tendency to seek other employment to the fact that our farmers, by using improved implements and machinery, are thereby displacing hand labor?—A. To a certain amount.

Q. Is it true that in the rural sections the poorer facilities for education, getting the newspapers, daily mail, and all those things have anything to do with this tendency to herd in the cities?—A. With some people.

Q. As a rule are farmers living from their farms as well as people of other professions and callings?—A. That would depend more upon the farmer than on the classes. I know farmers that live better than the average lawyers do.

Q. Do those engaged in farming, generally, get as good a living as those in other callings, those in transportation and manufacturing, and lawyers or politicians?—A. I will say that I would not want to live as some farmers do in some sections. Let us make a comparative statement and see how we ought to answer that question. If you speak of the uneducated farmer, the farmer without any culture of any kind, one who is only capable of doing the hardest manual work, it is unfair to compare his style of life with that of the educated mechanic in cities, because the educated mechanic represents a higher standard; but if you compare him with the uneducated week or day laborer in the city, I should say that their living is substantially the same. The man in the city gains certain things and loses certain others.

Q. Do the ordinary farmers dress as well and live as well and furnish their houses as well and pay as much to the preacher and school teacher as the other classes?—A. I should say yes, for any given section in which the farmers, say in the North, are selected, for example. I should say even in the South that the poor negro who works on the farm, representing a certain stage of natural development, will give as much to the preacher, for example, as the same man would if in the city. That I know is true in the North; and he will have as good clothes in the North, assuredly; and he will buy as good papers and as many of them.

Q. The agriculturists all over this country claim that they are not doing as well as other callings or professions?—A. I do believe that our farmers are not as well off as some city people, the men who represent a type of life above them. It is another thing when you compare them with the mechanics and laborers in the city of the same education, training, and thought—the ability to enjoy and use. You will find in the older sections of Minnesota as many pianos among the farmers as you will among the same grade of mechanics. You will find more daily papers among the mechanics than among the farmers, owing to the question of mails. When you go on to the mere frontier, out to the new section, say the

Red River Valley or the newer counties, you will not find so many pianos and organs, fine dresses and fine wagons. Why? Because those men are beginning life, and they are doing that which the ambitious mechanic who is wise enough to forestall a little of the present to gain the future will do. They go without some of these things for the time being. I would not want to say that the farmers on the frontier in sod houses have all these things, because they do not.

There are more mortgages foreclosed in the East than in the West, three times over. I am frank to say that the question of debt is probably in certain portions of New York and New England ten times as great as in the Western and South-western States. The East is suffering very much from the competition of the West in the production of certain great staples, and that competition is bound to be felt more severely in the future than it is to-day, for the West has only begun to bring that competition to bear.

Q. What portion of farm products enters into our exports?—A. Very large, directly and indirectly. If you take agriculture in its primary and secondary stages, as meat products and flour, etc., it makes up very much the larger share; 80 or 90 per cent.

Q. How and where are the prices of our foreign exports fixed?—A. Very largely in Europe; competition of the world; the world market; wherever you may make it center.

Q. When the people who produce 90 per cent of our exports are thrown on the mercy of foreign markets to fix their prices, is it not likely that they will be skinned, especially where the question of competition in the manufacture of raw material enters largely into the whole question, and is not that one of the great troubles of the farmers of this country?—A. I would say yes and no. Now, let me illustrate where I say yes and where no. I may be wrong, but I give you my idea: The farmers in Minnesota, who raise millions of bushels and who determine the price of wheat, are not suffering as the farmers in New York, who raise but a little. The farmers in Iowa are not suffering, where they are raising great quantities of corn and beef and pork, as much as the farmer in Maine, New Hampshire, or Vermont, where they are raising a little. The man in the West, who is absolutely dominating the market, is not suffering, but the man in the East who is seeking to produce farm products in competition with the man who dominates the market.

Q. I understand you to say that the prices of our farm products are fixed in foreign markets on account of the competition of the outside world with our producers?—A. I would state that in this way: The markets of the world have their prices fixed by the competition of America. The markets of the world are dominated by the product of the American farm under its most favorable conditions.

Q. Why does not Chicago or New York fix the price of wheat to the world?—A. They do more to do it than any other section.

Q. How is it wheat is priced in Liverpool?—A. You can state the matter in many ways. The price on the farm is the price in Liverpool, in any great market, minus the price of sending it there; but the product that is raised here in this country and the conditions under which it is produced will determine the price at which it is sold over there. I am now speaking of general conditions, to which there are exceptions. Then there may be a crop failure in Europe; that is one of the factors affecting the world; it raises the world's demand, and there is a time when the world's demand affects the price in the United States; but if you take a series of years, the price of wheat in the world is determined by the price at which it can be produced in the cheapest place. That is a fundamental law in political economy.

Q. What is it that gives foreign markets the power and control over foreign products in this country?—A. They do not have that power. Foreign production and consumption unite with home production and consumption in fixing the prices of all products. That is all. For any given product of the farm or shop the highest price is found where the people buy the most and produce the least; that for wheat is Liverpool; for iron is Asia and Africa. Liverpool does not fix the price of wheat or cotton any more than Africa fixes that of iron and steel. All prices are established in one way. I will give a concrete case: Here are a thousand men working in the production of any article, as wheat or pig iron: each one of that thousand exerts a certain influence; you take one of them out and you lessen by one-thousandth the factors intervening there; you cut it down to one-half, and you have one-half. If Europe and the world represent one-half and America one-half of the producing power, then they each have one-half of the influence in the determination of the price; and they always have it; they are entitled to have it.

Q. (By Mr. KENNEDY.) Is it true that the markets of Europe, to which we send

our manufactured products, have as much influence in fixing the prices of these manufactured products as the markets to which our great cereals go have in fixing the prices of cereals?—A. I should say, relatively, yes; the same conditions apply to both manufacturers and farmers. The farmer who is so situated that he can produce large quantities of grain cheaper than the rest of the world fixes the price for the rest of the world, within certain limits; that is, he does more to fix it than any other single individual. The men who can use Minnesota iron ore, which is produced under conditions the cheapest, and can make use of modern machinery, have more to do in fixing the price of steel in the world than any other equal number of men, although even their prices and the prices of the world are determined by the number of other men who are engaged and the conditions under which they are working.

Q. (By Representative LIVINGSTON.) Have the manufacturer and the miner the same competition in foreign markets to face and meet that the farmer has?—A. With limitation. Let me see what that limitation is: In so far as our manufacturer finds a sale for his products in this country, and he is producing an article which is not produced in sufficient quantity to even quite supply the home demand, and the excess comes from the Old World, and he is protected with an item of tariff or import tax, then his price is not wholly fixed by the markets of the world. That manufacturer has a margin of advantage, temporarily or permanently.

Q. They meet the same competition, independent of the question of protection; they would have to meet it if they did not have that margin?—A. Yes.

Q. What Government protection or aid is given, either directly or indirectly, to the farmer of this country?—A. Protection in the sense of the manufacturer's protection—I know of none.

Q. Then you are willing to say they stand at odds, and the other industries have the advantage of them in that particular; that by the tariff of this country other industries are protected directly, while the farmers are not even protected indirectly?—A. In so far as our tariff system develops home markets and thus brings people into our country in these other industries, to that degree it is an indirect protection, and that indirect protection is a margin in its total and final effects, in my opinion, as great as the other. That, of course, is only my individual opinion.

Q. (By Representative GARDNER.) Does that remark apply with equal force, whether the native operator, called so, is idle or employed in manufactures? You mean, so far as it employs him?—A. In so far as it gives employment to the people in this country.

Q. (By Representative LIVINGSTON.) You admit this protection to manufacturers' products is an advantage that they have as a class, directly by the Government, over the farmer?—A. I do not admit it in that sense, because I believe that the farmer, without protection's hand, would feel this world competition under conditions very much worse than he does to-day.

Q. If the farmers' products meet the competition of the world in foreign markets, and the manufacturers' products meet the same competition in foreign markets of the world, if the Government undertakes to help one in any way ought it not to help the other, both being situated in certain cases alike.—A. Certainly.

Q. Has she done it?—A. I do not know why it has not, because the tariff cuts absolutely no figure. We have to-day, to catch certain of the voters, a nominal tariff on certain agricultural products brought here from other countries. That tariff may affect prices a little on the border, just a trifle, but in the markets of the United States, on all the farms of the United States, the prices are not affected a hair's breadth. It is the same as with the tariff on steel rails. Nominally you have protected the manufacturer of steel rails and steel billets; absolutely the tariff is of as little consequence to-day, when your steel rails and steel billets and bridge timbers and locomotives go to the Soudan, as your tariff upon farm products in Georgia.

Q. Are you aware of the fact that the farmers have been hammering at the doors of our national legislature for an export duty to meet this trouble?—A. I understand that is true.

Q. They say they ought to have an export duty on their products so as to balance against the odds the Government has placed them in; what do you say about it?—A. I do not believe in it.

Q. You do not think that would remedy it?—A. No; you would have out of such a bounty no benefit at all to the farmer. It would be the same as in Germany in the matter of the sugar bounty. The English farmer, as the result of the German bounty, is able to feed his hogs raw German sugar as one of the cheapest articles he can give them; and he does that at the expense of the German taxpayer. The system of bounties in Germany has simply raised the price of sugar

to the consumer in Germany, and thus lessens the amount that is consumed in Germany. If Germany would take away all bounties on sugar the common people then could and would consume more sugar, and they would thus make a market for as much sugar of their own in twenty years as they have built up by their export duties.

Q. If this country would take off import duties on sugar, would not the mass of the people use more sugar and get it cheaper?—A. Yes.

Q. (By Mr. KENNEDY.) Is it a fact that the export duty on sugar in Germany has influenced the building up of that industry in Germany?—A. What Germany has done by fostering its technical schools, what it has done in the scientific development of the principles underlying the sugar industry, has been the great factor. I do not believe the bounty has played as great a part as that scientific study that has been fostered by the German Government; and here we come right to the key of many of these things, so far as legislation is concerned. The great work of Germany, a monumental work of benefit to the German farmers, is found in its agricultural schools and experiment stations; it was the bringing out of all the possibilities of the soil in different sections. Germany has led the world in these things. And Germany has favored the farmers and has helped the farmers, and has benefited them infinitely more in that way than she has by her export bounty. The agricultural experiment stations of this country, which show the people what is possible out of agriculture in their States, have done most for the farmers. I think Minnesota has been one of those. The farmers were changing from an almost exclusive cultivation of wheat as a single-crop industry to a diversified system of agriculture. While this change was taking place the agricultural college and experiment station was finding out what was the system of diversified farming best suited, not to the State as a whole, but for each individual section—for we have a great State, and the system of diversified farming in southern Minnesota is not suited for the north. That work has been of great value to the farmers. I think I can say the Minnesota Agricultural College has done more along that particular line than any similar institution of the Eastern States. I go back into my own old home in New York. I tell my farmer friends there that their farming industry has been revolutionized by the West, and that if they attempt to compete with it they will be ruined. They must find a new system of crops suited to the changed situation. But the State ought to take the lead, and by liberal expenditure, wisely managed, ascertain what new agricultural industries ought to be established in their section which will give them as much profit as the farmers in the newer States. I do not think that any of our Eastern States are doing enough practical work in that line. It is a tremendous problem, requiring the greatest intelligence, in my mind, to adjust methods of agriculture in all parts of the land to the new conditions following the introduction of cheap methods of farming in the West, and cheap means of transportation from the West to the seaboard. Farming is a great industry, the greatest in the world. To adjust it to the new conditions the schoolmaster must be considered more valuable than the lawmaker, and the lawmaker only valuable as he can set in place the schoolmaster. So far as legislation is concerned this is the conclusion to which I come. And in the Eastern States—New York, my old home; I speak of it because I know it more fully—they are spending a great amount of money for agriculture, but they are not coming down in a practical tangible way to ascertain what the farmers can do that will not bring them in competition with these Western farmers, where those Western farmers are working under conditions that will make them masters of the market. I believe it is the same, to a great extent, with the farmers of the South. I have been preaching that as a hobby. If I have a hobby at all, it is that this nation, in its Congress, is not doing in that matter what it ought to do in the practical working out for the older sections of the nation the methods of agriculture, the crops that are suited to enable the farmer in those sections to meet this Western competition.

Q. (By Representative GARDNER.) You have given the main study of your life, I take it, to these problems. Would you be prepared to advise the farmers of New York as to what to do?—A. No, I would not know enough about it; and let me say that I want to avoid any pretense that I have given this the main study of my life. It has been, even in the last 8 years, only incidental to certain sociological studies. It is only incidental to what I consider my main work, the general looking after the labor interests of the State of Minnesota.

Q. (By Mr. FARQUHAR.) What is the condition of the dairy industry of the State of New York to-day compared with what it was 80 years ago?—A. Almost ruined by Western competition.

Q. Is anything done about stock farms and cattle raising in New York?—A. Not to the extent it used to be.

Q. Have you ever noticed, in the exports from the State of New York of cheese and butter, what the production of the State was in comparison to any Western State?—A. New York has a tremendous dairy interest; it has held its own, and increased somewhat its amount of goods, but the profit has vanished. That is what I thought you meant when I spoke of "ruin." I did not mean to say the dairy interest had been wiped out, because it has not.

Q. Independent of supplying the State of New York there with the dairy products, its export trade is quite large?—A. Yes.

Q. Do you think that a farmer in the State of New York, on an ordinarily good farm, a farm that has been opened for 70 or 80 or 100 years, can not make as much off his farm now as he could 40 years ago?—A. He can not make the money; and in the country where I was brought up the average price of farm land is a little less than half what it was in 1870.

Q. Under the new conditions of the farm in the State of New York, having no relation to the selling price of the farm, is not the New York farmer reaping as much from his land now as he did 20 years ago, say in 1880, when the readjustment of values was made in this country?—A. I question whether he is doing as well as 20 years ago.

Q. Considering the crops that we raised in New York 25 and 20 years ago, and the selling price of those crops, and the dairy product and the cattle raising that we have now, do you think there is more money raised off a New York farm now than was then?—A. The farmer turns off as much money, but he is expending more money in connection with his farm.

Q. I mean first profits; I know his expenses are larger.—A. If you will say first profits, I will have to say less profits; for the dairy farmer that I knew in New York 25 years ago was buying but very little feed away from his farm; to-day he is buying large quantities of shorts from the West and also more or less corn from the West. After he has bought that corn and other feed and he deducts that, together with any artificial fertilizers he may buy, the extra sums that he thus expends, deducted from the total sums received, will give him, in my opinion, a slightly smaller amount.

Q. Does the New York owner of the farm and the New York tenant of the farm live as well now as they did 15 years ago?—A. Live better.

Q. (By Representative GARDNER.) You spoke of tenant farmers of 20 years of age and under. I do not understand that. There is not a State in the Union in which a boy can make a contract to become a farmer under 21.—A. That is true, but there are a great many cases where a father dies and leaves an estate to his widow and a young son manages it. You will find a great many cases where a boy reports himself as managing the farm even though he is under 21.

Q. He is not a tenant farmer?—A. He is put down in this census as managing the farm. On the family schedule he puts himself as the head of the family.

Q. Tenants under 21 are usually boys who are agents for their mothers?—A. Yes, under 21. But if I made a statement about farmers under 21 I misspoke myself; I should have said under 25.

Q. I understand the inference from your statement to be this simply, that the only tenant who will keep the farm in condition is the one who anticipates becoming the owner?—A. Probably, yes.

Q. You stated there were fewer married men now on farms than formerly; I believe no one asked you the reason for that.—A. I used the words "married men" to represent a family, where the head of the family was a married man or any way supported as the head of the family; for example, we had formerly a great many families, father and sons, who worked for wages on farms and died working for wages. To-day the average man when he starts in life has a chance of dying something besides a wage earner. I speak of the married man, not meaning anything of marriage but simply to represent the unit that we call in life a home and family. The number of families the head of which is a married man was what I was speaking of; those are decreasing where they work for wages.

Q. To what do you attribute the decrease in the number of the men who come under that classification of married men from farm laborers, or is that covered by your statement that they find better employment?—A. Let us put it in another way. There is a certain number of people leaving the farm owing to this cause already referred to. There is just the same chance for the man who is owner to leave the farm and make something as there is for the laborer. In this exodus from the farm to the town there will be a larger proportion of farm owners than of farm laborers. They all have a little money and are in better shape to avail themselves of the opportunities of the city. Notwithstanding this fact the natural action and interaction of the forces on the farms in this country is such that the

owners and tenants increase, the number of the laborers decreases, and the wages of the laborers increase. There is on our farms a greater opportunity for men to rise than there ever was. The movement to the city is no new thing. That movement has been going on for centuries, and will continue to go on. It is the salvation of the cities. Note the men who 50 or 60 years ago thus left the farm. They are such men as our great jurist, Justice Field, and his brother Henry, and multitudes like them—all farmers' sons. They go to the city and make the backbone of our republic. They come out of the farm-owning class rather than the laboring class.

Q. (By Representative LIVINGSTON.) Is it not true that the bankers, lawyers, doctors, the leading men in all pursuits, in every city in the United States, were originally farmers?—A. Very largely so.

Q. (By Mr. RATCHFORD.) We have, as I understand, among the farm laborers two classes, one the heads of homes and one which is not?—A. Yes.

Q. I understand from your statement that that part of the farm laborers known as the heads of families is decreasing in number?—A. Yes.

Q. And the question asked by Mr. Gardner is, Why is that class decreasing in number as compared to the class not the heads of families?—A. I did not catch that. I see the point. The great mass of our unmarried farm laborers are young people. They are the sons of farm owners, of farm tenants, and also the children of laboring farm families, and a very great proportion are under 25 years of age. As I mentioned before, the average man does not marry until 22, 23, or 24. If you should take 25 you would find that the average man under 25 is an unmarried man. The young man starts in life on the farm as a laborer and he becomes something else. One-half of them, when they get married, will work out with their wives and board in their employers' families. I recall a farmer in New York who came over here from England at about 17 years of age and worked until he was about 24 years of age as a farm laborer. His wife came from another section of the Old World. She worked as a servant on a farm until they were married; then they worked 2 or 3 years as man and wife on a farm, and finally took a farm as tenant, and later purchased a farm, and by the time he was 40 years old he had paid for a farm worth \$5,000.

Q. (By Representative GARDNER.) Are these young unmarried men on the Western farms the men who work the agricultural machinery that the laborers in other sections lack the education to work?—A. The great mass of our farm laborers, so called, are the children of the very men for whom they are working.

Q. They get the mechanical education necessary for the operation of that machinery on the farm?—A. On the farm.

Q. (By Representative LIVINGSTON.) They have no industrial education, have they, particularly?—A. Excepting as they have been taught on the farm.

Q. (Mr. A. L. HARRIS.) What is the character of the foreigners who go on the farms?—A. They have been largely men who have been employed in Europe as agricultural laborers. They have come largely from Germany, Scandinavia, and Great Britain. There have been a few from Bohemia, settling in certain portions. The agricultural immigration has been largely of the nationalities mentioned. The exact percentage of literacy is probably not far from that of the people of the North, taking the great body of this immigration that has settled on the farms. The immigration from Scandinavia has a larger percentage of people who can read and write their language than probably the native population, all told, of almost any State in the Union. They can all read and write. The German immigration proper is a little short of that, and then when you pass from German to Bohemian it is quite a little less. Of the literacy of the French Canadian who has come into some portions of the West as well as in New England I can not speak, but the general intelligence of all has been such as to elevate rather than depress the general tendency of our Western and Northern agriculture.

Q. (By Mr. NORTH.) The immigrants who go on the farms are the best that come to this country?—A. I should say they are very largely the best. Many Irish have gone onto the farms, the best educated among the Irish. The Irish represent of these three great types the least degree of average education when they come to the country.

Q. (By Mr. KENNEDY.) Is it not true that the best educated of the Irish come from the cities, like Dublin?—A. I can not say how that is. There is a certain ignorant class that drifts into the cities here.

Q. (By Representative GARDNER.) Is it not your impression that your statement that the educated, better Irish go to the country ought to be emphasized?—A. When I met the Irish in the country, as I did in my boyhood days in New York, I always looked upon them as the most desirable people. When I met certain other types which I saw in the cities around low saloons, I never fell in love with

them. I never saw any of that drinking element on the farms of New York where I was raised.

Q. I meant more particularly the latter period.—A. Well, I think it would be wise to emphasize the fact that the more educated foreign population drift to the farm until you come above a certain level, where they come to the city again.

Q. (By Mr. NORTH.) Is it a fact that the immigrants who go onto the Western farms come from European farms or from European cities?—A. I think they were very largely farmers at home, so far as my knowledge goes. I do not recollect a single man on a farm that I ever met that came from the city onto the farm. I have found people who settled in these cities that came from the farms, but I have not found any in the country that came from the city. Of course there is no question but that there are some.

Q. (By Mr. FARQUHAR.) Do these foreigners settle in colonies in that part of the West?—A. We have both, colonies and scattered.

Q. In the case of the use of foreign languages, do they still maintain the foreign language in the colony?—A. The Germans do, especially when they are settled under some semireligious auspices. The Scandinavians everywhere seek to put their language behind them.

Q. Is all public education in the State of Minnesota in the English language?—A. Yes—no. Everything is in the hands of the local authorities. When I say yes and no, both of them would apply to some of these colonies. You may find some of these colonies where a portion of the day is devoted to the teaching of the old language. You will not find that among Scandinavians in the public schools, but you will find some Germans where they will insist upon devoting a part of the day to a study of the German language.

Q. Have you free text-books?—A. We have a free text-book law, but the application of that law is left optional with the various districts. It has been adopted in a little more than half the State. I may mention in passing, that by the adoption of that law, the superintendent of public instruction figures that there has been a material advance in the average attendance per year of the several pupils.

Q. (By Mr. A. L. HARRIS.) What effect, if any, does immigration have upon American agriculture; that is, whether it is for the better or worse?—A. I would not want to express a very decided opinion. The examination that I made in Minnesota, relating to the average progress that had been made by several elements, American born and foreign born, so far as it goes to show anything, would indicate that the American-born farmer is able, on the farms of Minnesota, to make a slightly greater amount of progress than is the foreign born. It takes some time for a man to adapt himself to the changed conditions under which he must work to make success, as agriculture is different in this country from what it is in Europe, and if a man from Europe could come here, where we know the conditions are different, and make the same progress, it would argue very much against our American population, but the data which are found in my report, summarized, show the American makes some slightly greater progress in the accumulation of money, although the popular idea is to the contrary.

Q. (By Mr. KENNEDY.) Did the people of northern Europe who settled in most communities of the Northwest become producers there before there was a demand in the market for the surplus products?—A. Both the foreign immigrants and the native people moved to the West in recent years and in the past time before there were markets. The first great motive that existed in the past and exists to-day, causing the immigrants to move, is that of obtaining a home. Our fathers went into New England to get a home primarily, and not to sell on the market. Our fathers moved from New England out into the great West, and the man who comes here from Europe comes primarily impelled by the same motive, to get a home, and that, it must be remembered, is the ruling motive rather than that of markets. The people have made homes ahead of markets. But the creation of markets has given a tremendous stimulus to this immigration movement. This is true in the new Northwest, and I presume it is the same in the great Southwest, in Texas. The families going into Illinois years ago had a long hard siege getting their homes, simply because there were no markets. They got their homes, but their living was very primitive, because they were getting a home. Now the whole thing has been revolutionized by the building of our railroads and other transportation facilities ahead of the population; men now get homes mainly where there are markets provided by these railroads. Immigration is there moving along somewhat different lines from what it once did, but we must remember that from the first settlement of the country the acquisition of a home and not the market has been the primary impelling force.

Q. Then you believe that their overproduction and their surplus products have not brought any real injuries to the communities of the Central West and of the East?—A. The amount of their products is the determining factor in fixing prices,

and with cheap transportation those products have unfavorably affected the farmers in the East. I have no question about it.

Q. (By Representative GARDNER.) If the first white man had not yet crossed the Mississippi, and our population was massed east of it, the probabilities are we could pay double?—A. I wouldn't want to state it in that way. In 1870-1874 I was in Iowa, at the beginning of the agitation of these farm questions. At that time it cost from 1 to 2 bushels of wheat, according to the price in any given year, to take 1 bushel to Liverpool, to the markets of the world. The farm problem was the elimination of that share of the product of the soil that went to the middleman. That share has been constantly reduced until to-day it takes only a little more than a half a bushel of wheat to take a bushel from Iowa to the Liverpool market. Now, the farmer reasoned in 1870 in this way: We want to eliminate that middleman, and we ought to have one-half of the benefit of that elimination and the man in Liverpool the other half. That was the way the farmer reasoned in 1870, and in one sense he was correct. The farmer has not found his gains, however, where he expected them. He thought that the price of wheat in Iowa would receive an advance equal to one-half of the change in the cost of transportation. It did not. The price of wheat is substantially that which it was in those days; no more, no less. The average in gold is substantially what it was in 1870-1875. It would not do to take any one year to make that price; but, taking that producing section as a whole, the price is substantially what it was then. So far as the price of wheat is concerned, the Western farmer has gained nothing by the elimination of the middleman. His gain is found elsewhere. It is found in the decreased cost of the goods which he purchased. The purchaser of any article will always get the benefit of any changes in its manufacture, transportation, or handling. The producer absolutely never gets any of it. That is true of manufacturing and it is true of agriculture. The farmer in the far West receives this old price for his wheat, and buys all his purchases at reduced prices. This latter gain is very great. In this way he receives his share of the reduced cost of manufacture and of transportation. The extent of this gain may be noted from these facts: A reaper that was not a self-binder in 1870 cost about \$350 to \$400, the first reapers of that kind. A man now buys a self-binder that is far more effective in its relative functions for \$125. He can buy a better plow for \$12 than he could then for \$28, and so on with the rest of the machines, and so on with all other articles that he purchases.

Q. In stating the general principle to be that the reduced cost in transportation and handling always goes to the purchaser, and giving that as the reason why the farmer did not realize his expectations in the actual increase of price of wheat, are not you entirely eliminating the law of supply and demand? In other words, is it not true that just at the time that the middleman was being eliminated here, and the cost of transportation being reduced, and all that, that Russia, Argentina, and India were getting into the Liverpool market with wheat; and would not that of itself have been sufficient cause for farmers failing to realize expectations—that added competition in the market which he was reaching?—A. Yes, and no. The existence of vast wheat fields in the Northwest, with cheap transportation, if there had been no other factor, would have produced the changes noted under the law of supply and demand, even if there had been no such growth in Argentina and Russia, and the demand in Europe had remained the same as now. I mean to say that the law of supply and demand would have furnished a source of supply for all of that product in the United States without that, and keep the price where it is.

Q. (By Senator DANIEL.) Development had not taken place in one locality, but had progressed in another?—A. That is it exactly.

Q. (By Mr. NORTH.) Do you accept Mr. Atkinson's statement that the productive capacity of wheat in this country is able to meet all demands of the world for the next 50 or 100 years?—A. It depends upon how you state that proposition.

Q. Have you read those articles?—A. Yes; I have read the articles referred to. It is more or less hypothetical; and as you change the terms of every question you would have to change the answer very largely. He makes the proposition, What would be the production of wheat in the United States if you could keep the price of wheat at a dollar a bushel in Liverpool? I say the amount of wheat that would be produced at that figure in this country could hardly be calculated.

Q. It is immeasurable, what we are capable of producing?—A. It is immeasurable, and at that price it is hard to estimate what will be realized either in wheat or any other staple in this country in the next 50 years.

Q. (By Representative GARDNER.) Hypothetically, if we raised so much wheat at the expense of other crops, what would happen?—A. We would be importing lots of other things in agriculture from our semitropical neighbors.

Q. The Land Office reports that about all of the agricultural lands of the United States are taken up; that is, exhausted, as they put it. Is there any considerable amount of that land that is not reduced to cultivation?—A. There is quite a large amount of railroad lands that have never yet been settled. There are some lands still owned by some of the States, like Minnesota school lands and other lands, that have never been settled. There are in Minnesota large bodies of pine lands that will ultimately, when cleared off, be made available and make good farms.

Q. Have you an idea of the proportions of them, and the amount already cultivated?—A. I would not want to make any definite statements. I will say this in general: There is a larger amount of land that is possible for cultivation and settlement than our pessimists, the dark-viewed philosophers, can agree or can even imagine. There is less than some of our most hopeful people would think were possible in this country. I would make it between these. I would not want to attempt any definite statement.

Q. (By Mr. NORTH.) In a general way, the agricultural possibilities of the country are still very far from completely developed?—A. You are correct. In that connection I want to call attention to the possibilities of irrigation. I do not think that we have begun as a nation to wake up to the possibilities that lie before this country as the result of a proper irrigation system, and when that is considered I think there will be as large an extension in the next 25 years as in the last 25.

Q. From an economical view, do you favor these pending bills in Congress?—A. I have not studied them enough to know.

Q. (By Mr. FARQUHAR.) Do you know whether, where they have been tried in the West, they have been a great success?—A. Irrigation must be judged very largely by what has been done in other nations. Further, no great development of irrigation will take place in the far West until markets are developed for the produce, or methods are found for getting it cheaply to the markets, or crops can be raised in that section that will readily find a local market. You can not greatly extend the border of our civilization in agriculture much faster than you can develop the methods of transportation or find a local market for the products. The center for the cultivation of wheat since 1870 has moved 250 miles to the West and Northwest. That could not have been done had not the cost of transportation been such that the farmer could have a margin of profit at a point 250 miles farther away, and still get a price as large as he was getting on the whole at that other time.

Q. (By Mr. PHILLIPS.) Do you think when irrigation is obtained on a large scale that persons can get homes on these irrigated lands as they have where irrigation did not prevail, or before it came in?—A. They will have their tenure somewhat different, because that tenure will have to be subject to whatever system of irrigation is found best suited to this country. But, as I say, development of that irrigation will have to wait, not alone upon the mechanical or engineering problems of that irrigation, but also for the question of transportation. It costs too much for a poor man to make a home on that land until there is a market for his products. Up in the mountainous regions of Montana and Colorado you will now find irrigation on a small scale. The people there are raising by means of irrigation a small amount of crops, for which they find a ready market in their own States among the mine workers and the like. That crop raising by irrigation can not be extended any faster than the mining and allied industries are developed. At present there is a profit in this crop raising by irrigation in these sections. The price at which they sell their products is a price equal to the selling price of these articles in Minnesota, in Kansas, or Nebraska, plus the cost of transporting them to these mine centers. But that profit would cease if you take from that price in Montana and Colorado twice the cost of transporting the things raised from these States to Kansas City or Minneapolis, and that is what would take place if those sections changed from importing to exporting farm products. Successful and profitable agriculture by irrigation in Montana and Colorado at present is largely fixed by population there. If these States can develop a market for fruits, or anything that may be grown which will bear long transportation to the East, then you may have successful farming on a large scale there; otherwise not. That market will come in time; I believe it will come in the next 25 or 30 years.

Q. (By Mr. A. L. HARRIS.) What suggestion have you to make in regard to restrictions of immigration?—A. Nothing, excepting educational, possibly, and moral character.

Q. As to the sufficiency of public school facilities in the Northwest?—A. I think they are the best of any part of the United States.

Q. (By Mr. NORTH.) Have you compulsory education laws in Minnesota?—A. We have, but they are not very much observed; that is, the compulsory feature of it is not enforced.

Q. It is not necessary to enforce it?—A. Well, I will not say that; there is need of its enforcement in certain exceptional cases.

Q. (By Mr. A. L. HARRIS.) What have you to say in regard to the adaptation of the public school curriculum for the needs of the agricultural people?—A. I think it is improving rather than growing worse. You can always find fault with anything.

Q. Now, the question of technical education; you touched upon that this morning; have you not something further to say in regard to that?—A. The basis of technical education, so far as it relates to agriculture, must be among the farmers themselves, and it will begin by developing among the farmers, in all possible ways, a knowledge of the better methods of agriculture. I might mention what President Hill of the Great Northern does: He brings down every year from every county along his road in Minnesota, and sometimes over in Dakota, two from every township, free, to the State Agricultural School at Minneapolis. He brings them down, transportation free, to stay 8 days in the city, with the understanding that they shall spend 1 day at the Agricultural School and experiment station; and he explains that his profit and the profit of his road can alone come from the added prosperity of the farmer, and that can come only by a higher knowledge of agriculture and improved methods of farming among the farmers; and hence he has brought for several years what is equivalent to 10 train loads of people per annum a distance of from 150 to 300 miles. He says it is not philanthropy—it is business. It is the best way of adding to the profits of his road.

Q. (By Mr. NORTH.) They can not learn much in two days.—A. They get an insight. They can not learn everything in one day. A great many of these men will be interested in sending their boys and girls there. The girls go through the practical work of learning the dairying in all its improved methods. The boys are taught everything about feeding cattle and raising crops, and how to make the almighty dollar on the farm.

Q. The agricultural college is doing a great deal of work, then?—A. Yes; and that work is strengthened by other educational forces and by the action of the business men. Another educational factor in that community is the farming implement. One factor, in the cost of the old reaper when it was \$400, was the schoolmaster. With every instrument that was sold at that time had to go a man who taught the people how to use it. That man had to spend, on an average, 10 days with every farmer who bought a reaper. That man had to be a skilled mechanic, who was a high-priced workman. There were his expenses, his salary, and the interest on the money invested. These together made at least about \$100 to a first-class reaper. That was the fee which the farmers of this nation had to pay to be taught how to set up and operate a reaper. Now, when you have educated a great many farmers in this way they in turn become schoolmasters. They teach the other farmer. With every implement sold in 1870, a man had to go from the factory to set it up. There was not an implement dealer who knew how to set it up. Now all that expense is eliminated, since you have got the people educated.

Q. (By Mr. FARQUHAR.) Was not the former custom to charge the farmer with the cost of the expert mechanic and everything that went into the cost? It is another illustration of the principle that everything that is involved in the cost of an article has to be paid by the purchaser, and if you eliminate anything it goes to the man who buys it?—A. Yes; same as in wheat.

Q. (By Mr. NORTH.) Can you give the commission a general idea of the real efficiency of the existing agricultural colleges in the West?—A. I would not want to state about all of them, but I do know none of them have as large a proportion of the graduates go back to the farms as Minnesota.

Q. Do you know anything about the work of the University of Wisconsin?—A. I know they are doing a great work. I know in most of our Western centers there is a great work being done, and I am satisfied that the work of our agricultural schools, as a whole, in the Northwest is adding as much to the prosperity of the farmers as any single factor, or more than any other single factor.

Q. Do you have agricultural experimental stations connected with the college or apart from the college?—A. They are all under control of the college. Originally there was but one experimental station, and that was in connection with the agricultural school. Subsequently there have been opened, or are being opened, some three more in the State. They are located in different sections of the State and have different problems before them. There has been one located in the northern part of the State to investigate the character of farming that is best suited to the North, and upon lands once covered with pine forests. Those lands have another kind of soil from those of the South, or from the Red River Valley.

Q. Do people so far appreciate the work of these experimental stations that they willingly grant appropriations to sustain them?—A. Yes.

Q. (By Representative GARDNER.) A while ago I asked about the lands not yet reduced to agriculture. You answered that our agricultural possibilities were beyond conception, or something of that sort. You meant by that, I presume, agricultural possibilities, or something on the same basis—that is, it did not have any reference to the intensive system?—A. Yes. I do not know now what may be done on that intensive system.

Q. (By Mr. A. L. HARRIS.) Can you state as a statistician what is the amount of capital employed in agriculture at the present time, or rather in agricultural pursuits?—A. Meaning those forms of agriculture that are classed as agriculture in the census?

Q. Yes.—A. The value of the farms was a little over thirteen billions, that of the live stock and farming implements a little less than three billions, making a total of about sixteen billions.

Q. What is the comparative earnings of that capital compared with former years?—A. There is no way of stating that in percentage. I might say the only way of which I know of forming an intelligible answer to that is this: The number of men who are seeking and obtaining farms of their own is greater to-day than it ever was. This fact is evidence that there is relatively a greater profit than ever before in farming. The percentages of profits on the capital invested may, however, be actually smaller than 30 years ago, just as the rate of profit has been lessened in all other business. Money commands a far less rate of interest in all industries. The rate of net profit expressed in percentages has correspondingly been reduced in agriculture, as in manufactures and in transportation.

Q. (By Representative GARDNER.) You state that the fact that the ratio of the farm owners is increased would be evidence of the increased prosperity. Might that not be because our public-land system made the taking up and the settling of the farm the easier and most certain way of getting a home, without regard to its profits as an industry.—A. The land itself in the state in which nature leaves it is only a very small part of the value of a thoroughly good farm. The fact that these people who go onto these lands are able to improve them, erect houses and barns, and make all the other improvements with a far greater rapidity than ever before, must be taken as a measure of that added prosperity, whatever the factors producing it. The farm is, to those who understand farming, the best place to make money. To the man who does not understand farming I do not believe that the farm is the place. It takes somebody besides a fool to work and make a success on a farm.

Q. Following what you say on that, that the farm is only valuable to the farmer, that exposes the fallacy, does it not, of the contention of those who, when they find the cities overstocked, start an agitation to go on the lands and get rich?—A. It does. To send a man who knows nothing of farming onto a farm is at once to inflict a great injury upon the community and the man. It also marks the ignorance and the charlatanism of the man who advocates it. There is no way of taking such people out to the farm but by starting a school and giving them a schooling of 3 or 4 years. That is the only way of taking those people onto the farm. If at any time there is an overpopulation of the city and a deficiency in the country, a certain number of these people can be utilized as farm laborers. Some were thus sent from our Western cities during the last few years. Bureaus of intelligence were organized in these cities, and many men were sent out to the farms when employment could be found for them. Every man out of work and ready to adapt himself to anything could thus find a place. It is wise in times of depression, thus to organize society, find out where there is a deficiency of labor, and send the men there.

Q. After what age should a man not attempt to become a farmer at all; I mean in all its branches—the handling of stock, the driving of teams—at what age would you think he was too old to begin that education?—A. The same age that he ought not to take up any other trade.

Q. (By Mr. A. L. HARRIS.) What have you to say on the subject of taxation of property?—A. Our systems of taxation in most of our States—especially where there are developments of manufacturing and great transportation companies—need complete remodeling. Our old system of taxation—the system of taxation in vogue in most of the States—was developed at a time when all property was visible, the same as farms, cows, steers, or horses now are. That is no longer the case. Those visible forms of wealth make up practically only one-half of our resources, and as a result nearly if not quite a third of the property of the country is escaping taxation. To meet this condition of affairs we must change our methods and adopt the various forms of taxation suited to our day—the corporation tax, the inheritance tax, and the income tax.

Q. (By Senator DANIEL.) What do you think of a gross or net receipt tax on the corporations of the country?—A. I have not gone into a detailed study of cor-

porate life enough that I would be willing to give a definite opinion upon any given scheme of corporate taxation. I have only come to this conclusion: It is but justice at once, to the farmers and to the general community, that in some form that may be just and equitable between the several interests, these corporate and other allied forms of wealth should bear their due share of the public burdens. I simply want to put myself on record as decidedly in favor of the general proposition that justice to the farmer and the principles of equity and fair dealing which lie at the basis of all just laws demand a complete revision of the present system of taxation. We should adopt a new system, one that will recognize the world as it is, and not as we might wish it was or as our fathers found it.

Q. (By Representative LIVINGSTON.) Are you aware of the fact that the farmer, of all classes in the United States, has the least chance of escaping taxation?—A. Certainly, there is no question about that.

Q. (By Representative GARDNER.) Do you not think that any system of taxation by township or local divisions through the country would necessarily be more onerous than the taxation in cities?—A. Taxation in cities involves, in some respects, heavier expenses than are common in the country, but the people paying them have special advantages. For example, we have a great many so-called taxes in cities that are not really taxes; they are in reality investments under the name of taxes. A tax may be levied under the name of a sidewalk tax or water tax. It is levied for putting water mains in or sewers. It is an expense charged up against the abutting property. That is not a real tax. It is a form of investment. If you count these as taxes, then the city tax lists are very much larger than those of the country. I would say that a great deal depends upon the section where you are and the conditions. In New York State, where in the cities there is an aggregation of many capitalists, where the capital is actually not in the State, where the resources represented are scattered all over the country, it absolutely is true that proportionately to their wealth the city people pay only a third of that which the country people pay. And hence in New York large sums are raised in the cities to support the country schools, and this is but just.

Q. (By Mr. FARQUHAR.) Is it not shown by the tax lists, made by competent officials, the board of supervisors, that the cities of the State of New York pay usually two-thirds of all the taxes and the farming portion one-third?—A. Certainly; but proportioned to the ability of the people to pay, the country still contributes the larger share.

Q. Is it not another fact that the city populations of the State of New York contribute continuously to the country the amount of their taxation, and reap no benefit from the country that they do not pay for? Is it not in the nature of a gift?—A. I would not call it a gift, but the payment of a debt; in all those things the city only pays what it justly owes to the country.

Q. How should a city like New York or Chicago account for that portion that it is supposed to owe?—A. There are very many debts of the city to the country. There is a movement of wealth from the country to the city. Here is a man who works on a farm, and in the course of a lifetime accumulates a little money. He has the farm free and clear and a little money besides. He moves into the town. His brother moves from the little hamlet to a larger town, having accumulated a larger property. Thus there is a constant movement of property which was accumulated, made, produced, and created out of the farm into the city. Here in one sense is a robbing of the farms. Farm wealth is being exhausted as farm population transfers these resources to the city. Now, if you have a farm and you crop it and never return any manure to it, you will soon exhaust the power of getting crops from it. The same thing applies to the farm sections, from which have come all the great minds of the country. Many farmers, with their resources obtained from the land, move each year into the city. Now, if they do not give back to those sections whence they come some return for those resources, you would sooner or later pauperize and degrade them. You must maintain their ability to make money as you keep up the fertility of the farm. You must tax that money that was earned on the farm and which has been moved to the city, and give back to the farm the legitimate income out of that capital. You must expend it for country schools and roads, else you are exhausting the country for the benefit of the city. This is done too much now. We must, in the interest of the farming community, replace upon the farm that which is taken from the farm when its owner moves into the city.

Q. (By Representative GARDNER.) What comes to the city from the farm—the rent?—A. The money. Here is a man, in the first place, who makes a little money on the farm and goes into the city. John Smith who lives in one of the rural townships of one of your counties moves into the county seat. He takes into that county seat the result of his savings for a lifetime. Those savings come from that town where he was. He never goes back to that rural town. A just law should

in some way take the taxes paid by that man out of that county seat and give it back to the rural town, the farm, the farming community. In the same way taxes should flow from the larger cities into the smaller communities, because there is a movement from the smaller cities to the larger cities, just as there is from the farms to the smaller towns.

Q. (By Mr. RATCHFORD.) I understand from your statement that the farmer is sustaining very heavy losses by reason of this migration from the country districts into the city; by reason of the farmer having accumulated money, and bought city property with it and moved to that property, and hired John Smith or somebody else to go on to the farm. Now, would the farmer not suffer equally as much were the original owner to remain on it as it has suffered by his moving to the city?—A. John Smith's farm is not affected one way or the other, but the community in which John Smith's farm is is entirely a different community by reason of the fact that John Smith and all like him move. We have something besides the farm. We are not now talking about the farm because the farm is only one factor in the development of the community; the men are the greatest factor.

Q. (By Representative LIVINGSTON.) You mean the schoolhouses and churches suffer, and all the enterprises of the neighborhood?—A. Yes.

Q. (By Mr. RATCHFORD.) Is it not to be presumed that the original farmer will be supplanted by a class of men who are equally as intelligent and as frugal and industrious?—A. But not as wealthy. Here is John Smith at 60 years of age in a town we will call Preston. He is worth \$10,000. Worth that amount he can give and does give for the support of the church voluntarily \$200 a year. He can give and does give in the shape of taxation \$100. He goes away. Out of this property that he is taxed upon, there is only one-half of it in the farm; the rest of it is in some intangible form. This man who comes is only worth a thousand dollars. He can not give to that church but \$20 a year where the other one gave two hundred.

Q. (By Representative GARDNER.) Suppose that the city man should answer to that that your theory was precisely right and ought to be extended further; that inasmuch as John Smith accumulated his \$10,000 by the sale of his produce in the city to people engaged in manufacture and commerce in the city, that the city should always have taxed it because it was a primary or earlier source of the wealth, and had been drained from it before Smith got it?—A. Let us see what has been done in Paris and in certain other cities. We will there find a practical answer to the question. A great many cities originally derived their whole revenue from a tax levied upon the products coming into the city. They assumed that this was a tax which the man who sent his goods into the city always had to pay. Thus, when the gardener came in with a load of green produce, he was met at the gate and had to pay the tax; but all of that was simply paid as a tax by the residents of the city. The method of taxation did not determine who finally bore the incidence of taxation. The taxation for the support of the city did not come from the farmer, but was paid by the man upon whom its incidence fell, the man who bought those products.

Q. (By Mr. A. L. HARRIS.) What have you to say in regard to the decline in the price of agricultural products in the last, say, 30 years?—A. There has been a very large decline at points where the price is affected by the cost of transportation; there has been a less decline in points from which that transportation has carried the produce. There has been a decline, but small, in articles that have not been over-produced; there has been an enormous decline in the articles whose production has increased faster than the population. The law governing the price is that which was set forth by one of the old English economists 200 years ago. It is this: Where you double the product per capita, the price falls to one-fourth its earlier figure. That was the law that was announced in agriculture 200 years ago in England, and is substantially true to day.

Q. (By Senator DANIEL.) That law would presume the same amount of money?—A. Other things being equal. If you double the per capita demand or reduce the supply one-half, you will quadruple the price. It does not simply double the price but it quadruples the price. If you increase the quantity per capita of any agricultural products three times, you will decrease the price to one-ninth; and, on the other hand, if you cut the supply down, as it was occasionally in famines in Great Britain, to one-third, you thereby increase its price nine times, other things being the same.

Q. (By Mr. A. L. HARRIS.) That holds good in all the farm products, grains, cotton, etc.?—A. I believe that that principle in general applies to-day the same as it did 200 years ago.

Q. (By Representative LIVINGSTON.) The capacity to consume, by purchase or otherwise, has as much effect on prices of products as the question of over or under-production?—A. That comes in as a factor, slowly modifying prices. With cer-

tain articles it has far greater influence than with others. The amount of bread which a man can eat, the number of pounds of breadstuffs, including wheat, corn, oats, and all others that we use for human food varies but very little. We may change the form of it, but the number of pounds a human being eats is substantially the same. He may substitute cornmeal or oatmeal for wheat, but the number of pounds consumed will substantially be the same. The general proposition is not true to so great an extent with articles of food that may be called luxuries. The rule governing the consumption of strawberries or California pears or oranges or fruit is quite different. Their consumption may be increased enormously, and such increase may exert but a little influence in decreasing the consumption of these other things. As showing something of the power to increase consumption of food luxuries, I will mention the fact that Minneapolis, as a center of consumption and distribution of the Northwest, shows a doubling of fruit sales every 3 years for the last few years. Population has been doubling once in 15 years, but the sales of fruits double every 3, or eight times as fast as the population. A certain portion of the relief of agriculture must come from an increased consumption of these things, which represent relatively a large amount of labor. The increased demand of our people in the United States for these luxuries represents about as much for the farmer as our increased exports. Thus note canning, which represents one phase of this business. It began about 1865 or 1870. Now the amount of fruits, vegetables, fish, and meat that is consumed in cans in this country is very great. It may be stated in many ways. I sometimes put it in this form: Measured in quarts and pints they equal the total consumption of alcoholic liquors to-day. Their cost or value represents an immense sum, larger far than has been added to the drink bill of the nation in 30 years.

Q. (By Representative GARDNER.) As to the drink bill, is not there a vast amount of authority from various countries going to show that people drink in proportion to their depression or hard conditions rather than in proportion to their prosperity, or what the statistician would call ability to consume?—A. No. The drink habit, like the smoking habit, as well as all the vices of the world, increase with prosperity and decrease with adversity.

Q. (By Mr. A. L. HARRIS.) What is the cause of the decrease in the money value of land in the older States?—A. The money value of lands in the West has increased because there is a greater profit; the money value of lands in the East has decreased since 1870 because all they have been accustomed to produce in the past has come into sharp and direct competition with the West. Let me give some concrete illustrations. When I was a boy it was said they never could make any butter in the West to sell in New York. The only parts of New York State that made good butter were Orange and Chenango counties. They absolutely scoffed at the idea that Western butter could ever be produced to sell in that market. But the moment that men developed the method of shipping articles in refrigerating cars good Western butter was taken to the New York market. At once the monopoly of 3 or 4 counties in the New York market vanished, and the profit of those counties in the dairy business was gone.

As to increase and decrease in the value of land, I can not give details for the whole country, because I am not familiar with it. The farm lands in southern Minnesota began to advance quite markedly somewhere about 1890, and kept advancing until 1893, when that movement was checked. In northwestern Minnesota they did not experience any advance at that time. In fact there was at that time what might be called a checking of the movement which had been felt before that, and which had grown up with the rapid settlement of that section. There was a period of discouragement among the farmers, voiced in a great many ways. Land did not show any large decline in selling price. Its sale practically came to an end. Then came our panic and other factors that checked for the time being the sale of lands in southern Minnesota. The prices, however, continued to be what the business man calls firm. In the last year and a half there have been what the business man terms sharp inquiries, many inquiries for lands, and a very marked upward tendency in the prices, not only in one part, but all over the State.

Q. (By Representative LIVINGSTON.) Which do you consider the best for the farming interests of the country, small farms or large farms?—A. There is no question in my mind—the small farms. They are the better. In considering the size of the farm for profit I might give you the answer that was given me by a man in Minnesota who owned 1,400 acres. I said to him, "What do you think of the size of a farm for successful farming? You have been very successful." He was the most successful man in all that country. He said, "The small farmer is the one that makes the profit."

Q. Chiefly owing to the fact that it is worked by his own labor and under his

own control and supervision?—A. You might find on the farm or in the shop a great many men who can direct their own labor wisely who can not direct that of others. Where one man can direct the labor of others wisely there are 10 men who can direct their own labor in that way.

Q. (By Mr. A. L. HARRIS.) What do you know of the Dalrymple farm in Dakota?—A. I do not know very much. I consider that all those big farms, including the Dalrymple, are in the market for breaking up, just the same as those big farms of southern Minnesota are all opened—cut up. I can only say this in a general way.

Q. (By Representative GARDNER.) The New Jersey farmer was prosperous while he got \$1.50 for wheat, but competition since the war brought down that price to the prices which lately ruled. Have you any opinion as to how much of that has been the effect of opening the wheat lands in the West, and how much of it to the opening of wheat areas in other countries?—A. I can give my opinion and the reasons for it. The reason is the only thing that is worth anything. If that is not worth anything, the whole thing is not. I find in Minnesota, which may be called the center of the wheat area, that the gold value of the wheat on the farm, as given by the Agricultural Department for 5 years about the close of the war, averaged about the same as it has averaged the past 5 years, or, if anything, a little less. Wheat there at the center of its productive power in the West has remained substantially unchanged in price. In other words, the price at which wheat is produced in this country or sold in New Jersey is determined by its cost in the great wheat section of this country plus its cost of transportation to the other sections. The wheat in New Jersey brought a price in 1865 which was substantially the cost in Minnesota plus the cost of bringing it to New York City. The wheat in New Jersey sells for that to-day, and the wheat in Minnesota, taking five-year periods, was substantially about the same in 1865 as it is to-day.

Q. Assuming that the entire Western wheat field is eliminated, what would have been the effect of the foreign wheat?—A. I can not see that that brings in anything more than another field. That is, the world's wheat field is part in Argentina and part in Minnesota and the Dakotas. Without that foreign development it would all be there in Minnesota. The condition of price the world over is its cost in its cheapest market.

Q. You mean practically the same results would have followed to the New Jersey farmers if we had not settled our Western country?—A. Yes; either with or without that. I would not want to say definitely except in this shape. It is a very difficult thing to say what would have happened if something else had not happened. One of the conditions of modern agriculture has been a change in every part of the world. To say that such a change does not affect prices would be ridiculous.

Q. Would you state it this way, then, that the price of wheat in New York and New Jersey could not have remained above the Liverpool price, plus any freight, and stayed?—A. The United States farm determines the price of wheat the world over. I have sometimes said that the man who raises 5 acres of wheat in the United States in connection with a farm with diversified crops is the controlling factor. Let me illustrate. Any mechanic who is familiar with the work in the city knows that the man who works a hundred days in a year must for each of that hundred days get three times the wages as the man who works 300 days, or else he is running behind. He must have a margin of wages three times as much as the other man; and on that basis we fix the wages of a great many crafts. The carpenter and the out-of-door worker gets a wage scale higher than the man who works at woodcraft inside, and though the latter works more days in a year, in a year's work he makes no more, and on the number of days depends to a certain degree the rate of wages. Now, then, wheat raising on the frontier means work by the farmer for about 60 days. When wheat is raised by the man who only works 60 days a year, and, as somebody expressed it, sits on the fence or a dry-goods box the balance of the time and curses the Government, and the man who raises it comes into competition with a farmer who works 300 days a year, he must go to the wall, and that is what is being done in this country. And it is that fact, rather than cheap labor in other parts of the world, that is fixing the price of wheat. It is the small farmer of Minnesota and of the Northwest who is fixing the price of wheat. On a farm of 100 acres, instead of raising 50 acres of wheat, he has 10. He keeps some cows, he raises some oats and feeds to the stock. That 10 acres of wheat can be raised, and every cent of it is so much added profit to his farm in addition to what he might turn off in any other way. By having a widely diversified system of farming, he and every one of his household work 300 days, excepting such days as for his own pleasure he lays aside. He is a 300-day worker, and when he comes into the wheat market he determines the price in the United States. He is the man, and not the man in Argentina or India that works 60 days in the year, who determines the price of wheat.

Q. (By Representative LIVINGSTON.) The same way with cotton?—A. Yes.

Q. (By Representative GARDNER.) And under all lies the law of supply and demand, does it not?—A. Yes; certainly. But the keen-brained man is the factor of the production.

Q. (By Mr. A. L. HARRIS.) Is that the same with all agricultural products?—A. I do not know of anything that it will not apply to.

Q. (By Representative GARDNER.) Are you prepared to say anything on the effect on the farmer of this system of selling his crop before he plants it in order to get his seed and fertilizer and that sort of thing?—A. No; those are two distinct things; the liens and the future sales. Where the man is not an independent man, is not a free man industrially—I do not mean by that anything except freedom that comes with money; the man who has resources is free; the man who has not resources is not free; we may cover up our pretenses to the contrary notwithstanding—if there are future contracts or contracts concerning the future, made by such a man, who is compelled by his necessities to accept any contracts that may come, that man's future contracts will be always to his detriment. Whether he has made an agreement to pay a lien on his horse, or made any other loan due in the future he has an immense margin against him, and the fewer his resources the greater that margin must of necessity be. It is expressed in the matter of liens by the interest rate. The man who has plenty of resources can borrow money on his farm. If he has available resources and has character back of it, as that is also considered in loaning, he can borrow in Minnesota at 5 per cent on a farm. The man who will loan his neighbor who is known to be a sober, temperate, and prudent farmer, at 5 per cent, will ask 7 and 8 per cent from another neighbor right by his side on just as good a farm, where he does not have these qualities, and then he will want to shave some considerable more if this borrower represents a still lower grade of intelligence and foresight. If instead of a loan secured by a mortgage on land you substitute loans on personal property, liens on crops and the like, the creditor must of necessity have a still larger margin. I fancy—I do not know practically—that where there are crop liens and sales on crops that involve a loan, the poverty, the ignorance, and want of character upon the part of the borrower results in a tremendous loss to the producer.

Q. What, if any, effect, in your judgment, would that have in the fixing of the final price in the market?—A. None. That is, the system of selling under those circumstances, which means a tremendous loss to the producer, does not affect, in my opinion, the final prices that are realized on the products in the markets of the world.

Q. (By Mr. FARQUHAR.) You mean by that that the producer has no share at all in the general market outside.—A. No.

Q. (By Representative GARDNER.) What is the effect on the general prices which the farmer gets for his product?—A. The man who sells under those conditions always gets less than the independent farmer.

Q. Assuming 100 producers of a given crop in different localities, and 70 of them sell at the common price in the spring, taking an advance from the broker, is that not an agency in fixing the price which the broker will pay for the balance of the crop? Do not late spring prices depress fall prices?—A. Your question involves, if it is answered in the affirmative, the supposition that those brokers who have farm products to sell do not wish to make any profit upon that which they have bought. But the quantity which they have bought is larger than that which they can buy and on which they can make a profit by buying. If a lot of brokers have 70 pounds of cotton out of a possible 100, their possibilities of profit on this 70 pounds which they have is, of necessity, more than they can make on the other 30, and the moment they get half, that moment you have forced every one of them into what might be called a conspiracy to advance prices, in order that they may make something on what they have. They are in the conspiracy, if you can use that word. They are bound to conspire together so far as any action can go together, to get the largest possible prices that the supply and demand of the world will admit for their product.

Q. That is a standing conspiracy the world over in trade; but are there not elements in it that induce them and other brokers to offer a lower price for the remainder, and does not the example of others having sold have an influence on the farmer who has held back to sell?—A. I can not see it, because when they begin to buy that other 30 per cent of which you are speaking they are already selling, and their interests as sellers far outweigh their interests as buyers.

Q. They are buying in the southern and selling in the northern or European markets?—A. They are buying in a market in which other buyers are free to purchase, and are selling in a market in which these men of whom they bought, who are themselves free, can sell.

Q. Is not an independent raiser, who can afford to sell his cotton, prejudiced by the man who sells in the spring under the market price?—A. The only thing I have

ever secured that may be taken as bearing upon that question is this: I never examined the cotton market. I have examined the wheat market both in Chicago and Minneapolis. The one is a purely speculative market—Chicago—the other dealing with the sale of actual wheat. Chicago is the greatest speculative market in the world; Minneapolis the greatest market for the handling of positive, actual wheat. Examining prices in these markets, I found this situation: If one buys cash wheat the 1st of September and holds it in storage until the 1st of May, he would, in the course of 30 years, lose on an average 2 cents on every bushel that he bought on either one of these markets. In other words, throughout the Northwest the boards of trade have their prices in the fall nearly always raised 2 cents above the average which the situation the following spring will justify. The so-called bulls of the market on the average for 30 years have unduly raised the price of wheat 2 cents a bushel in the fall. The farmers and those associated with them by living in this country are always bulls on the market. Each year these bulls, who think that there is a profit in wheat, go in and buy and sell their futures with the idea of making money on the rise. As a rule that is never realized, and taking the last 30 years as a whole, the actual farmer selling his wheat at its harvest receives 2 cents a bushel extra which comes out of the speculators. The men in the city who handle actual wheat do less of this speculation than the populace suppose. The great mills of Minneapolis when they buy in the fall, as they often do, 30,000,000 bushels, protect themselves against all fluctuations. When they buy 10,000 or 20,000 bushels of wheat, they sell a future against it. They make somebody else carry the risk. What they are in business for is to make a profit on milling. They are certain that, in the long run, the price of wheat will by its variation cause more loss than it will profit. They do not want to carry any risk on this particular crop. They want their profit on the grinding of wheat. They will sell this future and buy it back when they want to grind that wheat. Of course, occasionally, that puts the mill at the mercy of the speculator. A few years ago, you all may remember, the Chicago speculators used these futures to make a squeeze on the Minneapolis millers. They would not take the Minneapolis grade wheat, and forced the price up. They manipulated the grain inspection in Chicago. No. 1 Northern was not accepted as equivalent to No. 2 Chicago, and hence the market squeezed the millers a little. All that the Minneapolis mills were seeking by their original future sales was simply to protect themselves and let somebody else carry the risk of price fluctuations. A great many of these options, a larger proportion of them than most people are aware of, are purchased by the farmers and people who live in the country, who always think there is going to be a larger price than is realized. City men are not so generally interested. If they are engaged in the legitimate business of handling wheat they seek to let somebody else carry the margin. They are not interested in an effort to force the price up or down.

Q. I do not see the difference of the miller buying day by day, when he wants wheat, and buying an option and selling one against it.—A. There is a great difference. What these men want is wheat of certain grades. They want that wheat in their possession and control in order that they may produce certain grades of flour which meet their market. They go in and buy this wheat, put their investments in it. All they want to do with their sales of futures is to protect themselves against fluctuations. They want to keep the actual wheat in their possession and control until they are ready to grind it. By buying in wheat of certain grades in the fall they are able to maintain their standard of flour and thus continue business.

Q. But on a given day they must deliver that kind of wheat according to the option they sold?—A. They run their risk of buying back that option. When they come to make their wheat into flour the price at which they sell their flour will be governed by the price at which they buy that option.

Q. (By Mr. A. L. HARRIS.) What have you to say in regard to purely speculative transactions, known sometimes as puts and calls, on a market; that is, as to their effect on prices of options, etc.?—A. Unquestionably they make temporary fluctuations, but when they do, in the nature of things, so far as they affect prices, they always boost them.

Q. (By Mr. FARQUHAR.) You do not think it is disastrous to the farmer?—A. Excepting as the farmer assists in the puts and calls. Great numbers of them are put on the wrong side of that as speculators. As legitimate farmers dealing in wheat I do not think they are hurt.

Q. (By Representative GARDNER.) Does the farmer go on the board of trade and gamble?—A. Very largely; he and other residents of the country and country towns are the lambs that are shorn by the boards of trade. You stop the farmers and the residents of the small towns from gambling in wheat and you stop a great share of it.

Q. (By Mr. A. L. HARRIS.) What have you to say in regard to foreign markets for farm products, and their effect upon the farmer?—A. Ultimately there will be an immense market for some of our products in Asia, a market that will cast into the shade the European market. I think we are on the eve of it, and a wise policy with reference to the Orient will give our farmers that entrance to a market which, for the cereals and for almost everything else, will be equal to that in Europe.

Q. (By Mr. FARQUHAR.) And Liverpool will not make the price for the Orient?—A. I do not believe that Liverpool now makes the market. The world demand makes the market. You increase by 400,000,000, the population in Asia, the demand for certain of these cereals, and you thereby affect prices very largely.

Q. (By Representative GARDNER.) Liverpool is merely the announcer?—A. It is not the determinator; it is the place where the price is announced. Under the head of remedial legislation I will say in brief, with reference to the regulation of trusts, that the conclusion of my study leads me to lay the stress not on trusts, but the legal regulation of corporations as a whole. The attempt to pick out the trusts from among our corporations I consider to be more productive of evil than good. There is a tremendous need of bringing all corporations, which are creatures of the state, under complete public control, and to cause all their affairs to be public affairs. By raising the question of trusts we hide the real issue. There is a difference in trusts and the men who are back of them; there is a difference in corporations and the men who are back of them. Some corporations are organized by villains to swindle the public. Some of our trusts are organized in that way, and some trusts are legitimate, as some corporations are, and have back of them honest men. The illegitimate cry about all trusts hides the distinction between those organized for legitimate purposes and those organized for the purpose of fleecing the public. The next 10 years will see the people of this country, by the collapse of trusts organized fraudulently for the purpose of swindling the people and by the collapse of small corporations organized for the same purpose, and not under public control, losing manyfold more than they will lose by the exactions of so-called trusts in constraint of trade.

Q. Would you add with probable panic and loss of labor?—A. Yes; absolutely; and we are drifting, as a result of all those things, in a mad frenzy of excitement in wrong directions. I believe a large amount of the talk against trusts is fostered by certain classes of men who are promoting them. They are interested in making the people believe that there are profits on all the watered stock that they issue. They do this in order that they may sell that watered stock to the lambs of the public. I believe that there are men even in public life interested in trusts who are advocating laws against trusts and talking in that way. They expect to make their money not in the way of actual profits on the business, but in selling the stocks and letting the people suffer when the collapse comes. I believe the whole agitation about trusts should be transferred to the corporations. We should know all about them, from the least to the greatest. We should have some legislation that will give knowledge, give the people an opportunity to know the real merits that lie back of all these schemes. All their transactions should be open to the supervision and regulation of the state. I deprecate some of the present talk about trusts because it delays the effort to secure the regulation of corporations until we have all big ones, when our job of regulation becomes increased in greatness. I want to see it begun now before all of our capital goes into large aggregations.

Q. (By Mr. A. L. HARRIS.) What have you to say about the existing antitrust law?—A. Most all of the so-called State and national laws relating to trusts have assisted in giving the trusts other forms. If anything, they have assisted in helping on the movement for the organization of the great capitalistic corporations instead of deterring them. They will do that, and thus cut but very small figure for the benefit of the people in putting off the day which we ought to have of the regulation of the corporation, attracting our attention from the real issue, real necessity, and doing more harm than good.

Q. From what source would you have the law enacted regulating these corporations?—A. Most of these corporations are creatures of the individual States, and they must, of necessity, go for their regulation into the State itself.

Q. (By Mr. PHILLIPS.) The State in which they are organized?—A. No; I think the State in which they do business may, if it deems best, regulate them just the same as it regulates our insurance and banking companies. When an insurance company doing business in one State is organized in another, the State in which it does business demands from that insurance company the fullest publicity relating to its affairs, and if it fails to get that in a satisfactory way it debars it from doing business. Any State has, in all matters relating to corporations, whether trusts or otherwise, the power to bar any corporation from doing business when

it fails to observe a reasonable regulation. Any State has the power to begin to require this publicity relating to corporate action. It has this power over not only the corporations created by itself, but those created elsewhere. If any State begins regulations in that line the value of a corporation created in a State like New Jersey, for the purpose of getting around the laws of some other State, vanishes.

Q. If the materials barred be essential to the citizens of other States, where a sufficient market could be found, might not a corporation leave that State alone and yet have a large monopoly in those materials?—A. That is true. In dealing with these corporations we must take into consideration the article or articles which they handle, create, manufacture, or deal in. I can here only set forth the general principle of action. We have already worked out the principle of regulation for one class of corporations. That principle which is involved in our insurance laws would doubtless have to be very greatly modified in its application in details for each of the various lines of industry or articles in which the trust operates or is connected with. I have not given enough attention to the subject to go into details, say, for a concern handling steel rails. If all the steel-rail corporations of the United States should come into a syndicate, it would hardly be practical for a State like Minnesota to say, "We will bar their rails," because we must have rails. The State must seek to apply the same general principle of regulation along some other line. I have not worked out the way. I fancy it would require possibly 25 years of legal discussion and investigation and decisions to find a way to do it, but I believe that it can be done, and it is along the line of that which I believe in general is practical. But the present legislation, which is largely prohibitive, is in the line of the legislation of England from the year 1800 to the beginning of this century against organizations in restraint of trade, which was largely there the regulation of labor. All those attempts in England for 500 years were futile. In so far as the organization of capital is beneficial and profitable it will occur in spite of all this legislation, just as the legislation against laboring men, when the desire was in their hearts for freedom, was futile. You can not legislate down the public aspiration or aspiration for freedom. That fact is demonstrated in all these 500 years. You can not any more legislate against the possibility of men's profits. That is a law of aspiration of another class of men, when these profits are legitimate. You can regulate it and prevent a violation of the rights of others.

Q. (By Mr. A. L. HARRIS.) Have you anything to say in regard to the Federal legislation on the subject of pure food?—A. I think the Federal legislation should seek in all articles of interstate and international trade some inspection. Thus, there is a loss to the American farmers to-day from the fact that some of our corn shipped to certain ports in Europe reaches there in an unmerchandiseable condition, and the foreign dealers who buy it upon the grades warranted by certain of our export cities are ruined by getting the corn on their hands unmerchandiseable, and that reacts to the detriment of all American exportation of corn. I understand that to be the case. If that is the case the Department of Agriculture should, and I understand it is looking into the matter. It should in some way take cognizance of it and find out what places of export are thus permitting a certificate of grade to be of no value whatever. I think the Government should seek to protect the good name, as we call it, of the American farm products in the markets of the world. So far as our food products enter the world markets, so far the United States should come in and with legislation provide facilities of guaranteeing the purity of all the products, direct or secondary, of American agriculture. We should have it that American meat, canned or otherwise, going to the markets of the world should not have upon it a taint of suspicion such as that which grows out of our army contracts.

Q. (By Representative GARDNER.) Would you carry out that idea by advocating a national grading?—A. There should be certain methods of investigation that would guarantee the soundness and purity of goods put upon the market.

Q. (By Mr. FARQUHAR.) In the meat products, etc., is it not pretty well done now under the Bureau of Animal Industry?—A. I think it is as a whole, and I think the Agricultural Department is taking up the report of the abuses of the grades of corn, and I believe it can be safely trusted. If there is legislation needed along that line, the Agricultural Department will undoubtedly advocate it. I believe that wide-awake, aggressive Agricultural Departments, such as I think we have to-day, can do a vast amount of good.

Q. Is the cause of the necessity dishonesty?—A. Not always; of course, carelessness sometimes comes in.

Q. You would not give that as a big percentage?—A. Carelessness is about as much a factor as dishonesty in this world.

Q. (By Mr. A. L. HARRIS.) Carelessness would not make adulteration?—A. Carelessness might possibly lead to the shipping of damp corn when it is not up to the grade of dryness.

DISTRICT OF COLUMBIA, CITY OF WASHINGTON:

I swear that the statements made by me of my own knowledge in the foregoing report of my testimony before the Industrial Commission are true, and that all other statements I believe to be true.

LE GRAND POWERS.

Sworn and subscribed before me this 18th day of November, 1899.

N. A. BARROWS,
Notary Public.

CHICAGO, ILL., August 9, 1899.

TESTIMONY OF MR. W. H. BURKE,

Editor of Farmers' Voice.

At a meeting of the subcommission on agriculture in Chicago, Ill., August 9, 1899, at 2.45 p. m., Mr. A. L. Harris presiding, Mr. W. H. Burke, being duly sworn, testified as follows:

Q. (By Mr. A. L. HARRIS.) You may state your residence.—A. Evanston, Ill.

Q. Your occupation?—A. Editor of the *Farmers' Voice*, Chicago.

Q. How long have you been editor of an agricultural paper?—A. Three years and more.

Q. What was your previous occupation?—A. I was a reporter on the *Chicago Record*; and I was a copy reader on the *Chicago Record*.

Q. Have you made any special study of agricultural conditions or agricultural wants in this part of the country?—A. In a general way.

Q. You have the plan of inquiry before you. If there is any topic in the plan of inquiry which you prefer to dwell upon, you may take that matter up and give the subcommission all the information you have in your possession.—A. Well, I take it for granted that you are seeking to reach general conditions and causes. From my point of view, the questions as here enumerated are purely statistical, and while I have some statistics here that would be of interest along the line of the taxation of land, there are some general conclusions I have reached as an agricultural editor that I would like to submit.

There was instituted by the Agricultural Department, in 1896, an inquiry in Cattaraugus, Chautauqua, Putnam, and Westchester counties, New York, with regard to the conditions of taxation there as affecting the farmers. The general conclusion of the Agricultural Department, published in what is known as Circular No. 5 of the Division of Statistics, is that the farmer is bearing a very, very large proportion of the taxes.

I hold in my hand a pamphlet entitled *Recent Results of Property Tax in New York, Massachusetts, New Jersey, Ohio, Illinois, Missouri, West Virginia*, by Lawson Purdy, 111 Broadway, New York, compiled from official reports. They are all authorized reports. If you care to have me do so, I will leave a copy with you. The information was gathered from several sources. In Pennsylvania there was a commission appointed to investigate the tax law, by Governor Hoffman. The figures quoted from Pennsylvania's report are from the second report of that commission. The Massachusetts commission was appointed to inquire into the expediency of revising and amending the tax laws of the State, and their report was issued in October, 1897. In New Jersey a commission was appointed by Governor Griggs, now the Attorney-General of the United States. Governor McKinley appointed a committee in 1893 to investigate the question in Ohio, and I have an impression—I do not just catch the line here where it is stated—that the figures here quoted are from the last report of the State auditor of Ohio. In Illinois I presume the figures are, of course, taken from the last report of the State auditor. In Missouri the figures are taken from the last report of the State auditor. So I may say that these figures are from authoritative sources, and not mere guesswork of anybody interested in a particular theory of taxation.

In this pamphlet I notice that in Monroe County, New York, which contains the city of Rochester, although the real estate is more than double in value that of Oneida County, the personal property in Oneida County is nearly double that of Monroe.

Q. Assessed valuation?—A. Yes. Oneida is one of those which have been investigated by the tax commissioners. The New York report is right along the line as taken in these four counties, and it shows that the rural districts are paying on personal property and real estate a tax entirely out of proportion. In the four city counties of Missouri personal property amounts to 15½ per cent of the total assessed value, and in the remainder of the State 29.67 per cent. It means that everything is visible with the farmer. The farmer can hide nothing.

Q. (By Mr. CONGER.) You mean, then, do you not, that in the cities the personal property goes untaxed?—A. Certainly.

Q. (By Senator KYLE.) Because it is hidden?—A. Because it is hidden in one way and another. Every one knows, for instance, that the average wealthy man in Chicago spends more money in one month than the average farmer does in a year upon himself. There is no guesswork about it. The average man living in Chicago and worth ostensibly \$10,000, as compared with the farmer whose property is worth \$10,000, will spend more money in one month than the farmer will in a year. He will have more rings, more watches, more fine furniture, more of all that enters into personal property than the farmer will, and yet much of it is so minute as to escape the tax assessor. And there are good grounds for believing that even where property is not susceptible of being hidden, the tax assessor is influenced in his estimates. For instance, I was sent some years ago as a reporter to investigate the matter of the Pullman Car Company's taxes. I found property estimated to be worth \$31,000,000, and at the county treasurer's office discovered that the company paid about \$15,000 in taxes, although the company paid an annual dividend that time of \$7,000,000.

Q. (By Mr. A. L. HARRIS.) What was this property?—A. It was the town of Pullman and the Pullman works.

Q. It was tangible property?—A. Tangible property, yes; much of it realty.

Q. (By Senator KYLE.) Pro rata, how much should they have paid?—A. Well, they should have paid taxes on a valuation of not less than \$8,000,000.

Q. (By Mr. CONGER.) At about what per cent?—A. I can not remember what the tax was that year.

Q. Well, approximately—1, or 3, or 5?—A. I would not want to approximate because I am afraid I would not get close enough, but you can see that \$15,000 is ridiculous—ridiculously low. Spread thirty-one millions of property over Illinois farms; what would it buy? It would buy whole counties which support their schools, their entire local government, their own road taxes and all to the amount of hundreds of thousands of dollars, from moneys that are paid on smaller valuations than the Pullman Car Company's.

Q. The taxes on thirty-one millions of farm property, you would think, would be \$40,000 or \$50,000?—A. I think that would be a very small estimate of what it ought to be. A \$31,000,000 county is a pretty big county.

(Witness reads the following with respect to Missouri from pages 23 and 24 of above-described pamphlet:)

"In the city counties personal property amounts to 15½ per cent of the total assessed value, and in the remainder of the State 29½ per cent. It does not, therefore, appear that taxes on personal property benefit the farmers in Missouri. But comparison of St. Louis city with a typical farming county, like Camden County, where town lots are only 4 per cent of the value of real estate, shows even a worse condition of affairs for the farmers. In St. Louis city personal property amounts to 14½ per cent of the total valuation and in Camden County to 37 per cent. St. Louis city has 65 per cent as much real estate value as the rest of the State, but only about one-eleventh as much money, bonds, and notes." That will give you a pretty good idea, and what is true of this is practically true of the several States named here. The farmer pays on everything he has.

In California I understand they have adopted a form of classification which requires that 91 listed articles must appear in all lists; and of that list I have enumerated the things which are hidden, those which may be hidden, and the things which can not be hidden by the farmer. For instance, among those things which can be hidden are State, county, and municipal bonds, jewelry, plate, watches, and so on. Those are not so easily hidden: may be or not. I find, without going into the whole thing, that there are 11 which you can positively hide. Of the 91 articles, 42 are absolutely peculiar to the farmer, such as hay, hops, butter, cheese, wood, tanks, horses, thoroughbred horses, standard horses, American and standard bred cattle, beef cattle. Everything else that is enumerated here is practically met on the farm; that is, the farmer would stand on a great many of them. I have noted as instances of what they would not have lumber, coal, fixtures of stores and others, goods, wares, and merchandise; law libraries, medical libraries, railroad rolling stock, franchises, etc. These are things that he would

not have, but 42 of them are absolutely peculiar to him, upon which he must pay, and upon all but the 11 or 12 he would stand equally with other members of the community in owning.

Q. (By Mr. A. L. HARRIS.) I wish you would outline your method of taxation in Illinois. How is the value of the property, real and personal, ascertained?—A. The assessor visits the property, presumably, and fixes a value on it, I think, annually. Our personal taxation is now under an entirely new law; it is made up in the form of schedules submitted to the individual. He renders his own statement, subject to the board of review. Chicago, as you know, now probably is in the throes of a taxation excitement. I was noticing in last night's Post the figures of increased personal-property taxation. As a result of the new law, after having been revised, I believe, by the board, I should say, broadly speaking, that it has increased about 46 or 47 per cent.

Q. (By Mr. CONGER.) Does the property owner making out this schedule of personal property which is submitted support it with an affidavit?—A. My impression is that he supports it with an affidavit. I am not sure about that.

Q. Have you any data to show what per cent of the property has heretofore escaped its burden?—A. No; that would be absolutely impossible to know, and this is why personal-property taxation works so disastrously to the farmer, although the farmer is chiefly to blame for the personal-property tax.

Q. (By Senator KYLE.) How is that?—A. He is demanding it always. He has always been at the legislature demanding the personal-property tax on the mistaken hypothesis, so far as the results go, that the business man would escape if the personal property were not taxed. It has been a great mistake of the farmer, and one which he is just beginning to see.

Q. What is your own idea as to the correction of this difficulty?—A. Well, now that you have asked me that, I will answer frankly. I am a single taxer, and I believe there is no other form of taxation that has ever been invented by man that will collect an equitable, just, and perfectly even taxation everywhere and under all circumstances.

Q. (By Mr. A. L. HARRIS.) You suggest the assessment of real estate on the Henry George plan?—A. Yes. Put the taxation not upon real estate but upon land value, upon site values, for a building is a part of real estate. If you use the term real estate, you greatly confuse the meaning.

Q. (By Senator KYLE.) That is, you include the building with the site?—A. You do in real estate. The term real estate includes the fixed improvements.

Q. How would it operate with a man who had most of his money, probably millions, in simply personal property?—A. Well, no man can own personal property to a very large amount which is not in the form of jewelry and small trinkets, except in some way or other it is related to land. If you refer to stocks and bonds, speaking broadly, there is no stock or bond issued to-day which does not find its basis in land.

Q. How about the merchant who may have \$1,000,000 invested in a stock of goods?—A. The hypothesis of taxation should be to encourage trade, to encourage industry, and not to put a fine upon trade. It would be equalized through the whole community, because the merchant would sell his goods so much cheaper. Now you not only pay the tax, but you pay an interest on the tax. My view is that every time you pay a tariff tax you pay the tariff tax plus interest. You pay interest and profit on tariff taxes. I buy a thing in England for \$1; the tariff tax at New York is 50 cents; I add not only 50 cents, but I include that in the whole thing and charge upon it my ratio, which may be 25, 40, or 50 cents. The merchant will tell you so. That is the universal custom, and every tax you put upon industry you take so much out of the great common people. It can not be otherwise. It is nature's law of gravitation in commerce that makes it so.

Q. You would have this man escape taxation, the merchant with a \$1,000,000?—A. He would not escape. He must have a great big store to handle that property, and he must pay a big rental for that property, which goes into the public treasury. There is no such thing as escaping the public treasury if you have anything.

Q. You would say first he was paying rent to the property owner?—A. He does not pay any rent to the property owner. The property owner's rent goes to the State. Let us at this point differentiate the buildings from the ground. Schlesinger & Mayer, of this city, occupy a little corner about 120 feet long by 60 or 80 feet wide. The ground rental of that is \$120,000 a year. That is entirely irrespective of improvements, the building, and they are to pay that for 99 years to Marshall Field and his assigns.

Q. Under the present system he pays taxes on his goods besides that?—A. Yes.

Q. If he had a store selling diamonds, and had \$1,000,000 worth of property in

there, under your system it would escape taxation?—A. Yes; entirely, because there would not be an actual escape.

Q. Under the present system the farm, fences, and buildings together are all taxed; under the single tax he would simply have his cows, horses, harrows, and plows exempt?—A. No; there would not be a single tax upon him except upon the land value.

Q. (By Mr. A. L. HARRIS.) As the State has parted with the title, how would you get back now?—A. The State never parts with the title.

Q. When the Government is selling its land off, the purchaser, on receipt of the deed, owns the property in fee simple?—A. Yes.

Q. Now, how would you get back to make the tax a rent on that, and thereby, of course, destroy the title except so far as he has a right to use it and pay the rent?—A. And sell it. His fee simple is not injured.

Q. Has he any title that he sells? Does he not simply sell his right to hold it?—A. But the fee simple is not altered under the single tax.

Q. Of course, theoretically, he owns the buildings placed on the land and the improvements made. The original theory is that by taxing improvements you tax labor, and that labor should not be taxed. We will say that the ground upon which this hotel stands is vacant. It is valuable simply from the fact that labor and capital have put up buildings all around; the great city of Chicago is here. A society created all the value. It is valuable on that ground only. In paying rent only upon the ground value of this city, is not labor taxed?—A. No; I can not see why it is or how it is. I do not see where labor enters at all. Labor does not enter at all, because you are simply taxing the ground value.

Q. (By Mr. CONGER.) You would assess an acre of ground in Arizona the same as you would in the heart of Chicago.—A. You notice that I said the site value.

Q. Yes. What do you mean by the site value?—A. I mean a particular piece of ground which has a peculiar value by means of its location. Your question would be impossible.

Q. I asked the question, expecting that your answer would be no. Then I was going to ask you why you would assess this acre of ground in Chicago more than the other?—A. Society has created all the value which comes to this property. Chicago at one time was a barren place without a building or a man in it. The first man who came here was a blacksmith, I understand, who located out here a few miles and built a blacksmith shop. Now, there was not a particle of land value here at that time which could be stated in figures. There was not one iota of value in this lot more than there was in any other. What is it that creates value? Value is a relative term. Demand creates value. As a matter of production there might be, but speaking economically, there was no value in the city. Now, then, the time that several families gathered around this blacksmith shop some one said, "Here I have 2 children; you have 3 or 4 children, and so on. We must have a school here." "Certainly." Now, then, immediately there follows a necessity for public revenue. The question is, how shall we fix that revenue so that each individual shall pay his just share? When you go into a store and buy 10 yards of goods at \$1 a yard and pay \$10 for it, you have no objection if a man follows you in and buys 5 yards of the same goods and pays \$5 for it. Now, the hypothesis of the single tax is this, that society created all these values; that has given a form of taxation which is not taxation at all but simply rental, which is perfectly natural, is regulated by the great law of supply and demand, which is nature's great regulator, as you know, in commerce and finance and every direction, and that there can be no possible injustice to anyone if each pays for what he enjoys.

As to your question with regard to labor's being taxed: The laborer who would pay a higher price for this lot because this building is here is proportionately benefited by the presence of this building here, as he is by the presence of the church, the schoolhouse, or the county court-house. He is paying more, and here is the cause—he is paying exactly what you and I and every other man would.

Q. (By Mr. A. L. HARRIS.) Now I get a title, but I do not get the title under Henry George theory.—A. You are mistaken. I do not know what the constitutional provisions are, but presuming there was no constitutional impediment, if the Illinois legislature should pass a resolution, containing no more than 50 words, to the effect that from and after January 1, 1900, all taxes within the State of Illinois should be assessed upon the value of the land, that would put the single tax into operation without changing the modus operandi of collection, the modus operandi of assessment, or anything at all. The only difference would be that then land values could be traced as on a map. You would know exactly what your neighbor paid, because if he had the same amount of land that you had and if he adjoined you there would be no reason why it should be less valuable than yours, or more.

Q. (By Senator KYLE.) That is, the same sort of land?—A. Yes.

Q. The test would be what it would rent for in the open market?—A. Yes; and there enters the law of supply and demand.

Q. (By Mr. CONGER.) It would seem to me that if you are going to assess it on land value, you are, in fact, assessing the improvements, since the land is more valuable because of these improvements.—A. Excuse me, you are not correct in stating the question in that way. You will see you are wrong instantly, if you apply that statement to the single tax, because the vacant lot lying next to this lot would be taxed identically with the built-on lot.

Q. That vacant lot has a higher valuation because of the surrounding improvements. You take all the improvements plus the land?—A. That is exactly our contention. If the city of Chicago—

Q. (Interrupting.) What I was going to ask you was whether in your opinion the farmers in the State of Illinois support your theory and want this single tax?—A. No; I do not think so—any part of it. I do not believe that the farmer or the average business man comprehends the single tax.

Q. (By Senator KYLE.) I want to see how it would apply to two farms lying side by side. One farm has good buildings and fences, and opposite that is one of equal size, with land equally as good, but having a log house and poor fences; what would be the basis of assessment then?—A. The natural value of the land.

Q. Not the improvements?—A. No.

Q. What the land would rent for divested of all improvements?—A. Yes; you see that the farmer would then be paying absolutely not one tithe of the taxes paid by him to-day. If he did not have the idea that Mr. Harris has, that it would disturb his fee, he would not care, he would favor it. But let me call your attention to this one point: It does not disturb the fee; the State does not give up the title to the land, even as a fiction. The nonpayment of taxes causes the land to revert to the State always.

Q. (By Mr. A. L. HARRIS.) Not in our State. The land is always sold for taxes. A. Exactly; by whom? The State sells it. How did it get possession of that land to sell it? You see what I say is true; it always reverts to the State; always really belonged to the State.

Q. (By Mr. CONGER.) Do you think the farmers generally are dissatisfied with the proportion of taxes they are compelled to pay?—A. Yes. I can speak with some authority on that from the action of a large number of farmers before the State legislature of Illinois last winter. A bill was introduced that road improvements should be carried forward upon something like this basis: 50 per cent to be paid by the State, 35 per cent to be paid by the county in which the improvement is made, and 15 per cent to be paid by the individual whose farm abutted the improvement. I think those were exactly the figures. But the farmers defeated that measure, upon the ground that that 50 per cent and 35 per cent very largely came out of their pockets also, and that while they would be paying 15 per cent absolutely as individuals, they were generally paying a very large proportion of the whole 100 per cent, showing that they realize how unjustly they are being treated in the matter of taxation.

Q. (By Mr. A. L. HARRIS.) Who is it that makes the levy, say, for the school district in your State?—A. The school board makes the levy.

Q. Who makes the levy for the township tax—the township officer authorized by law?—A. Yes.

Q. Who makes the levy for the county tax?—A. The county assessor.

Q. Now, substantially, does not the farmer vote upon himself the burden of local taxation?—A. Doubtless he does, but upon the hypothesis that the other fellow must pay his portion.

Q. Wherein would the farmer be benefited by putting the taxes exclusively upon land values?—A. He would receive his benefit in several ways, and in this notably—that appears on the surface. He would receive benefit from the fact that every railroad would pay upon its land values, right of way; that every great corporation which had the slightest relation to the land would pay in the same ratio that he did. Perhaps if I read to you a little while here it may help to answer that question.

(Reading from pages 22 and 23 of pamphlet referred to in first part of Mr. Burke's testimony.)

"While Cook County has more than one-thirds of the total real estate value of the State, it has only one-sixty-third of the value in watches and clocks possessed by the remainder of the State, one-twenty-second of the value in carriages and wagons, one-twenty-second as much money, and one-tenth as much credits. In 1894 the bureau of labor statistics of the State of Illinois made an exhaustive report on the subject of taxation. After giving a great many tables which showed conditions existing at the time, they said: 'The following tables graphically express

the demoralization to which Chicago has been reduced by the general property tax, and indicate the goal toward which every community subject to that or a similar system must invariably tend.' The tables are direct indictments of assessors of wealthy and influential property owners, and incidentally they condemn our constitutional principle of taxation itself."

From the table which appears on page 21, it appears that (reading)—"Cook County, containing the city of Chicago, has more than 12 times the value in town and city lots that it has in farm lands, and that the remainder of the State has 3 times the value in farm lands that it has in town and city lots. Yet the percentage of personal property to total valuation in Cook County is only 13½ per cent, whereas in the remainder of the State it is 17.7 per cent; and, in spite of the severe character of the existing law, it is perfectly obvious that only a small part of the personal property of the State is really listed for taxation." Now, there is where the advantage is to accrue from—indirectly, at least. Only a small part of the personal property of the State is really listed for taxation. Now, in making up your budget for school or State, you are always considering your personal property. Therefore every bit of personal property that fails of taxation somebody has got to make up. But the direct benefit of the single-tax system is that the farmer pays upon original land values. Society values, if I may use the term, do not exist there as in the town.

Q. (By Mr. CONGER.) Your idea is, then, that under the single-tax method the taxes that are now paid by people outside of Cook County would be borne by the land values of Cook County, or at least a large portion thereof?—A. That would hardly be the fair way to put it. Cook County would pay its fair share, which it does not do now. If they had a hundred millions to raise, Cook County would pay its proportion of that hundred millions, which it does not do now, or anywhere near. I have just quoted that the change within the year amounts to 97 per cent, I think.

Q. I understood you to say that if the single-tax system were put into practice the farmers would not pay a tithe, a tenth, of what they do. Who would pay it?—A. It would be paid in this way: Let me ask you what percentage of the entire land of Chicago do you suppose is actually built upon now? Boston has about 20 per cent of its land actually built upon. Boston is an old city. Chicago is a new one. I doubt if there is 15 per cent of Chicago's land actually built upon. That land which is not built upon is all held by speculators, and they will not sell to a man who wants to buy. I rode last night on my wheel 10 miles by unoccupied land that you can not buy a foot of for less than \$75, \$50, \$25, and it will not be built on for 12 or 15 years, but will be held there because the owners know they have a cinch. Now, if there is only 15 per cent of Chicago's land built upon, you can imagine that if Chicago has 10 to 12 times the value in city lots, there is where the taxation will rest.

Q. If the farmer, under your theory, would pay but a tenth of what he does pay, who must pay the other nine-tenths?—A. It would come back to where it belongs, and that is the whole society.

Q. (By Senator KYLE.) Are not those lots taxed now?—A. Some of them pay 82 cents a year.

Q. (By Mr. A. L. HARRIS.) Whose fault is that?—A. It is largely the fault of the general system that obtains.

Q. (By Senator KYLE.) You are proceeding on the theory that under the single tax all would be equitable, with perfectly just assessments?—Yes.

Q. Now, would that be true any more under the single-tax than under the present system?—A. I think so, for this reason, that there is such an admixture growing out of the present forms of taxation that nobody in the community can put his finger on—except in a few rare, individual cases, where one neighbor may know about another neighbor—you can not know about anybody's tax or anybody's property.

Q. We know it in all our towns. Here is somebody that owns a house and lot that has cost \$1,000 and it is taxed for \$1,200, and here is a man that owns one that is worth \$3,000 and the board of review puts it in at \$900. That is because of what, the imperfections of humanity?—A. Very largely.

Q. There would be the same humanity to tax under the new theory?—A. Yes. Just imagine that map as the town you live in. The building now is entirely eliminated from the map. Your neighbor, John Smith, who owns a big house and paid \$1,200 or \$1,500 for the lot, is down on this map. This man, who lives here, knows his land is worth exactly as much as John Smith's, and he paid exactly the same originally. They are all on this map, and you can see in 1 minute in the county treasurer's office what every man pays.

Q. You would have it so arranged that each man could tell?—A. Yes; there would be one vast map so you can tell.

Q. Could it not be done under the present system?—A. No; you can not do it. You come in and say, "My house did not cost me \$15,000. Here is the contract. I had that house built for \$8,000. Your guesswork is no good. You are simply guessing. You don't know anything about it." You can not devise a scheme of taxation, and there never has been one devised, to open all the taxes to the inspection of everybody, but this is open to every human being who can read. There is no way to hide it.

Q. (By Mr. A. L. HARRIS.) As this city now is built the land value increases, does it not?—A. Yes.

Q. Who fixes that value; how is that done?—A. Well, there would be one easy thing. You will readily grasp this fact: Having taken out of the question of taxation all possibility of individual discrimination, as I have shown, then every-one will seek to equalize. We will suppose that the population increases the next year 100,000. There would be a proportionate rise in real estate, and that would be equitably assessed. Suppose there were 100,000 people located on the North Side; the advantage of that would accrue, if it were an advantage, to the North Side.

Q. That has to be valued now?—A. It has to be valued now, but it would be done by the entire community with the knowledge that the same system was existing in all parts of the community. There would be no individual discriminations. You have lost the selfish motive. There is no motive in making the North Side pay those taxes; the South Side knows if it has the valuation it too must pay those taxes. In principle and operation the single tax would work justice; you can not discover a place where there is a flaw in its operation.

Q. As this property increases it also increases the burden that is placed upon it for State and other purposes, does it not? A part of those taxes, of course, has to go to defray the expense of running the State?—A. Yes.

Q. We will suppose, now, that you are adjusting this equitably among yourselves; you would be generous enough, would you, to put your values high enough?—A. We have the State board of review now to adjust that.

Q. Would not the imperfections that we are experiencing under our present system—that is, the effort to evade the burden of taxation—come home the same way, on account of the locality that is liable to have a burden to pay attempting to shift it as far as possible and throw it back upon others who are equally anxious to throw it some place else?—A. I should say not, having divested the whole situation now from individual opportunity, as it occurred in the case of Pullman. I am speaking now of the moral factor. You ask if the same elements would not obtain in the matter of assessing a certain section of the State as against the other sections of the State, operating as it does to-day, and I say not, because you would have a common basis for comparison. The law of supply and demand would absolutely obtain under those circumstances.

Q. (By Senator KYLE.) That is supposed to obtain to-day.—A. You know that it does not.

Q. It is supposed to be the governing principle on the board of review in the county and in the State.—A. But don't you see that instantly you confuse the subject by bringing in the value of—

Q. (Interrupting.) There is no doubt about that. You divest it of one great element, the improvements, and what remains is subject to the same imperfections of judgment, and must be.—A. I beg your pardon, it can not be if it is land; it would be if it were buildings.

Q. We find to-day that in two blocks that stand side by side, one man's vacant property will be assessed probably two-thirds higher than the others. At the same time we have a board of review supposed to be good men.—A. I will tell you that if you have the entire community with only one thing to look for, one thing to work upon, you must see that you have simplified the proposition and made a man a direct taxpayer, and when you have done that you have accomplished a thousand other things with it. You can set the wheels of justice to work anywhere. You have accomplished something which relates to everything else. And I say that the simple fact that that map hangs on the wall simplifies the whole thing and makes dishonesty impossible.

Q. I read with much interest here several years ago in the Chicago Times a series of articles some person apparently interested in the welfare of the city had written giving descriptions of property in the center of the city here on State street, worth \$200,000 and \$500,000 for buildings and lots, comparing them with other sections, showing the discriminations and everything else connected with it, and the injustice of it, all published for the benefit of the people of Chicago. I would like to know whether that produced any particular impression upon the city so as to correct the evil?—A. Well, the articles were suggested by myself. A series of articles were written up by Tom Cannon. The immediate effect was to increase the circulation

of the Chicago Times about 6,000 copies a day. It indicated the degree of interest those articles aroused. I remember the Title and Trust Company paid 2 per cent, while a poor fellow who lived out toward the country somewhere paid 27 per cent upon the admitted valuation. I would not say assessed valuation, but the generally expressed valuation in the community. That series of articles was brought out early in 1897. At that time the assessed valuation in Chicago was something like \$77,000,000 less than it was in 1878, when we had about 350,000 population.

Q. (By Mr. CONGER.) Do you know the assessed valuation of Chicago now?—A. No.

Q. (By Senator KYLE.) What would you think of the beneficial effect of a published list of the taxes upon property at the present time?—A. I would not think it would amount to anything, because it would not show anything. We will say you live on State street. Here is a piece of property marked lot 10, block 25. You do not know whether there is a building on lot 10, block 25, and it is doubtful if the next-door neighbor knows much about it. He is probably a renter. He pays, say, \$2,500 a year for his house. You do not know. But if lot 10, block 25, were marked at \$1,250, and lot 10, block 26, were marked \$100, and the taxation was based on the land valuation, you would know mighty quick.

Q. You might not know the relative location?—A. I say lot 10, block 25, and lot 10, block 26; practically the same location. If there were no buildings involved, a perfect stranger from San Francisco could walk through and see there was something wrong there.

Q. You are going on the theory that you would have this published under the single tax?—A. Not at all.

Q. How would you know that this is so?—A. I say these maps would show.

Q. You would have a map hung up in the county treasurer's office?—A. Yes.

Q. Could not that serve now?—A. No.

Q. Why?—A. Because one man would say what kind of buildings it had, and another man would say there was a three-story brick, and it must have cost \$10,000.

Q. Everybody would not know, but somebody would know?—A. Somebody would know, but the public could not know.

Q. The question has arisen in the minds of a great many persons as to whether it is not wise to publish the taxation of property, similarly to the way the Government has thought of publishing the pension lists to purge the lists. A. There might be a little value in that, but I do not believe so.

Q. Now, leaving the question of the single tax just a little bit, and taking it for granted that the Illinois legislature and those of adjacent States here are not going to adopt that system for the next 4 or 5 years, what have you to offer in the way of relief to the farmers for unjust taxation—something that is immediate?—A. It would take a pretty wise man to invent anything that will defeat intentional deceit, perjury, and fraud anywhere, and that is what you are going to have just as long as you have the mixed system of taxation. Now, in saying that I do not doubt that there are certain forms adopted by other States which ameliorate the general condition of things. I have no doubt but what, for instance, the State treasurers or auditors might get together and adopt measures by taking the best plan, as they discover it, in each State and combining them in one form; that would doubtless relieve the situation; but I do not believe you will ever relieve the situation as long as you have mixed taxation. I think it is a human impossibility to do it. And laying aside now all dishonesty and all intentional deceit, putting it out of the question, still I think you will not secure equitable taxation under the present system of mixed taxes. It becomes too confusing; no one mind is capable of grasping the system.

Q. (By Mr. CONGER.) The present system of listing personal property in Chicago is a new system, is it not?—A. Yes.

Q. Do you think it is a good one? Will it be an improvement over the old?—A. Oh, yes; it has increased, as I have shown you, the listing of the property. How the entire system will work I do not know. There will be a legal testing of the power of the board of review. Now the board of review has the power under the law to raise you to a certain figure. That is the present Illinois law. It is a question whether it will stand the test of the constitution.

Q. Regardless of the man's affidavit who lists his property?—A. Oh, yes; entirely. They have raised property millions on the South Side.

Q. (By Mr. A. L. HARRIS.) Have you anything further to say in regard to agricultural conditions or relief?—A. Along that same line, yes. I think the farmer feels to-day that he is the chief sufferer from what is going on in the world through what is known as the trust, the trustification going on; and I think that the same law would settle that question as well as it would settle the question of taxation, by destroying special privileges.

Q. Please explain.—A. The farmer is not satisfied with present conditions; he is not selling his products one penny higher to-day than he did 4 years ago. The condition of agriculture to-day quite generally, I think, felt by the farmers is that they are paying higher prices for everything they buy for the farm, and that they are not getting any more than they received a few years ago to speak of for what they produce, not anything to compare with the rise. So they have a grievance all right. The entire rise in steel does not grow out of the trustification. It grows out of splendid crops, which have made the farmers buyers and increased the demand for manufactured products through the land. I say that the trust would be affected in the same way ultimately by the single tax that your dishonest taxpayer would be—by destroying special privileges. The special privilege always establishes revenues without any regard to the conditions. They may be slightly affected, but relatively they always have large revenues. They are not subject to the law of supply and demand, while individual initiative and enterprise are always subject to the law of supply and demand.

CHICAGO, ILL., August 10, 1899.

TESTIMONY OF MR. EDWARD S. RICHARDS,

Grain merchant, Chicago, Ill.

At a meeting of the subcommission on agriculture in Chicago, Ill., at 10 20 a. m., August 10, 1899, Mr. A. L. Harris presiding, Mr. Edward S. Richards was introduced as a witness, and, on being duly sworn, testified as follows:

Q. (By Senator KYLE.) Please state your full name.—A. Edward S. Richards.

Q. And residence.—A. I live in Chicago.

Q. What is your occupation?—A. My occupation has been that of a commission merchant, grain merchant.

Q. How long have you resided in Chicago?—A. I came here in November, 1868; been here ever since.

Q. Have you been conducting business on your own account during those years, or have you been identified with some elevator systems?—A. Well, I went into the grain business in 1873, and was connected with a receiving house at that time, and continued in that connection until 1878, when I went into business on my own account as a shipper of grain; bought and sold grain by sample on the Chicago Board of Trade. I continued in that business until 1884. I found during that period, as a shipper of grain, that we were having a great deal of trouble about the weights. There were continual claims for shortage being made from our correspondents in the East and South, and those shortages either had to be paid or we had to lose our business. I found upon attempting to collect the shortages from the railroad companies from whom I had received bills of lading and upon which I had paid for this property that they refused to pay any claims for shortages; and the result of it was that I had to pay them myself or lose my business. And I continued then until 1884, I think it was, and then I built a transfer house for the Lake Shore and Michigan Southern Railroad Company, whereby we took the grain out of the cars and weighed it instead of weighing it on track scales, as had been the custom theretofore. I might say in regard to the track scale weighing, that really the method that was employed in those days was, that after a Western car had arrived in Chicago, and the sample had been taken from the car and exposed for sale on the board of trade, and as soon as the grain had been sold the car was ordered over to the Eastern line to be transferred into an Eastern car. This being the terminal of the Western roads, they did not allow their cars to go on east of Chicago; consequently the grain had to be transferred from the Western car to an Eastern car. Well, the first step in that direction was to weigh the Western car to get the gross weight of it. The car was then switched over to what was called the transfer track, and there the grain was shoveled by hand from the Western car into the Eastern car, which involved expensive labor. That was so as late as 1884, and for many years prior to that. After the grain had been taken out of the Western car, which was sometimes as long as 3 weeks afterwards—it was a tedious operation—the empty car was taken back to the track scales from whence it came and there reweighed, and the tare thus ascertained was deducted from the gross weight, which had been previously ascertained, and that was presumed to be the weight of the grain, and upon those weights we paid for it—we bought and sold. And those weights were put in the bill of lading, and we

of course made our invoices to our correspondents, and if the weights held up it was all right, but if they fell short we had no remedy. We had to pay the shortage, as I remarked a little while ago; we could get no redress out of the railroad companies.

Q. That is, your correspondents in the West?—A. No; in the East. Well, the same way in the West. Of course, I being a shipper, my correspondents were in the East. The railroads made it a rule to remit the freight on the excess. For instance, if the weight would fall short 1,000 pounds, and the rate from here to New York was 20 cents a hundred, they would remit \$2, but that would not be for the grain, which was the biggest end of the deal. Then I got up what is called the hopper system of transferring grain. In the first place, we ran the car up on an incline, elevated the car about 30 feet, and then we took steam shovels and got the grain out of the western car into the hopper scale, and then got the net weight, and that weight was always correct and reliable and was adopted as a final weight, and accepted by the trade everywhere, East and West and all over the country, as being satisfactory.

Q. Is that plan still in use?—A. Yes; it is in use in a modified form. I got up another plan. There was an objection to pushing a car up this incline. We had to push it up about 1,000 feet and that was an expense. So I got up another plan of elevating the grain from the grade level. It is practically an elevator apparatus without any storage. I took out the bins and made a cheap affair of it. It did the work all right. It did what we wanted and we paid only for what we needed. In that Lake Shore deal I got 70 cents a car for the certificate of weights. The expense was much less by that way than it was by the other way, both in performing the work and to the trade; and yet the track system is not in use, but the other system is. They are both mine. They both belong to me. I got them both up. Then I got into trouble with the Lake Shore Railroad. They were troubled with the weights down at the eastern end, and they would fall short sometimes as high as—well, one car of oats fell short about 3,000 pounds, and that was the straw that broke the camel's back. I went down there. They would not pay the loss. A man by the name of Hunter owned the oats, and they fell short about 3,000 pounds in New York—about 100 bushels. I went to New York to see about it, but they would not do anything, and the result was that it created a rupture between me and the railroad, and they broke our contract and cut my business off short, so I gave that business up in 1886.

Q. You might tell us something about the importance of Chicago as a grain center, and the growth of the business done here.—A. Well, Chicago by reason of its geographical position, which is a commanding one, has these great systems of railroads coming in and going out, which are distributing lines. We also have the lake, which is another great avenue of transportation, and which should make Chicago naturally a very strong point, provided the rates and the conditions were suitable for them; but our elevator system has all got tangled up here. We stand to-day with an elevator capacity of, I think, about 40,000,000 bushels, and we have not a public warehouse in the city. I mean by that, we have not an elevator that is run in the interests of the people.

Q. The kind prescribed by the law of 1871, you refer to—public elevator?—A. Yes; where a warehouseman is not a dealer. In all these elevators, I think without a single exception, the warehouseman deals in grain, and the grades are so manipulated that it is hard to tell what you are getting when you buy a lot of wheat. Of course, if you want to buy a special quality of grain you can get it, but you have to pay a premium on it. You can not get it on the open market. That is the way I understand it, and for that reason I am inclined to think that the public suffers great injustice and a great wrong.

Q. How many of these terminal elevators are there that are supposed to be public warehouses?—A. I think there are about 28 or 30. They are all run by about seven or eight firms.

Q. And all these men are engaged in buying and selling grain themselves, who are storing grain for the public?—A. Yes.

Q. You might tell us about that and the evils that are growing out of it.—A. Well, you start with the initial shipper. These elevator people have their buyers out in the country to buy grain. They send the quotations out every day to the country shippers along these different lines of railroad, and a bid is made for the farmers' grain. The country shipper buys it and puts it in his warehouse, if he has one. But whenever the farmer sells it to his country shipper, he sells it subject to Chicago weights and inspection. It don't make any difference to say: "Well, he knows how many bushels he puts in the car," because he must sell subject to Chicago weight and inspection. If he falls short 2 or 3 or 5 or 10 cents a bushel in Chicago, that is all his loss; he has no remedy, and he has no receipt from the

railroad that will protect him, because the bill says, "subject to loss in weight," and the terms of the contract prevent the making of any claim.

Q. The same rule applies to inspection as to weights. Do not our farmers generally know pretty nearly what grades they are raising?—A. That is true; our farmers can tell the grades they raise as soon as it shows up in their hands.

Q. (By Mr. CONGER.) Is there much complaint from these country shippers that the weights fall short more frequently than they overrun?—A. We never hear of their overrunning; if they overrun we never hear of it; that is, looking at it from the standpoint of the shipper. Of course, that is one of the perquisites of the business.

Q. Is there considerable complaint about the weights falling short?—A. There has been a very serious complaint in the last few years. I have not been actively engaged in the grain business in the last few years, and I am not able to say what has been the experience more recently.

Q. (By Senator KYLE.) Has there been a general complaint in regard to the inspection, as a rule?—A. I think there has. I gather that from my conversation with men that are in the trade.

Q. (By Mr. CONGER.) Does the fact that these elevator men in Chicago are engaged in the purchase of grain along these lines of railroad operate against the interests of the producers of grain as to price?—A. I think it has some effect; just to what extent I could not say. The farmer raises grain, and as soon as he harvests it he must sell it, in the great majority of cases, and he must accept the situation, whatever it may be. He has no facilities for keeping the grain, and he has to dispose of it. Of course, that is sometimes partly for his financial interest, and sometimes possibly he has no facilities for holding it.

Q. (By Senator KYLE.) The reason the grain men are interested is because it goes into the hands of what is called the terminal elevators; that is, these Class A men?—A. Yes.

Q. Is there a combination amongst these men to control the grain business in this city?—A. I think there is.

Q. Tell us what you know about that; go as fully into that question as you can from your knowledge.—A. I could not say that there is a combination to the extent of dividing their earnings or pooling their business or anything of that sort. I am rather inclined to think that there is not, but I think there is an understanding between them as to what the rates of storage shall be, and upon what lines the inspection shall be made, and in fact all of the general details of the business, I think. I think so far as the management of the business is concerned it is done by this combination of elevators.

Q. Do the railroads direct that the grain hauled upon their respective roads shall be consigned to these terminal elevators, the ones upon their own roads, respectively?—A. I think that is a condition that naturally follows. If the grain were coming in on the St. Paul road it would naturally come into the elevators on that line. I do not mean to say that if the owner of a lot of grain shipped it here over the St. Paul and wanted to have it sent over perhaps to the Chicago and Alton that they would not switch that car. I do not know whether there is any restriction of that kind that would prevent that, but naturally the grain would go into the elevator on the line belonging to the railroad that transports the grain.

Q. Who owns these elevators?—A. With a few exceptions, the railroads own them.

Q. And are operated by themselves or leased principally?—A. No; I understand that they are leased.

Q. Are special favors ever given to the lessees?—A. I think so; yes. I have been informed—I state this simply from hearsay—that the plan has been on the part of the railroads to let a person or firm take an elevator and run it, and they pay them so much per car for all grain that goes through the house; that that is the basis upon which the rental is fixed. Of course, the inference is, and I think it is generally believed, that parties occupying that relation with the railroad company get special favors in the way of rebates or concessions that perhaps do not belong to them. I think one of our great troubles of the day is that all shippers are not treated alike.

Q. You said a moment ago that these terminal elevators were buying grain themselves, and at the same time they were supposed to be public warehouses. If I consign a carload of grain from Minnesota to one of your elevators of the Milwaukee and St. Paul road it must be received by these men?—A. Yes.

Q. The bills are examined by these men; in other words, all your waybills are open to the inspection of those who are your natural rivals in business? They know how your car is consigned if you ship out of here, and they know the grade of your wheat, and all those things?—A. Oh, yes; they know that.

Q. They also get the knowledge of all the men who are shipping grain here?—A. Yes; they know that. You are obliged to give up that information. For instance, if you want to get a lot of grain out of an elevator, you go and get an order from the elevator to deliver that car of grain to an Eastern road, the Lake Shore and Michigan Southern, or any of those roads, and it is quite frequently the case that the name of the consignee is on this notice, and the shipping directions. In that way an elevator man would get possession of information that perhaps you would not prefer to give up. There may be a way of evading that. I do not see how. These conditions have come up since I went out of business; so I do not want to be quoted as absolute there, but think it is right.

Q. Is it true that there are two or three private elevator companies in Illinois—the Illinois Grain Dealers' Association, for instance, which has a number of members, and is composed of the small country elevators through the State of Illinois—that are rather in competition with these men who are operating the elevators of Class A?—A. That is right. The Illinois Grain Dealers' Association is another combination. It is different from this one; it has no relation to it. As you say, it is in competition with them.

Q. We understand that the members of this association contend that, as independent buyers, all their business is subject to the inspection of their competitors in Class A?—A. Oh, yes; I do not think there is any question about that.

Q. They know from whom the grain is shipped, to whom it is consigned, the grade, and all about it, and so have the very ins and outs, so to speak, of their private business?—A. Yes; the railroad companies, when they ship a carload of grain from an initial point, or any point, make in addition to their waybills that you speak of an expense bill. That expense bill is what determines the freight that the receiving road has against it. For example, if I ship a carload of grain from Des Moines, Iowa, to Chicago, over the Rock Island Railroad, that carries with it the charges from Des Moines to Chicago, which belong to the Rock Island Railroad, and they are carried out on that expense bill. That expense bill then is turned over. The car is being shipped, and we will assume now that it is turned over to the Eastern line with directions to collect the back charges from the consignee in New York or wherever the grain may be carried, \$78; that is, on the Rock Island Railroad, and the Eastern railroad assumes to pay that much to the Western railroad, so that expense bill comes to Chicago and is collected by these elevators here, I suppose. The expense bill is paid by the consignee in Chicago, which would be, we will say, one of these elevator men. Then that leads into a situation where I think you are going to find some good meat as to where these rebates come from, and how they are paid.

Q. You believe there are systems of rebates in operation?—A. Yes. It is done through these expense bills. That is one way they do it, and I do not know but what they may have other ways.

Q. Explain the rebate matter a little more fully.—A. My opinion is that the consignee in Chicago—say he is one of our elevator friends here, for example—gets a lot of grain over the line of railroad on which his property is located, and he pays the regular tariff. The expense bill comes in and he pays it and gets a receipt for it. At the end of the month he makes up a statement of the amount of grain that he has received over that railroad. He sends that in to the company, to some officer—nobody knows exactly who he is—and the rebate is figured out, so much per 100 pounds, or whatever they have agreed to give him. Now, that money does not come to him out of the freight department. You might go in the freight department and hunt for it for a half a year and you never would find it; but my information is that it is paid by some other department. It is charged up to some other fund—it may be the bridge fund, the repair fund, the passenger fund, or some other fund—and you could not find it in any of the cracks where you would think it would be lost.

Q. And you think this favor is only granted to the operators or the lessees of the terminal elevators?—A. Substantially so; yes. I do not believe that any shipper of the road has that advantage. It used to be, in old times, that everybody got a little rake-off; but when this interstate-commerce law came in it was hailed with a good deal of pleasure by the railroads, because it simplified their business. They thought it would be a good deal better to give a rebate to one man than it would be to give it to 100 or 500, because then they knew just how to handle it. Our lines are operated by such men as Mr. Peay, Mr. Counsellman, Mr. Armour, and Carrington, Hanna & Co.

Q. Does this operate, in your judgment, to the detriment or depression of the grain trade in any way?—A. I think most assuredly it does.

Q. How, in your opinion?—A. Well, it is discrimination. It gives to one man an advantage that another does not have; consequently they are not upon the same footing, and they can not do business upon the same lines.

Q. I refer to the price of grain, as realized by the agriculturists of the country.—
A. I can not see how the agriculturists would be benefited by it in any way. The way they got at this thing in the first place was a good deal like these beef fellows did. They would go into a station where a man had been in the grain business perhaps all his life, been identified with the town as long as it had been a town, as a grain dealer, and stood well in the community, and had bought grain of the farmers, and whose dealings were all satisfactory; and these elevator men would go out there and try to do business with him. Well, they could not do it, and it was not satisfactory, and they would say: "All right; if you don't sell us this grain we will put a man in ourselves." They would put a man in and start in by bidding up a little and paying the farmer a quarter of a cent or half a cent or 2 cents, no difference what it was, and they would do that until they got the other fellow out—the old citizen had to go. Then the other fellow was in and he worked things just to suit himself. Then the question is, How far did he go the other way? Nobody knows, because there was nobody there to watch him. The farmers felt that they were not getting what they were entitled to. They could not tell exactly how nor why, but they were not satisfied. They would have to sell the grain subject to those conditions, and they were not always satisfied.

Q. In the Northwest there are about three elevator systems, as a rule, in the important towns. Do you suppose there is collusion between them as to the carrying price of grain?—A. Well, now, for example, I see Mr. Peavey has gone to work and bought \$300,000 or \$400,000 worth of elevators along the line of the railroads. It is just exactly as if it was in Duluth; it is all along the same system, just like the telegraph company is. It fixes the rate, and they do the business on this line.

Q. We have three systems that operate through the Northwest, through South and North Dakota and Montana. They are F. H. Peavey & Co., Van Dusen system, and Bagley & Cargill. Though the three companies may be buying grain and acting as ostensible rivals in the community, at the same time is there not practically but one elevator system in the town?—A. Well, I do not know as to that. I am not acquainted with that situation.

Q. The agriculturists who had been buying and selling grain have been crowded out of the market by these people, and they now have possession and are operating in the town as elevator men. It is charged that the card price is arranged in the East and sent to the West each day, and that there is practically but one man in the field buying grain; that the farmer may choose to sell his grain on only one card; that it goes on to the East as his shipment, and at the same time it must ultimately fall into the hands of those who are his natural enemies.—A. That is it. There is a point right there that we want to look at a little. For instance, we will take No. 2 wheat. There is the line. We carry the grade. I think if it weighs 56 pounds to the measured bushel and is reasonably clean it will grade No. 2. If it weighs 63 pounds under the same conditions, it grades No. 2. Now, intrinsically, there is a difference in the value of that wheat amounting, perhaps, if a miller looks at it, to 5, 6, or 10 cents a bushel. Now, here comes one of our friends from the Northwest, the farmer. He has a specially nice lot of wheat to ship to Chicago. It weighs 63 pounds. It goes to the elevator: it is graded as No. 2 wheat. He might have a lot of that cheap wheat, and may have some very good No. 3 wheat that he wants to raise to No. 2. He can take 2 cars of No. 2 wheat and 3 cars of No. 3 wheat—the difference ranges as high as 15 cents a bushel—and make 5 cars of No. 2 wheat at a time.

Q. Raise 15 cents a bushel on 3 cars?—A. Yes. Now, there is where we do not think we get a fair deal. If we have a fine lot of grain that is put into the elevator, we want to know that we are going to get the same kind of grain. We do not always get it, and that is one of the defects in our grading system that we cannot overcome; and that is why I say we ought to pay more attention to the selling of grain by sample. Where a man wants grain for consumption he wants to get what he buys and what he pays for, just as when you buy a suit of clothes you select a piece of cloth for those garments and you want the same piece of cloth that you buy.

Q. You have no remedy to suggest?—A. Only selling by sample; that is the only way I can see. We want to preserve the identity of the article. If you take that fine wheat you have up in your country and deliver that identical grain in Liverpool you will get 15 cents a bushel more. They have good mills over there, but they can not get the wheat to make the flour.

Q. The evil seems to be in the inspection department?—A. That is one of the evils. I do not see how you are going to get over it.

Q. The grain is inspected under State rules?—A. You can not make a rule for every carload of wheat. There must be a line upon which you go. You have a minimum quality and a maximum quality.

Q. There is a chance for improvement in both the State and national laws, you think?—A. I would be a little wary about attempting to fool with the inspection department unless you do it to correct fraud. If you can find a place where there is fraud going on, then of course you must apply the remedy; but I do not see that there is any fraud here, except so far as the warehouseman may perpetrate fraud by taking advantage of your good wheat to raise his poor wheat. That is one of the defects of the system.

Q. What does your law provide in regard to such a matter as that?—A. It does not provide anything, because they are both No. 2 wheat, and the law provides that they shall go into the same bin, but he don't put them in the same bin. He puts his low-grade wheat into the same bin and all his high-grade wheat into another—that is, we presume he does—but he is not violating the law when he does it.

Q. Your statement in regard to special favors in the way of rebates, etc., brings this question very close to the interstate-commerce matter. Do you know whether the Interstate Commerce Commission has been here to investigate that matter?—A. I have seen some notice in the papers that they have been here, but I have not paid any attention to it and have not attended any of their meetings.

Q. Is it a violation of the interstate-commerce law?—A. Well, I never looked at the law as amounting to anything. I think everything they attempt to do is a kind of farce. It stands as a kind of club if the railroad company will not give a man a pass.

Q. Now, that leads up to the consideration of the interstate-commerce law. You can tell us what you know about that law and its workings from your observation and experience up to the present time.

(A letter written by Mr. Richards to Senator Kyle, dated Chicago, Ill., July 11, 1899, was here submitted as containing the witness's views on the subject of the interstate-commerce law. Said letter follows:)

2008 JACKSON BOULEVARD,
Chicago, Ill., July 11, 1899.

HON. JAMES H. KYLE,
Chairman Industrial Commission, Washington, D. C.

DEAR SIR: I have the honor to inclose herewith a letter of introduction from my esteemed friend, Hon. Shelby M. Cullom, of the United States Senate.

Knowing that in all probability matters of great importance to the public will be brought before the Fifty-sixth Congress that are or will be considered by your commission, I have sought an opportunity to give expression to certain views I hold in regard to what I consider important factors to the welfare and prosperity of the country at large, and which are embodied in the two questions of interstate commerce and capital and labor, both vital forces in our political, social, and domestic economy, and with which I have had a close and intimate relation for many years past through practical business association.

Since the year 1873, and until within the past few years, I have been personally and actively identified with the purchase, sale, and shipment of grain in the Northwest, in which capacity I have met the abstract principles surrounding the transportation problems, and have experienced and made a study of the causes and effects of strikes and dissensions between capital and labor, both of which are, in my judgment, not only the most important factors in our commercial relations, but, under certain conditions ones from which emanate the most violent disturbances and disruptions to our business interests, clearly showing that we have reached a point in both of these great and important questions where wise and just legislation is the only remedy for the evils that have long been a menace to our national and individual prosperity.

My conclusions may be stated as follows:

First. That Congress alone has the power to enact laws that will protect, regulate, and enhance all kinds of interstate business.

Second. That the power vested in the Interstate Commerce Commissioners should be so extended as to give them such judicial or police powers over transportation companies as will enable them to enforce all laws in a manner not in conflict with the local laws in the States in which said companies may operate or have a corporate existence.

Third. That the interstate-commerce law in its present form is incomplete and inadequate to perform the uses and functions for which it was originally intended, and should be amended to that point or repealed entirely.

Fourth. That the stability of a rate is more important than the rate itself. All rates should be uniform and should be based upon single carloads as the unit, without regard to volume, and no discrimination or preference allowed between

shippers, all rates being flat, without concession or rebate, and so stated in the bills of lading issued upon grain or other merchandise shipped from one State to another.

Fifth. That practically 90 per cent of all grain and farm products raised in the United States becomes an element of interstate traffic, and that the Interstate Commerce Commission should be clothed with supervisory power to direct, control, and enforce every minute detail connected with transportation—weighing, storage and inspection, transfer en route from one line to another from the original point of shipment to its destination—not inconsistent with the State laws for the protection of the parties interested in said property.

Sixth. That all bills of lading now issued by railroad transportation lines covering grain shipments are illegal, and in many instances are used to perpetrate and conceal fraud and dishonesty.

Seventh. That the grain business of the United States represents one of its most important industries, and that millions upon millions of dollars are lost annually to owners and shippers by reason of defective bills of lading and other wrong and illegal methods employed by intermediate agencies between the producer and consumer. These can only be stopped or mitigated by proper national legislation.

I have given, in a cursory manner, what I consider some of the salient principles and requirements of an interstate-commerce law. I have worked out some details for a bill that may be submitted at another time, if desired. This subject, being an extensive one, demands the closest and most careful consideration. An effort will doubtless be made in the next Congress to enact amendments to the existing law that will permit pooling. The courts, both State and Federal, have generally defined the character of traffic associations and their relations to the public. In my judgment, the present law has been inoculated with vicious provisions that have impaired its value and destroyed its efficiency as a protective measure to the best interests of the people. Care should be taken to scrupulously guard against all kinds of subterfuges that may be employed to controvert and destroy any of the rights that have been decreed as belonging to the people by the judicial department of our Government. This can only be subverted by wise and judicious legislation that is unmistakably plain in its language and purpose. In this the present law appears to be most defective and weak. It neither confers the requisite powers upon the commissioners nor reaches the foundation of the practical wrongs it was intended to correct.

Touching the capital and labor question, my observation, taken from an impartial standpoint, has taught me that wrong exists on both sides. From these, differences have arisen that have crystallized into dissensions that breed strikes and violent opposition one to the other. This condition is unnatural and destroys more than it builds, and is as demoralizing as it is destructive. As a remedy for this I believe in organization, without which desirable results can not be obtained. But in making these organizations the power of the State must be invoked. The working of capital is largely through chartered corporate channels, defined and prescribed by law. The working of labor is through organizations that have no legal entity outside of a dispensation of its own creation. I know of no labor organization that is operated by a charter obtained through the laws of the State. If these are true conditions, we have organized capital versus disorganized labor. Both, in my opinion, should be upon the same footing.

Labor is as much a commodity as corn, dry goods, insurance, all of which have a commercial value and are bought and sold in the markets of the world. The law of supply and demand is the natural arbiter of values. All attempts to force aside this law by creating fictitious values in stocks, grain, or labor breeds disaster against which there are statutory laws.

During the last quarter of a century the times and conditions have most radically changed. Old things have been supplemented by new ones. There appears to have been a revulsion from the time-honored maxim that "Competition is the life of trade" to the dogma that is inscribed upon the banners of both capital and labor, "Death to competition." You will see the effect of this in our so-called "trusts" that are springing up in giant form and including all necessities of life, such as tobacco, sugar, iron, road carriers, house servants, etc. In this new departure capital and labor appear to be neck and neck in the race.

Our courts have decreed against and denounced the principles upon which these "trusts" are formed, but they still go on with the work. Strikes and rumors of strikes are heard all over the country, and a new trust is born almost every hour. At this juncture, in my opinion, lies the great work of your commission. Wise legislation is the only means that will reach and reconcile these differences. The power of the Government is all-powerful, to which all are subservient. There is a grave doubt as to the jurisdiction of Congress in legislating against trusts created

and operated under State authority, but its complexion changes when they undertake to do business with territory outside of their parent State, as in the case of transportation companies, whose ramifications are so wide and far reaching that they must come within the control of Congress; hence, if a strike should occur upon the Chicago, Burlington and Quincy Railroad, that runs through several States, and it being engaged in handling interstate traffic, it would appear that the entire question would come as clearly under governmental control as in the transportation of the United States mail or other Government property. If the question of jurisdiction can be disposed of, the remedy appears simple, and my suggestions are as follows:

First. That Congress enact a law authorizing labor organizations to be created under special enactment or charter privileges, with as many subordinate classified branches as it may require; this to be a department of the Government, the same as in patents, pensions, or agriculture.

Second. That it shall be the privilege and duty of all persons who may think that it is to their interest to join a labor organization to become members of it and to abide by the laws and regulations that govern it.

Third. That no individual or organization not acting under the law shall have any legal existence for remedy or redress for any grievance except through the lawful organization of which they are members in good standing.

Fourth. It shall be the duty of every subordinate organization to hear and consider any complaint filed by any of its members and to act on the same, and provision should be made for bringing in all parties to a controversy before a decision is made or an appeal is taken.

I have, I think, sufficiently outlined my suggestions to give you a general idea of how I propose to reach these questions. I have given both subjects careful study, and have blocked out a bill that covers more in detail the line of my thoughts and researches.

If the above suggestions are of any interest, I shall be glad to hear from you further, and will render such aid as in my power.

Yours, respectfully,

EDWARD S. RICHARDS.

Q. Please give your judgment as to the operations of the interstate-commerce law up to the present time, as observed by yourself in your practical experience and contact with it.—A. My idea about the interstate-commerce law is that it was prompted by the conditions that existed at the time Congress was asked to act in the matter, to prevent discriminations against persons or individuals, realizing the fact that a railroad system is a country maker or a country ruiner—you know they can build the country or they can destroy it, they can build an individual or they can destroy him, by their policy of discrimination. As I understand it, this law was passed for the purpose alone of preventing that discrimination, so as to put every man who was in business on an equal footing. But in passing that law Congress was led to apply certain remedies that the courts have not recognized; in other words, they were unconstitutional. They can not compel a man, as the Constitution has provided, to say nothing about the courts, to testify against himself. That was one of the provisions in this law that weakened it, in my judgment. We had that experience in the Counselman case. The result of it was that this long line of testimony that was available or could have been made available had that fault never existed in the law, might have been drawn out; but they did not do it. They did not get it. Then they sought to amend the law by relieving a person of any criminality, and how far that has operated I do not know, because I do not believe there have been any cases. The questions of discriminations in the long and the short haul have been aggravating because they have been perplexing. We have not been able to determine exactly how that should be applied. That was just exactly what they wanted. They wanted all those perplexing questions to come in there, so when the issue was made there would be no way to meet it. My theory about this whole law business is that what we want to do is to get down to practical results and to practical conditions. Take a car load of grain, for example, as a basis and follow it right through and see what the ramifications are that it has to pass through, and set your machine to fit the case. You can not change it. As I understand it, the law must be applied to the actual conditions as they exist. These people are just simply the agents of each other; we are agents of each other, and we are dependent upon each other. So far as we have good faith with each other we get along, and when we do not we have trouble.

Q. The operations of the interstate commerce law during the past few years you do not think have been very satisfactory to the people?—A. Not at all; the people have had no confidence in it.

Q. What do you regard as its imperfections chiefly?—A. I think, in the first place, that the commissioners have no authority to act and do anything. If we file our complaint with the commissioners, the amount of it would be that they would look it over and give it a cursory examination and say, "We think very likely there may be a case; you would better take it to the United States attorney and give him the case." And that does no good. A man can not spend his lifetime fighting these things. There ought to be a more summary way of running these things than we have now.

Q. (By Mr. CONGER.) In stating your conclusions in your statement, you say that "The power vested in the Interstate Commerce Commissioners should be so extended as to give them such judicial or police powers over transportation companies as will enable them to enforce all laws in a manner not in conflict with the local laws in the States in which said companies may operate or have a corporate existence." Would you enlarge on that point a little?—A. The question of giving them judicial power seems to be a pretty serious one. I am told that the courts do not favor that. The Supreme Court has not favored it. But I have not heard that there was any objection to giving them police powers, which is nothing more nor less than the enforcement of the laws of the States through which this grain passes. For example, if you have a carload of grain coming from Minnesota or Dakota to Chicago, while it is here it must be subservient to the laws of this State, and I do not understand that Congress can interfere with those matters. Those conditions must be carried out. Hence, if the commission were clothed with the power to enforce even the laws of the State, which we think are good and are competent to manage those questions, that would be an improvement on what we have now, even if they can not have the judicial power to impose a fine and punish the parties who violate the law.

Q. Your fourth conclusion is that the stability of a rate is more important than the rate itself. Touching on that point, I noticed in the papers the other day that Mr. Knapp, of the Interstate Commerce Commission, and, I think, Mr. Morton, a local merchant or shipper, both expressed themselves as in favor of legalized pooling. What would be your idea in regard to that?—A. I think it would hardly pay to legalize it. We have a pool now. This traffic association is nothing more than a pool, and they have been doing business exactly on the same line as they always have. The courts have sat down on them, but they keep on just the same. The pooling business is simply an understanding between themselves as to the division of the tonnage and the making of the rates and the percentages, etc. That is about all that amounts to.

Q. At present it is prohibited by law, is it not?—A. I think it is. I have not read the decisions of the Supreme Court on that point. I just glanced them over, and generally they do not approve of the methods of the association.

Q. I think the idea as expressed by these gentlemen was that it should be made legal for roads competing for business from a given point to divide that business and each road carry its proportion at a fixed rate rather than to be cutting rates to a disastrously low point, the theory being that they now cut the rates to those competing points to such an extent that they carry the business at a loss and are obliged to get their profit by charging higher rates from noncompetitive points.—A. Well, that all comes in under this doctrine of competition. If we must abandon the theory that competition is the life of trade and is the germ on which business is built up, then, of course, the pooling business is all right. I know that in my experience, even before this pooling business was adopted, I have known where railroads have done business at a loss, and I think that is an unfortunate condition.

Q. (By Senator KYLE.) Isn't it rather a choice between two evils? Pooling exists in practice at the present time, and there is no supervision by the Interstate Commerce Commission; but, under the new plan suggested by Mr. Knapp, he would allow them to pool the business and have them under the supervision of the Interstate Commerce Commission.—A. It would depend on how it is legalized. If there is a barbed-wire fence, so that you can hold them in, it is all right, but if not, you will have the same trouble that you have now.

Q. The contention of the railroad companies is this: In one of our Western towns where there are 3 or 4 or 5 railroads entering, the jobbers, that is, the large dealers, have the railroad companies practically by the throat. They say, "Here, give us rebates, and cut rates down to one-half or one-third, or whatever it is." And they are compelled to do it, or they will ship on some other road; and consequently, in order to meet a deficit in the treasury, they must in turn take the small shipper by the throat and hold him up, and recoup themselves in that way. But they claim that if the law permitted pooling they would take the jobber by the throat and say, "Stand and deliver, and we will be fair to the small shippers."—A. Of course, if you can enforce that doctrine, it is all right. That is

where the trouble is going to be. We all like to buy things as cheaply as we can get them. I guess it is human nature. Mr. Armour is a large shipper of provisions and grain, and, of course, when he has a good big lot of freight the railroads know it, and they come and make him a bid for it. One fellow will come in and say, "I will take that for 23 cents," and he will say, "Come in and see us again." Another fellow will come in and take it for 24 cents, and the result is that he gets it. I do not know that Mr. Armour ought to be punished because he gets it as cheap as he can—that is, cheaper than some other fellow could get it. That seems to be his privilege. But it seems to me that as long as the railroads are operated as they are, for the benefit of the whole public, the little man should be protected as much as the big one, and the railroads should be absolutely prohibited from giving special rates to one man over another. If that can be done and placed under the supervision of the Interstate Commerce Commission, with power to punish, and enforce that law under penalties, that might make pooling successful.

Q. You say pooling exists, has existed in the past, and the probability is it will exist in the future?—A. In some form or another. I am satisfied we have just as much of a pool as we ever had. I do not think its methods of doing business have been changed by these decisions of the Supreme Court. They may be a little more cautious in doing their business, but I have no reason to believe their methods have been materially changed.

Q. (By Mr. A. L. HARRIS.) Can Congress give to the Interstate Commerce Commission, subject, of course, to appeal to the higher courts, this power? Is there anything to prevent that, outside of the jealousy of the courts?—A. My suggestion came rather as a hint from Senator Cullom. I was talking with him about that one day, and he said he did not think it would be practicable to give the commission judicial power; that the courts had set their faces rather against it. Whether or not it is an insurmountable question, I do not know.

Q. Is it your idea that it would not be final jurisdiction, but be subject to appeal to the higher courts; and, further, that one of the weak places in the Interstate Commerce Commission is their lack of power to enforce their own findings, and that every finding must stand by itself and is not made a rule of action?—A. That is right; that is just the way it is, I think.

Q. (By Senator KYLE.) Nothing they do is any precedent for future action?—A. That is just what I thought it always was; that it has never had any force to it; carried no weight with it; everything they would say and do seemed to drop like a wet rag and never move.

Q. (By Mr. A. L. HARRIS.) Do you think that when a law is proposed and there is opposition, the first course of the opposition is to defeat the bill, and if that can not be done, the next thing is to clip its wings as much as possible?—A. Exactly; that is what I think has been done. I think there has been more importance attached to this rate business than anything would justify. If the laws of trade could be carried out, that is, competition—because the law of supply and demand must come in as a factor in some way or another, and the very minute you put an iron band around that situation you circumscribe something that ought not to be circumscribed—the question of rates would regulate itself. But I do not know how you are going to accomplish it by pooling, because you virtually give them a band to put around. We must have railroads, and they are all trying to make money, and if they can not get what they consider their share of the business at the regular rates they will cut them, and they will cut anyhow; no matter how strong their agreements are, they cut just the same.

Q. You think the producer and the consumer get more benefit from the fixed rate than they do from a rate which is cut, because in the latter case the producer does not know, and even the buyer may not know, as a rule, what he may have to pay if he gets a product on the market?—A. That is the trouble. I think it all depends upon the stability more than on the rate itself.

Q. (By Senator KYLE.) You might just go into that a little more—the importance of a fixed or stable rate.—A. If people doing business with railroads knew that the rate was uniform, they could make some calculations upon which they could do their business, otherwise they can not. Now, for example, I ship a carload of corn or wheat from here to New York. I buy it right here on the Chicago Board of Trade. I stand right alongside of my competitor. We both buy wheat at the same time and possibly of the same man, pay the same price, and ship it over the same or a competing line of railroad. That wheat gets into New York on the same day. It is sold on the Produce Exchange perhaps by the same broker, and yet one of us can sell cheaper than the other. The conditions are exactly the same; it is bought at the same time and shipped at the same time and the circumstances of the sale are identical, and yet he can undersell me 2 cents a bushel. The result is that a change comes in the market, and my wheat is not sold, and I

nave to pay the expenses. There is a case where one man has been discriminated against. You see the effect of it.

Q. (By Mr. A. L. HARRIS.) Is that practiced now as much by the railroads as in former years?—A. I think it is more so, from the fact that it is driving these fellows out of business. Analyze this board of trade situation. Men that made big money here a few years ago are practically doing nothing now. They have been driven out just the same as the countrymen. Those same conditions are found here in this city, practically.

Q. (By Senator KYLE.) You say the conditions are practically the same?—A. Yes; I mean the man in the country who was the original shipper that I talked about, has been supplanted by the representative of the elevator.

Q. (By Mr. A. L. HARRIS.) Has selling by sample been supplanted by this system?—A. Largely so.

Q. The quality of grain that the seller owns does not count for as much?—A. No.

Q. If it comes within the grade, that is all that is necessary?—A. We believe that we have lost our grip here in the grain market. The grain is going around us. I do not know that that could be backed up by any evidence—that feeling—or if there are any statistics or books which show that up very fairly, but they say we are losing lots of grain; we are not getting it; and the same way with the lumber business. We had trouble here about the inspection of lumber years ago, and parties would not come here, and our grain business is going the same way. The fellow in Boston, instead of coming here, will go out in Iowa and get his grain there.

Q. Is the amount shipped lessening every year?—A. I would not state authoritatively, but I am inclined to think so. I have not been watching it in the last 3 or 4 years.

Q. (By Senator KYLE.) You state in your first conclusion, "That Congress alone has the power to enact laws that will protect, regulate, and enhance all kinds of interstate business." Now, suppose our shippers out in the Northwest consign grain to Chicago, and the rate is between 15 and 20 cents a hundred, and they think they are paying too much, can there be any power added to the Interstate Commerce Commission to regulate that in any way?—A. I do not know whether their province should go so far as to make the rates, because that would be an arbitrary act, which would perhaps be just as distasteful as an arbitrary act on the other side. There is a provision in the law giving the Interstate Commerce Commissioners power in regard to some mechanical devices that are used in the coupling of cars—to make the business interchangeable between different kinds of railroads and between different systems of railroads, so as to have a uniform system of coupling that the cars might be continued right on. But that is not the policy of the railroads, because they do not like to have their cars run off their own lines. The Interstate Commerce Commission could be clothed, I suppose with power to do anything that would facilitate and promote interstate-commerce business.

Q. Suppose our people are paying a charge of 18 or 20 cents a hundred and think that that is an exorbitant price; have they any redress at present?—A. No.

Q. Could the commission be empowered to sit in judgment on those rates and reduce or advance them?—A. I don't think they could. I think when you attempt to fix values by legislation you are stepping into deep water. You can not do it. That is a commercial necessity which the law of supply and demand must cover. I do not believe the rate-making power should be given to the commission, and I do not believe it ought to be given exclusively to the railroads.

Q. (By Mr. A. L. HARRIS.) Where should it rest?—A. Well, the conditions will regulate it. Now, the railroads themselves will announce that they will make a rate, say, of 20 cents between two points. The Government will say, All right; 20 cents is the rate; it shall not be changed under any conditions except as the law does now; and when the rate is 20 cents, it must be the same to Smith, to Brown, and to Jones.

Q. (By Senator KYLE.) And that power is in Congress?—A. Yes. It must be uniform.

Q. Then there must be something about raising the rate?—A. Let the commission decide. That is where the commission does not come in now. In the first place, the bill of lading is ambiguous; it destroys the effect of the law. You have no basis to go on. Then they have a clause in the contract where they absolutely evade that liability and say they are not liable, when the law says they are.

Q. (By Mr. A. L. HARRIS.) The courts enforce that?—A. I do not know whether it has ever been fought out.

(The testimony here closed.)

At a meeting of the subcommission, on August 11, 1899, Mr. Richards was recalled for further examination, and testified as follows:

The WITNESS. Yesterday I wanted to have here a bill of lading such as is used by the transportation lines, to sustain the statement I made that they are illegal, which I calculate to prove or attempt to prove by the statutes of Illinois, which I think are in accord with the law governing common carriers which pertains to the whole country. I have here the compiled statutes of the State relating to the railroad and warehouse laws. It is gotten up by the State Board of Railroad and Warehouse Commissioners. (Reading.) An act regulating the receiving, transportation and delivery of grain by railroad corporations, and defining the duties of such corporations with respect thereto. [Approved April 25, 1871. In force July 1, 1871. P. 636.] Section 118. "*Be it enacted by the people of the State of Illinois represented in the general assembly*. That every railroad corporation, chartered by or organized under the laws of this State or doing business within the limits of the same, when desired by any person wishing to ship any grain over its road, shall receive and transport such grain in bulk, within a reasonable time, and load the same either upon its track, at its depot, or in any warehouse adjoining its track or side track, without distinction, discrimination, or favor between one shipper and another and without distinction or discrimination as to the manner in which such grain is offered to it for transportation, or as to the person, warehouse, or place to whom or to which it may be consigned."

Here comes in where the bill of lading figures (reading):

"Weighing in—receipt. And at the time such grain is received by it for transportation, such corporation shall carefully and correctly weigh the same and issue to the shipper thereof a receipt or bill of lading for such grain, in which shall be stated the true and correct weight."

Now we will take the bill of lading. Here is the bill of lading, the form of which prescribes the name or marks, the name of the consignee, and the destination and description of the articles, which would be 1 carload of grain; and the weight which the law requires should be actually stated is put under a column which says, "Weight, subject to correction;" some bills of lading have it, "Said to contain so many pounds;" but in either case the weight given is ambiguous; it does not mean anything, for the reason that if there is a shortage on that shipment and you attempt to collect that shortage—what evidence have you that it is a shortage? because the railroad states that property is taken on the condition that it may be so much or estimated to be so much; they do not state specifically what it is, and they reserve the right to correct this statement at what they see fit, and then deliver the property at the elevator in which they may be interested. My experience has been that they have fallen short on an average 3 or 4 bushels on a car, and they have gone as high as 100, but that is an uncommon case; but it is not uncommon to have them fall short 20 or 25 bushels.

Q. (By Senator KYLE.) They are always weighed at the initial point?—A. Yes; they are supposed to be weighed at initial points. There are many cases where the facilities do not exist for weighing grain properly. There are some country stations to which the farmers have to haul the grain and weigh it on the wagon scale of the shipper, and they will shovel it from the wagon into the car, and the sum total of these weight tickets of shipments which are made by the shipper are added together as an approximation and inserted into the bill of lading which they give; but that bill of lading given in the country is simply a memorandum, because they do not assume to know, or they say they do not know, what the weight is until it reaches some point of transfer; it may be Chicago or it may be Boston; and they will settle upon terminal weights, whatever they are. Now those weights are, in a majority of cases, determined in Chicago. As I stated yesterday, grain is bought upon Chicago weights and inspection, and whatever the weights are here governs the man in the country, and he sells his property and the payment is made upon that weight; and the same going east. The same weight is taken and used in the former shipments. Well, in case of loss, all that you have is this document, and you can see that it does not amount to very much. There is a clause on this bill which is also objectionable, I think. (Reading from a blank bill of lading of Lake Shore and Michigan Southern Railway Company, marked Exhibit C.) "Grain in bulk consigned to a point where there is an elevator may (unless otherwise expressly noted herein, and then if it is not promptly unloaded) be there delivered and placed with other grain of same kind, without respect to ownership, and if so delivered shall be subject to a lien for elevator charges in addition to all other charges hereunder. No carrier shall be liable for differences in weights or for shrinkage of any grain or seed carried in bulk." Now there is an express declaration on the part of the railroad company that they will not be liable for any shortage, and they do not state here what the basis of that claim shall be definitely. So

that if I ship 30,000 pounds of grain in a car and take that bill of lading, and if they say there is only 27,000 or 29,000 pounds I must accept their statement as final, because I have accepted a contract that virtually admits that. Hence, I say, the bills of lading are not legal, not in compliance with the law.

Q. Has public complaint been made in regard to that?—A. I do not think it has. It is a matter that I have called attention to a number of times. I called the attention, several years ago, of the president of the Board of Trade to it, but at that time they were very much occupied in killing off these bucket shops and they did not think it was of enough importance to look after, and it never has been done that I know of.

Now, as I remarked yesterday, a man that is shipping grain over a railroad line is very careful not to do anything to provoke them. He has to keep good-humored all the time; if he does not he is going to get himself into trouble. Hence these shippers never go to the extent of instituting any legal proceedings to protect their rights, for in the first place it costs money and costs time, and it also aggravates the railroads, and they don't want to do that. Take all the difficulty that comes up there—it just simply passes by; nothing is ever done with it. Hence, I say, I don't think any suits have ever been brought. I do not believe it has ever been brought into court. If the defect did not exist in the contract, in my opinion it would not be abused as much as it is; while, having that ambiguity there, it gives these people an opportunity, if they so desire, to take advantage of it, and I think in many cases they so desire.

Q. Does the statute provide a penalty for it?—A. It does. (Reading:) "And such corporation shall weigh out and deliver to such shipper, his consignee or other persons entitled to receive the same, at the place of delivery, the full amount of such grain, without any deduction for leakage, shrinkage, or other loss in the quantity of the same." There is another violation in the bill of lading, because they say they will not be liable. (Reading:)

"Damages. In default of such delivery, the corporation so failing to deliver the full amount of such grain shall pay to the person entitled thereto the full market value of any such grain not delivered at the time and place when and where the same should have been delivered."

"Evidence—shortage. If any such corporation shall, upon the receipt by it of any grain for transportation, neglect or refuse to weigh and receipt for the same, as aforesaid, the sworn statement of the shipper, or his agent, having personal knowledge of the amount of grain so shipped, shall be taken as true, as to the amount so shipped; and in case of the neglect or refusal of any such corporation, upon the delivery by them of any grain to weigh the same as aforesaid, the sworn statement of the person to whom the same was delivered, or his agent, having personal knowledge of the weight thereof, shall be taken as true, as to the amount delivered. And if, by such statements, it shall appear that such corporation has failed to deliver the amount so sworn to be shipped, such corporation shall be liable for the shortage, and shall pay to the person entitled thereto the full market value of such shortage, at the time and place when and where the same should have been delivered."

There is a section, in regard to the scales they should use. The law is good all along, and in my judgment this bill of lading is not consistent with that law.

There has been further legislation in regard to this subject. The question came up as to whether or not the warehouses were public or private. Of course, Judge Tuley took this matter up in his opinion, and I think he discussed that very carefully, and I believe that the commission will find some valuable points in that. That opinion, I will say, has been affirmed by the supreme court of this State, which virtually negatives the law passed at a recent session of the legislature annulling the law, upon which Judge Tuley based his opinion. Under this law, every public warehouseman is required to have a license; and this is the section that refers to that (reading):

"Section No. 136. The proprietor, lessee, or manager of any public warehouse of class A shall be required, before transacting any business in such warehouse, to procure from the circuit court of the county in which such warehouse is situated, a license, permitting such proprietor, lessee, or manager to transact business as a public warehouseman under the laws of this State, which license shall be issued by the clerk of said court upon a written application, which shall set forth the location and name of such warehouse, and the individual name of each person interested as owner or principal in the management of the same; or if the warehouse be owned or managed by a corporation, the names of the president, secretary, and treasurer of such corporation shall be stated; and the said license shall give authority to carry on and conduct the business of a public warehouse of class A in accordance with the laws of this State, and shall be revocable by said

court upon a summary proceeding before the court, upon complaint of any person in writing, setting forth the particular violation of law, and upon satisfactory proof, to be taken in such manner as may be directed by the court."

That is the way these warehouses are created. They have to get a license first, and that is the question upon which hinged this whole thing of whether a man could be a warehouseman and a dealer at the same time; and behind that is a constitutional provision, which I think you will find in the amendments to the constitution that were passed in 1871, which provides for the manner in which the grain should be unloaded. Then there was another law passed by which they amended the law, so that in a city of the size of 50,000, I think it is—I have got the law here, a section of it (reading):

"Section 192. Road[s] receiving for transportation shall furnish suitable appliances for weighing, etc. *Be it enacted by the people of the State of Illinois represented in the general assembly,* That in all counties of the third class, and in all cities having not less than 50,000 inhabitants, where bulk grain, mill stuffs, or seeds are delivered by any railroad transporting the same from initial points to another road for transportation to other points, such road or roads receiving the same for transportation to said points or other connections leading thereto shall provide suitable appliances for unloading, weighing, and transferring such property from one car to another without mixing or in any way changing the identity of the property so transferred, and such property shall be accurately weighed in suitably covered hopper scales, which will determine the actual net weight of the entire contents of any carload of grain, mill stuffs, or seeds at a single draft, without gross or tare, and which weights shall always be given in the receipts or bills of lading and used as the basis of any freight contracts affecting such shipments between such railroad companies and the owners, agents, or shippers of such grain, mill stuffs, or seeds so transported and transferred."

They require that the grain shall be weighed in hopper scales to eliminate its being weighed by track scales, for the reason that the inaccuracies are so great; because there were cases where cars would come in here covered with ice and snow, and the grain would be sold and the Western car would be sent over to the Eastern road, and it would sometimes take three weeks before that car would be returned to be reweighed, and when it was weighed the second time that snow and ice would be all melted off, and it would not be in the same condition, and consequently that would be a factor in the weight of the grain, and it necessarily makes that inaccurate. The railroads have protected themselves in that way. That was the object in putting it in, in my opinion. Well, of course, we found that that system of weighing grain was entirely unsatisfactory. The idea of it was to keep it out of the elevators and sell it by sample, and the only way was to weigh it on track scales. I was then actively engaged in the shipping business, and I got up this plan of taking the grain out of the cars and weighing it in hopper scales, and we put it in on the railroads. The railroads did not want anybody to check it. I was practically the weighmaster here for that class of commodities, and the result of it was they broke a contract with me. I had a 10-year contract, and it ran nearly 2 years. That has been all settled. We got through with the fight. But the Michigan Central and some other lines here are using another device which I also claim to be mine, which practically does this same thing. But they did not change their form of bill of lading any. The weights are all right. They do not take any liability because our experience was that the average shortage on the weights where they were honestly weighed out and honestly weighed in was about 80 pounds to the car; so there is no reason why they can not give clean bills of lading if they want to.

Q. Scales at the initial point would remedy that matter, would they not?—A. It would, but they could not put them in. The railroads would not accept those weights. Whether you could compel them to do it is another question.

Q. When you send stock or furniture—any local freight—they always weigh it, do they not?—A. Yes; they weigh it in, and I do not see why they should discriminate against grain. The trouble is that our methods are all pretty loose about the grain business. I will emphasize the statement I made here that the grain business in the United States is about the biggest thing we have here; yet I do not think there is a business that has so many loose ends and is conducted so loosely as it is. I think that settles the bill-of-lading question. That is about all I have got to say on that question. Now, at some point in this proceeding I would want to show you what this process is that you asked me about yesterday.

Q. What process is that?—A. The system in use by the Michigan Central, the Grand Trunk, and other lines that are using it. I have worked a good while on this thing, and have got it so it works all right, but, as I say, I have got tangled up with these fellows, and I do not know when I am going to get out.

Q. (By Mr. A. L. HARRIS.) All you have to do now is to preserve the number of the car taken out, and when it comes in, and the road it belongs to?—A. Yes; we give the history of the car there, its inspection, and its destination. Now, this is Chicago car 2550; it comes in over the Michigan Central—800, and a record is kept so that you can give an absolute record of everything connected with the time it came in, the condition the car was in, and the condition the car was in when it went out.

Q. (By Mr. CONGER.) How long does it take to unload a car?—A. I have unloaded 5 cars in 8 minutes.

Q. Generally are they in one hopper?—A. Oh, no; each car at a separate hopper, and they were all unloaded at the same time. I could unload 20 in 8 minutes if I could unload all at the same time. Where the volume of business requires it, it is just as easy to put up a big house as a little one. Of course, I have been brought in contact with these questions by reason of my personal interest in the matter. I do not disguise the fact that I have been working on this line, and you must judge for whose benefit it is. I claim that I have made some money and the public have been benefited by it. I have guaranteed to reduce the expenses 75 per cent the cost of handling grain in Chicago. Under the old system it was a cent a bushel, and I charge a quarter of a cent; that is knocked off, and we guarantee against any inaccurate weights; and in all my experience I never had but 2 cases where I had to pay shortage—where my weighmaster got drunk and made a mistake and it was proved up, and I paid the loss.

Q. (By Mr. A. L. HARRIS.) If your system is adopted there will be no necessity for the conditions in that bill?—A. It all goes right here in the bill of lading; that is the germ.

Q. I can see how they have protected themselves in the conditions that they prescribe; but now here is an absolute way; there is no tare in it at all?—A. No; it is just like a grocer buying and selling sugar. He buys the sugar on the scale and not the barrel or box.

Q. Have you not a law that would seem to give full protection, if enforced?—A. It will not take but a minute to read this section. The State of Illinois was so pleased with this plan that they passed a law requiring it to be done.

Q. Is that law evaded?—A. It is partially complied with. We have four or five roads here in the city that are using it; there are some that are not.

Q. Is there any reason for their not complying except the reason that you stated, except the reason that the shipper did not want to come in conflict with the railroad?—A. The shippers are all like this: You read the testimony that I have from Boston, New York, Philadelphia, and all over the United States in regard to those weights. They are accepted as satisfactory and final; the Board of Trade has indorsed it; therefore we do not have any trouble except with the railroads and elevators. Perhaps they have been jumping on me a little.

Q. Under the law the requirements are stated?—A. Yes.

Q. And here is a plan by which the weight can be ascertained accurately?—A. Yes.

Q. Why is this law not enforced?—A. Just for the same reason that a great many other laws are not enforced—because they are obnoxious to the people whom they are enforced upon.

Q. What would you suggest for a remedy, when there appears to be a sufficient remedy on the statute books?—A. I suggest this: If you give the Interstate Commerce Commissioners the power to enforce the laws that are already in existence—I am talking of these laws right here, some here in Iowa and Nebraska, because you can not make any laws that will conflict with the State laws—but if the Commissioners' powers are extended so as to give them these police powers, they can compel the enforcement of this law.

Q. Then there is no conflict between the railroads and the grain men; there can be none?—A. No, there is not. There are other matters between the grain men besides this. I do not want you to think that I am trying to advance my own point, because there are other systems that are practical and just as good as this. It is the principle I am working for. If the law is enforced and the power rests only with the Interstate Commerce Commission, we can not make a law in this State that is going to be effective against it. Consequently, if it is interstate business, it must come under the jurisdiction of the Interstate Commerce Commission. It is the only power in the world that can manage it, or some other power that Congress may delegate.

Now, in regard to the elevator question, my contention is that the producer will be benefited if he can send his grain to an open market, where it can be sold in the open market, subject to the rules and regulations and the laws of trade. He can not do it in this town to-day, simply because the price is set on it before it

comes here. The same way in regard to hogs and cattle. There is a little coterie there that has had that thing, and they fix it. It used to be that the price in Liverpool cut some figure, or in New York, but I don't think it does now. If it does, it is done so invisibly that you can hardly see it.

Q. You mean it is arbitrarily fixed now by this little coterie?—A. I would say that. That is a pretty strong term to use, but will I say that it is practically arbitrarily fixed. These fellows manipulate the market to suit their own purposes.

Q. Without regard to the conditions of the market?—A. Yes. You can see how that is. We have 40,000,000 bushels capacity, and sometimes the elevators are pretty full. I do not know how they are to-day; but when you get a large accumulation of stock—it don't matter what it is, whether it is boots or shoes or grain—if there is a glut in the market the tendency is to depreciate the price. There is no reason why these fellows can not create that glut at any time; they control the elevators, and can get the grain.

Q. (By Senator KYLE.) Is it a fact that they make it a practice to keep their elevators full here on account of collecting the storage charges?—A. It would be their policy to do that. I think their rate has been reduced to three-fourths of a cent a bushel, and of course that is something. At 600 bushels of wheat to a car that would be \$4.50 for the first 10 days.

Q. And one-fourth of a cent for each 10 days after that?—A. Yes; but there is big money in it at that, and of course the more grain they have the more they can make out of it.

There are two points I want to speak of there, and one is an open market if you are selling the grain by sample. As I explained yesterday, there is a difference in the same grade of wheat or the same grade of corn; there is not any kind of grain but what there is a wide range between the minimum and the maximum quality of that grade; so to the sample there is an intrinsic value attached.

Q. How is the price practically fixed before the grain is harvested; how?—A. For example, to-day the warehousemen will send out a card to their representatives on the trunk lines, stating that they are paying so much for grain delivered at such a station to-day or to-morrow. They will get the postal card to-morrow morning, and that is the price they are authorized to pay for that grain. They probably will get telegrams changing it; it may go up or down; but in that way, I say, the price is fixed. It used to be that these country shippers would send their grain in here to a commission merchant and the price would be determined after the grain got in; that was governed a good deal by the receipts and shipments; but those legitimate influences appear to have become obsolete.

Q. Do you think the price is more often depressed than otherwise by such an arrangement between the buyers?—A. That would depend altogether on the tendency of the manipulators. Our speculators here have generally been bears.

Q. Which is a severe thing for the country shippers?—A. Yes. The plan of making the market, coming up to within perhaps a year or two, has been to take the bear side and sell the stuff short, because he could sell it for more than he could sell it to-morrow. In other words, if he sold to-day, he could buy to-morrow and make a profit, and some of our more successful speculators followed that. Mr. Partridge was one of our biggest plungers, and that was the side he always took. It was very seldom he was buying the market. But lately the man that has the money is generally fixing the price.

Q. (By Mr. A. L. HARRIS.) Which is the better for the producer, the present system of buying or selling on a card price, or the old plan, the local merchant buying and keeping the margin between himself and the consignee?—A. I think the old plan as we had it at first. I do not think the card plan is a good one.

Q. I have had some experience in selling wheat. Our market for a number of years has been Toledo, Ohio. Under the old plan they kept a very wide margin between the local grain dealer and the price at Toledo each day. Under the present system they bid closer for wheat each day than they did under the old system, from the fact that the local grain dealer knows just what he is doing, and we get more for our wheat; that is, we get nearer the Toledo price, with the cost of transportation and commission added, than we did under the old plan of selling to the local grain dealer, because of the certainty. He knows what he is doing each day. What have you to say on that phase of it?—A. Don't you think that is occasioned by the fact that when the commission merchant makes you a bid for that wheat, and you accept that bid, he aggregates his purchases of that day and sells in New York or Chicago against that wheat, or in Toledo?

Q. I understand the card system they use there is this: At 9 o'clock, in the morning mail, the grain dealer at Eaton gets a bid from his Toledo correspondent, or the man he is shipping to, and that usually runs good for about 3 days unless it is changed. Now, during that time the grain man fixes the price that he is paying for wheat, and probably he will give 3 days for that wheat to be delivered.

He immediately wires the grain man at Toledo what he has done during that day, and the farmer has 3 days to bring his wheat in.—A. Don't he have the same opportunity on the first day the price is fixed? As far as the delivery is concerned, that may be a longer time or a shorter time.

Q. As I understand, the Toledo man gives him the 3 days for the delivery at Eaton, and then a certain number of days for the delivery at Toledo. Of course to-morrow that may be changed for 3 days in the future again, and then our local grain merchant pays for wheat what his orders are for to-morrow, or rather what the bid is for to-morrow, and these 3 days I have to deliver my wheat are still good, even if wheat goes up or down. If it goes up, I still have to take what I sold for; if it goes down, I take what I sold it for.—A. As I understand the way we do here in naming the price, it is good for to-day. The country buyer is governed by the price for to-day only. If he buys any wheat, he reports that to his principal in Chicago, and that principal may, if he wants to, sell against it to hedge himself against any loss, and then he holds the shipper for the delivery of that wheat. Of course, one difficulty that the farmer, the producer, may fall into, is that the grade may be mixed. Of course if he is going to go into the market and buy it, that is mostly a loss; but where everything goes over here, that does pretty well, because they know just what they are going to get for the wheat before they ship it in. Of course there are times when they have their little contentions about the weights and mixing the grades, which the farmer has to take the chances on.

Q. Don't we have to take the chances, because we have to deliver No. 2 wheat to sell?—A. Yes, as far as the obligation of the farmer is concerned as to the delivery of the wheat, it is a matter that rests between him and the shipper. For instance, we may sell September wheat; we may sell August wheat; we may sell wheat for August delivery. This is practically cash wheat. For instance, I sell 1,000 bushels of August wheat or 5,000. That is always, at seller's option, to be delivered in August. We have 20 days to deliver, but the price must be fixed to-day, because we don't know what it is going to be to-morrow.

Q. There is an impression among our farmers that the present system brings them nearer the Toledo price than the old system, where the local grain dealer took the risk. He either made more or he made less.—A. I guess perhaps he knows a little better what he is doing than he would where he had to wait 3 or 4 days or a week to get returns from his commission merchant after he shipped the stuff in on an open market; and if that is so satisfactory it would be well not to disturb it.

On the 7th day of March, 1893, the Chicago Tribune published an exhaustive statement of the investigation that was made by them in regard to this very question. I went yesterday and consulted the files.

Q. Did you secure a copy?—A. No; I do not think it can be secured. I think it is in the files in the public library. All the papers are there. I was interested in getting that thing up. I was employed by the Chicago Tribune, in connection with Mr. Vanderlip, now Assistant Secretary of the Treasury. We went out and made an exhaustive investigation of the subject, and it was published in full in the Chicago Tribune of that date, and on the following day they had interviews from the Members of Congress. In the first place I must explain, possibly, a little inconsistency. This article was prepared, say, on Friday, and ready for the press. The paper was printed on Friday and dated Monday, the 7th day of March, and they were sent to Washington in a special edition and placed on the desks of every Member of Congress, and on that same day, after the paper had arrived there, the Tribune had a corps of correspondents who went around and interviewed the Senators and Members of Congress as to their views on the interstate-commerce question, and they drew forth some very fine expressions; and it occurred to me yesterday, after I was here, that it might be of great interest, and perhaps service, to your commission to read those statements, because we hunted up the very best men we could find. We went to governors and railroad managers, and presidents, and bankers, and all classes of people, and interviewed them freely; and it was in that line that I got this information as to the manner in which these rebates were secured which I explained to you yesterday. So I would suggest to you, gentlemen, if you desire, that when you return to Washington you invite Mr. Vanderlip to come before you and express his views. I think he has some very decided views on the question, and I think they are very valuable.

Q. There is one question I want to ask you about: Could the Interstate Commerce Commission, either as a court or as a commission, without interfering with State rights, enforce a law of Illinois?—A. I do not see why not. A man in Iowa can come here and enforce the law here. If he can come and enforce the law, why should not the commission? You are nothing but a combination of citizens outside of your official capacity.

Q. Are you not making a Federal court to enforce a State law, which is usually

the province of the State court?—A. The State can not enforce that law as long as it is left outside of its own State. Here we take a car of grain and run it 17 miles and it is in Indiana; we have lost our entire jurisdiction.

Q. But where does the right of action accrue?—A. That is the question. If I ship a carload of grain from Chicago to New York under a bill of lading, after it has gone 17 miles it has gone into Indiana. It may not have leaked a drop when it left Illinois; it may have gone through Indiana, Ohio, and New York State and into Massachusetts; in that journey there has been a loss. Where has that occurred? The shipper can not tell, and you can not pursue him with any law that I know of. You can not pursue him in Massachusetts, because the law may be entirely different there from what it is here. That is the way I understand it. I made that point in discussing the question with the president of one of the Illinois lines, and he said, "You can not enforce the Illinois law in Massachusetts."

Q. Now, what I want to get at is the power of the Interstate Commerce Commission to enforce an Illinois law in Massachusetts.—A. It is absolute, I think.

Q. Can a Federal tribunal enforce a State law?—A. If I am a citizen of Nebraska, I can pursue an Iowa man.

Q. Where do you get at him; where do you bring your action?—A. Wherever I can get service on him. I could sue him there. Those are legal questions that I would not assume to answer.

Q. The reason I asked the question was I thought you might be clear upon that point.—A. Well, I am, in my own mind, but I do not mean to say that I am correct about it. I am not a lawyer, and I do not know whether I would be authority on it or not.

Another thing I spoke about: I suggested yesterday that in making amendments to the interstate-commerce law, we want to get down to the abstract principles of the business we are trying to manage; that is, to get to the very root of it; and I sketched off these little amendments here as suggestions merely. Now, if you care to hear them I will read them or I will leave them.

(Being requested by the subcommission to read said suggestions, the witness read as follows):

DRAFT OF PROPOSED AMENDMENTS TO THE INTERSTATE-COMMERCE LAW

[Submitted by Edward S. Richards, Chicago, Ill.]

"Be it enacted, etc.

"SEC. 1. That all carload lots of grain or seeds shipped from any point in one State to any point in another State, both being within the boundaries of the United States of America, shall be known and classed under the law as interstate-commerce traffic, and shall come under and be subject to all laws, rules, or regulations made and hereinafter provided for or contemplated by this act.

"SEC. 2. The Board of Interstate Commerce Commissioners are hereby authorized, empowered, and directed to make and enforce such rules and regulations as are now already in force, or that may be hereafter provided, for the proper protection to the owners of such shipments of grain and seeds while in transit from its initial point of shipment to its destination; and that are not in conflict or inconsistent with the laws or regulations in force in the State where said shipments originate, or to which they may be consigned for sale, use, or reshipment.

"SEC. 3. It shall be the duty of every common carrier receiving grain and seeds for transportation to issue to the owner or shipper of such property, covering the same, a receipt or bill of lading, in which shall be plainly and correctly stated the kind of property and the actual net weight of the same, which shall be the basis of all freight contracts, and upon which any and all claims for shortage, damage, or loss in weight while in the possession of said common carriers for transportation and delivery to the destination and consignees named in said receipts or bills of lading shall be made and adjusted.

"SEC. 4. It shall be the duty of the Interstate Commerce Commission to see that all laws, rules, or regulations affecting the weighing in or out of the cars containing grain shipments, at the initial point of shipment, intermediate transfer points en route, or to the consignees at its destination, are justly and honestly enforced, and that the actual net weight of each and every carload of grain and seeds shall be plainly stated in the receipts or bills of lading issued by said common carrier to the owner or shipper of the same; which shall represent and determine the amount for which said common carrier shall be liable and responsible to the said owner or shipper of said property agreed to be delivered at the destination named in said receipt, bill of lading, or other contract between the said owner or shipper and the common carrier to whom it shall be or has been delivered for transportation.

"SEC. 5. In case there should be any shortage, loss in weight, or damage to the property received for transportation when delivered at its destination in accordance with the receipt, bill of lading, or other contract between the shipper and said common carrier, it shall be the duty of the said owner or shipper, upon the failure of the contracting carrier to promptly pay the same, to file in duplicate a properly authenticated claim with the Interstate Commerce Commission, concerning said loss or damage, based upon the actual cash value of the property claimed to have been lost or damaged while in the possession of said common carrier, and not delivered in accordance with the laws governing common carriers or the receipt, bill of lading, or contract issued to said owner or shipper when the property was delivered to said carrier for transportation.

"SEC. 6. Upon the filing with the commissioners any claim in duplicate, by any owner or shipper, against a common carrier, for loss, damage, or shortage in weight on any shipment of grain or seeds, it shall be the duty of the commissioners to furnish the common carrier complained of with a notice of said complaint, with claim attached, and notify both complainant and common carrier that said claim will be taken up for adjudication at a date within thirty days or as soon thereafter as practicable, upon sworn statements or depositions, by brief or orally, as may be agreed upon by the parties interested, within the thirty days or time designated by the commissioners. If the complainant or plaintiff fails to comply with this requirement within the time designated by the commissioners the cause may be dismissed without prejudice and at his cost. If the defendant common carrier fails to comply, a default may be taken and judgment entered against the defendant for the full amount claimed, together with costs of suit and reasonable attorney's fees, to be collected through the clerk of any United States district or circuit court as other judgments are collected.

"All costs will be taxed to the unsuccessful litigant and converted into the United States Treasury Department as an offset to the expenses of the commission.

"If, for reasons satisfactory to the commissioners, additional time is required by either or both of the parties, a continuance may be granted for not exceeding thirty days, each party being entitled to one continuance. After six months from the date of filing the claim, if the claim shall have been abandoned, it shall be stricken from the docket and can only be revived or reinstated as new business by refile of claim, payment of additional costs, etc., as in the original procedure.

"SEC. 7. All proceedings for the collection of claims against a common carrier under the provisions of this act shall be against the carrier or line issuing the original contract, receipt, or bill of lading, upon the theory that while the initial carrier may be only one of the many lines over which the property involved in said claim may pass in reaching the destination named in said bill of lading or contract, it binds all connecting lines as principals through their agent, the contracting party, in the business created by said contract or bill of lading, and in which they are copartners in the division of the profits and losses arising from such business; and any judgment or order made by the commissioners shall be valid each or severally against the entire combination of interests represented in such contract or bill of lading, but it shall be collected by execution, if necessary, from the carrier or transportation company issuing the original bill of lading, upon which said claim shall have been established by evidence before the commissioners.

"The commissioners are hereby empowered, authorized, and directed to exercise the full and complete jurisdiction of a trial court, with the same powers as are conferred upon the circuit and district courts of the United States. An appeal may be made from the judgment of the commissioners to the court of appeals, whose decision shall be final and without appeal, unless involving constitutional questions, which alone may be appealed to the Supreme Court of the United States.

"SEC. 8. It shall be the duty of the commissioners to supervise and direct the inspection, storage, weighing, and transfer of all interstate grain and seeds while in transit from producing to consuming markets, and they are hereby empowered to make and enforce such rules and regulations as will give full and absolute protection to this class of property as will prevent the improper inspection or grading of such grain and seeds, or the improper weighing, mixing different grades, or separating the different qualities of the same grade of grain or seeds when placed in the storage bins of an elevator or public warehouse in order that a fair uniform average quality may be obtained that will honestly and fairly represent the quality of the grade to which it belongs.

"No interstate grain while in transit by rail shall be allowed to be stored in any elevator, warehouse, or other place of storage where the owner, manager, or any of its agents operating or interested in such elevator deal in grain on their own account, and which is stored in such elevator, without the written permission of the owner of said grain."

Here would follow a penalty clause for violation of any of the provisions or requirements of this act.

This practically brings this warehouse question right before Congress so far as the interstate grain is concerned. So far as grain originates and ends in Illinois you have no jurisdiction whatever. On interstate grain you would have absolute control, and it brings this elevator question right before Congress; and in my judgment there is where it belongs, because if you have power to regulate the rate, and power of prescribing the kind of coupling they shall put on the cars, you have certainly a right to regulate the manner in which the property shall be handled while it is in transportation. It seems to me so.

There is only one thing I want to suggest, and that is in regard to the organization of the Interstate Commerce Commission. You have some good men, but they are all lawyers, I think. I do not want to have you feel that I am finding any fault, but simply as to getting practical results it seems to me that in the organization of all these commissions, the labor commission, if you have one, and the Interstate Commerce Commission, they should be made up of men who are practical. Now, for example, I would have one member of this commission an agriculturist; take a man like Secretary Wilson, of the Agricultural Department—I think he is the right man in the right place; and another man who represents the manufacturers, and another man who represents the commercial and merchandizing interests, and have an attorney, a good man that would be competent to be a good judge and would be competent to be, perhaps, chairman of the commission, and hold them up to the level in the line of the law. Having a good set of men in there, they would settle these questions more quickly than a lot of gentlemen who are versed only in the law.

Q. (By Senator KYLE.) You think they would point out the difficulties at once?—A. Yes; they would. I believe it was President Harrison who said he would not appoint any man who was not competent to occupy a position on the Supreme Bench of the United States Court.

Q. (By Mr. A. L. HARRIS.) Don't they have very intricate law questions to solve?—A. Perhaps they do, but one lawyer is just as good as half a dozen.

Q. Like a doctor, he may want counsel?—A. Well, he can go out and get counsel. If you are sick and the doctor thinks he has a big job on hand he will go out and get counsel. You don't call in two or three doctors. My theory about this whole business is that the Government is nothing but a big corporation. It ought to be run just as a man ought to run his own business. Now, I think if we can start right by getting efficient men in, in the first place, we get the benefit of their life's experience in the lines which they can follow, and I believe that we will get better, quicker, and more satisfactory results on that line.

CHICAGO, ILL., August 10, 1899.

TESTIMONY OF MR. MILTON GEORGE,

Agriculturist, Chicago, Ill.

The subcommission on agriculture met in Chicago, Ill., August 10, 1899, at 2.40 p. m., Mr. A. L. Harris presiding. Mr. Milton George, being first duly sworn, testified as follows on the subject of agriculture:

Q. (By Mr. A. L. HARRIS.) You may state your name, place of residence, and occupation.—A. My name is Milton George; Chicago is my residence. I am interested at the present time in the development of Mexican lands on the cooperative plan. That is the only occupation I have at the present time, except being interested in the boys' home, south of the city, the Glenwood School for Boys. I founded that 10 years ago.

Q. What has been your occupation in life?—A. Agriculture first and agricultural newspaper work later.

Q. What have you to say in reference to the earnings of capital invested in agriculture, compared with any time, say, within 40 years?—A. The cost of production has greatly decreased in proportion to the development of the modern facilities, which have added to the man power so many times. It costs, I suppose, not more than one-quarter as much to produce a bushel of wheat now as it did 40 years ago, when we cut it with a cradle.

Q. Which makes the earnings of capital greater?—A. Yes.

Q. What have you to say in regard to the earnings of capital invested in agriculture compared with the investments in other industries, such as banking and manufacturing?—A. Well, I think they are less. I would say that 3 per cent would be a fair estimate of the earnings of capital devoted to agriculture.

Q. Do you give the farm now the full credit of the living of the farmer?—A. Yes.

Q. You would think that 3 per cent would be a fair estimate?—A. I think so. Of course some earn much more than that naturally, and others earn nothing. The farms are making good progress in diversifying agriculture, and that is adding to their crops. In the Northwest, up to within a very few years, they devoted almost everything to cereals; now they are practicing rotation and the rotation adds to the output of the crops, and altogether I think they are making very favorable progress.

Q. What about the taxation of agricultural property?—A. Having been an assessor in the country years ago, I know some of the methods by which men of money escape taxation, while the farmer, with his visible assets, is subject to the assessor's estimate at all times.

Q. (By Senator KYLE.) Do you think that the farming class in the United States pays much more than its fair share?—A. I have never undertaken to make an estimate of that, but I would say considerably more. For instance, the banker in our town said to me, after the assessment had been made and the taxes collected, that he bought Government bonds previous to the 1st of May, when the assessment should take place, and when the assessor had made his estimate he found it profitable to sell the bonds again and loan out his money at sometimes 10, 15 to 20 per cent on short term paper. So it did not pay to keep Government bonds, if he could sell the bonds again after the assessor had got through.

Q. Have you any suggestions to make of amendments to your State law in regard to taxation?—A. It has been my belief that the only way you can reach capital successfully or reasonably is by an income tax. It is the easiest thing in the world for a man to pay his taxes if he gets the money; but it is not an easy thing to pay taxes if he is not earning anything or is losing money. It has been my experience in this city that property is really confiscated because of being tangible, while people who have had their investments in some other form have been escaping. That has been demonstrated to some extent by our new law in this State, which has changed the policy of assessing.

Q. How do they escape?—A. It is a little difficult to explain all the ways in which they may escape. They escape by not listing. Even under this compulsory law, enacted at the last session of the legislature, they are refusing to schedule. It is difficult to make them schedule their property. A man naturally does not want to lie if he can escape it by saying nothing at all.

Q. What have you to say in regard to the prices of agricultural products?—A. They are fixed by competition with the products of the world, in foreign markets. Of course, there are other likely reasons; there are some in operation in this country which affect prices more or less.

Q. The natural law of supply and demand has something to do with it?—A. Something. It means we depend upon the foreign market for the selling of our products, to some extent, and our surplus is usually large enough to make it necessary for the foreigner to really fix the price of our products in a large measure.

Q. If you raise 600 million bushels of wheat and export 100 million bushels, that 100 million bushels fixes the price substantially?—A. I think so. As I said before, there are other causes, at home perhaps, that should not prevail, which might be remedied by proper legislation.

Q. Are there any advantages in large farms as compared with small farms?—A. No; I think not.

Q. Which has the advantage really?—A. I think the smaller farms have the advantage.

Q. Do they develop the country more rapidly?—A. They have more thorough cultivation. The large farms are usually farmed in a slipshod manner. The smaller holdings are the more successful, I think.

Q. Are the large farms breaking up into the smaller ones, or is there a tendency to get big ones?—A. Going into the hands of men who have money, who buy to hold for a rising price; or if they can rent it out for \$5 or \$6 an acre, and have the taxes paid, they do it.

Q. Is that true in Ohio and Indiana?—A. It is in this State (Illinois). I do not know how it is in Ohio. In Illinois many of the best farms have been purchased by bankers, merchants, and the more successful farmers, as safe investments.

Q. Do you know whether or not, with the succeeding generations, the farms of half a section, a quarter section, or a whole section, are being divided up among

the children of the farmers, and getting to be 80-acre and 100-acre farms?—A. Well, the children have been leaving the farms and going to the cities, so that they have not been dividing up quite so much as in the earlier days. Children are leaving the farms. I think such times as we have now, when money is plentier, if the farmer wants to continue his indebtedness and hold on to his farm, he does so. A few years ago, in the pinching times, he would let go if prices were low and he could not make interest, and the landlord took the farm. That happened usually. Of course, some farmers have been forehanded enough to loan out their money and perhaps add to their farms by picking up their neighbor's, who could not carry longer.

Q. (By Mr. A. L. HARRIS.) Have you at any time been interested in the organization of farmers for their mutual benefit?—A. Yes.

Q. What organization have you been connected with?—A. The Farmers' Alliance.

Q. What were the objects sought in organizing the farmers?—A. For social and intellectual culture in the main, and cooperative effort.

Q. From your observation, what has been the effect of organization among the farmers?—A. Well, I think it has been very good. The granger laws, you know, came out of the organization of the Grange, and I think perhaps the butterine law. I was the first one to take up the question of legislation on the question of butterine. The Farmers' Alliance assisted a great deal in securing legislation on that question.

Q. What is the social condition of the farmer at the present time compared with former years?—A. In one sense perhaps better, and in another I do not know whether they are any better. I think farmers make a mistake in allowing their sons to go to the village to stand around the street corners in search of opportunities. If they could organize they might have them in much better social environment, in a way to advance the intelligence of those in search of opportunities in the agricultural districts. These orders were all on nonpartisan plans in the first place. The constitution and by-laws precluded any idea of partisanship, but farmers did not hold to that. While they might have done so theoretically, practically they became political parties, and in that way the organizations have failed.

Q. In seeking legislation beneficial to the farmer, would you have looked at it in a partisan way?—A. No; intended to be done in a nonpartisan way. Later the declaration of principles of the Farmers' Alliance was used as a platform practically for the Peoples' Party. While they admitted or claimed perhaps that the Alliance was not partisan, unless a man was a good Peoples' Party man he could not be a good Farmers' Alliance man.

Q. What is the condition of the order at the present time?—A. There are 5 different organizations. I suppose there is a fragment of each in existence somewhere. None of them are strong. The grange perhaps stands at the head, on a firm basis. That has steered clear of partisan interference during the last 25 years, and has succeeded pretty well since its first experience.

Q. (By Mr. CONGER.) Can you name those organizations besides the grange and the national alliance?—A. There is the Farmers' Alliance proper. Then there is the Farmers' Alliance and Industrial Union, which is the southern branch of that organization; and the Farmers' Mutual Benefit Association, the Patrons of Industry, and the Patrons of Husbandry, or Grange.

Q. (By Senator KYLE.) Do you think it is possible to organize the farmers thoroughly for commercial end?—A. I do not.

Q. For the real benefit of the farmer as regards the price of his crops and so on?—A. I doubt it. I worked very hard at it for several years, and spent a great deal of money. There are so many interferences that failure seems to be inevitable in the end.

Q. You have been called upon to organize in order to get your rights, the same as commercial bodies?—A. Yes, but it is difficult on account of interferences. The leaders become ambitious and want offices, or some outside influence gets in to use the Grange or the Alliance for their own benefit, and they often get enough in that way to wreck the enterprise. That has been my observation all the way through.

Q. (By Mr. A. L. HARRIS.) Is it possible to cooperate and make it useful?—A. Yes, to some extent. I believe in cooperation. The farmers are not always true to their own interests. They organize a Grange store, for instance, and run it a while, until some merchant who has more experience in the business and more money will cut prices for the purpose of eliminating a competitor, and succeed, because farmers break away from their own store and buy where they can buy cheapest; they do it often.

Q. What have you to say of diversification of agricultural industry, and its advantage to the farmer?—A. Well, clover is the great thing on any soil where it will

grow. It does not grow in the Southern States; but for the Northern States there is nothing equal to clover. Clover has many qualities—the quality of thick foliage, which makes a shade for the soil, and prevents the decomposition of the soil. You know the soil is organic and it only decays fast enough to give up its organic property sufficiently rapid for the growing vegetation. It should not decay more rapidly than that. If you expose your soil constantly it will give up more than the plants can use. That is, this decomposition is going on in the soil, as you know, and your soil is becoming inorganic instead of organic, the organic form being necessary to a productive soil. That is one of the reasons why the Southern States are sterile. The humidity and the continual warmth decompose the soil, and the cultivation they give their land down there—cotton and corn, which only cover the land a part of the year; the remainder of the year the soil is bare and uncovered, so that the organic part of the soil is constantly being eliminated in that way by exposure. Clover is a great thing to preserve the fertility of the soil and adds to it by the nitrogen which it takes from the atmosphere and deposits in the soil. It is one of the most useful plants we have, and it makes a splendid ration for domestic animals, being highly nitrogenous. The swine plague is prevailing just for the reason that the corn is starchy. The corn is fed to swine and they lose their vital energies for lack of the nitrogen and phosphate which are necessary to add to the muscle and bone development. So that when you rotate your crops and include clover, blue grass, or timothy, whatever it may be, you are increasing the fertility of the soil.

Q. Are fertilizers used in Illinois?—A. I think the soil of Illinois, where it has been properly managed, is more fertile now than the virgin soil at the first breaking of the prairie was.

Q. (By Senator KYLE.) It seems to me the corn is taller in this State than it used to be 25 years ago.—A. And the stalks are larger around.

Q. (By Mr. A. L. HARRIS.) You think really the soil is getting better?—A. I think so.

Q. That promises well for the future?—A. Yes; for the perpetual productiveness of the soil of this western country.

Q. Has improved machinery, as well as improved methods, had anything to do with the present production of the soil?—A. Yes. It has made possible this thorough cultivation of the soil, and it has increased the yield, of course; but in the growing of animals the amount of machinery necessary to run the farm is lessened because the use of harvesters is reduced; you only need your mowers and your rakes and so on, and carriers for hay.

Q. And the improved machinery has lessened the cost of production?—A. Yes; quite largely.

Q. What have you to say in regard to the increase or decrease of transportation rates from the producer to the consumer?—A. The rates have naturally fallen as the equipment of the railroads have been added to. Like all other enterprises, it has made its progress; the grades have been lessened. A few years ago the Illinois Central was reducing its grade wonderfully so as to add to the length of its trains. And the steel rails have added a great deal to the duration, and to the ease of drawing the train—less vibration—and the trucks, air brakes, and so on have been improved.

Q. This goes to the benefit of the producer?—A. Well, to some extent producers get the benefits.

Q. (By Senator KYLE.) Can you give any information about the comparative price of transporting grain 25 years ago and at the present time?—A. Not positively, because I have never studied the figures.

Q. You say they have fallen?—A. They have fallen materially; I know that; though I think in this State, for 15 or 20 years, our commissioners did not interfere with the rate the railroads were charging after the maximum charges were fixed by our commerce commission when the law was first put in force.

Q. You think the railroads kept, perhaps, enough below that to not require that the commission should make rates less than 8 cents a mile for passengers or less than the freight rates allowed by the commission?—A. Yes.

Q. How about the prices of commodities between these two periods?—A. They have fallen somewhat, I suppose, too, on an average, but have varied greatly.

Q. Twenty-five years ago and now?—A. I remember the time that you could not sell corn for 10 cents a bushel in this State; you could not find a market, even at 10 cents, in exchange for merchandise.

Q. Was that in 1870?—A. No, it was in 1840-1844.

Q. (By Mr. A. L. HARRIS.) Before you had transportation—lines of railroad?—A. We had rivers. I lived in Fulton County, this State. We could not sell pork at any price. My father packed his pork and sold it out later.

Q. That is some of the experience you can remember with regard to the hardships of farming?—A. Yes. So that when you discuss this question of reduced prices and so on, as a whole, you must go away back and find a great many things.

Q. (By Senator KYLE.) Are the conditions good, as compared with 40 years ago?—A. Vastly improved.

Q. Farmers live in more comfort in their homes?—A. Yes.

Q. Better education and social privileges—all of these things?—A. Yes; much better.

Q. Since the time of the beginning of the war, for instance?—A. Yes. I remember seeing a man on the way from Peoria. I think corn was about 12½ cents a bushel, and he was hauling it down there to get gold to pay his taxes. You could not pay your taxes in anything but gold then. He got 15 cents a bushel in the city of Peoria when he arrived. The present times are quite an improvement on the good old times, but conditions might be better still, no doubt, for the average man.

Q. Did young men leave the farms in those days as frequently as they do now?—A. No.

Q. To what do you attribute the reason for that?—A. The monotony of the farm and the drudgery as compared with the attractions of city life. Until the farmer's son is educated in his pursuit as other classes are educated for their callings, he can have no real interest in the farm; it is drudgery to him. Intelligent labor is divine, but ignorant labor is drudgery. I think that is one of the reasons why farmers' sons leave the farm. Our agricultural colleges are not receiving but one in a hundred of the students that are coming there for the purpose of educating them in the conduct of a farm.

Q. I remember distinctly, in entering the University of Illinois in 1871, that it was an industrial university then.—A. Yes; they dropped the industrial. As that was the only part of the name that represented labor I opposed the change.

Q. Were a large number of the students matriculated into the agricultural department?—A. No; but I felt that it was essential that there should be more of them to carry out the purposes of agricultural colleges, and to encourage the youth in that direction. I founded an institution near Chicago for the purpose of educating boys in agriculture, a pursuit which includes all the sciences known to man, perhaps.

Q. Have you any further information to give in the way of transportation rates?—A. I have in reference to the commerce laws, and that is to so amend them as to allow railroad corporations to pool their earnings. Now, perhaps you would say that would be objectionable. Competition, you know, is wasteful and leads to discrimination among shippers. So long as railroads are subservient to the laws of the country and the people who grant the privileges which permit them to operate, whatever benefit can be given to the railroads can be taken advantage of by the people in return. If there is any advantage to the railroads in pooling their earnings, I say let them pool their earnings, subject, of course, to more stringent provisions than we now have in our interstate-commerce laws, so as to be able to give the benefit of whatever they may derive from pooling to the people, the patrons of the roads. Of course, there is a certain sentiment prevailing against railroads pooling their earnings.

Q. Isn't that quite a prevalent sentiment amongst the farming class?—A. Yes, it is; but I have been of opinion for a long time that it would be a benefit to the farmers and all classes of shippers to allow the railroads to pool their earnings under the strict surveillance of the Government.

Q. Under the present system, which are the favored classes of shippers?—A. The large shippers. The class that is already independent enough is favored; and the class which needs the favors is discriminated against.

Q. Do you think that if the jobbing class is favored now, some other class must be discriminated against in order to get even, to equalize the matter?—A. Yes.

Q. And that those who are discriminated against are the farmers and the small shippers?—A. Yes.

Q. Do you think it is ultimately against the interests of the farmers?—A. Yes.

Q. What restriction do you say should be placed on it?—A. I suppose the spirit and letter of the commerce laws require that the rates shall be reasonable and without favoritism, without discrimination; that really comprehends the whole thing. But under the present laws rates are not always reasonable, nor is there lack of discrimination. I can see how the farmers are handicapped in the country. For instance, in order to send their own grain to market, to save the middleman's tolls, they come in contact with the grain buyers and their associations. Grain dealers have State associations and their national association, and the individual grain buyers have their elevators. Naturally the railway companies cater to the

elevator men and the grain buyers, because it is less trouble to them. Suppose a farmer has 2 or 3 carloads of grain to ship? He applies for cars. Some grain buyer has grain to ship and he applies for 10 cars. The railroad company must see that the grain buyer has 10 cars where the farmer gets but 1. He may have to wait a month or two months for that grain buyer to have his 10 cars before he can have his 1 car, and he will become discouraged and sell out for whatever he can get. That is what the grain buyers want him to do; and so he is prohibited from having the best market for his product on account of that condition.

Q. (By Mr. A. L. HARRIS.) The big shippers?—A. Yes, the big shippers.

Q. (By Senator KYLE.) Do you say they do work together in this city?—A. Yes, I am quite confident of that. I have had some opportunity for observation lately on that point.

Q. What do you know, if anything, about combinations to control the price of farm products, not among farmers, but among those who buy; combinations which sometimes fix the prices arbitrarily?—A. Well, that is done, but to what extent I can not say. Of course, these corners are sometimes run apparently in the interest of the farmers. I think the Leiter deal was. That is the only corner I ever did see that helped the farmer. I think that helped the farmers and the entire country.

Q. Especially the farmer that had not sold his wheat?—A. In general I think it helped the entire country, because I think it gave them an opportunity to sell abroad wheat at 40 to 50 cents higher than what they otherwise would.

Q. You have had no experience then as to local combinations that buy grain direct from the farmer, controlling the prices?—A. There are combinations of that kind. Through these organizations, State and national grain-buying associations, and the railroad companies discriminating in favor of the larger shipper, they do in a measure control the prices of grain.

Q. Suppose the farmer is able to get the cars and consigns his wheat to a commission man, is he under any disadvantage?—A. Sometimes, in getting the grain buyer to weigh it for him, or the weight turns out unsatisfactorily. He may interfere in getting cars. If he finds the farmer wants to ship, he will order a few more cars than he wants to use, which is more than the railroad company is willing to furnish at that point, and in that way the farmer gets discouraged and tired, and needing money he will sell out for what he can obtain. A great many cases of that kind have come to my notice in the last year.

Q. Have you anything to say in regard to the effect of what is known as grain gambling, puts and calls, and so on?—A. I have watched that sort of trading a great deal. I think it is just as possible for a combination of large capitalists to bear the market as it is to bull the market, and I think perhaps easier to go on the bear side—that is, to sell whenever there is any tendency for markets to advance. I think prices are really kept down during years of comparative plenty. When there is a good deal in sight, it is a very easy matter to depress prices below what they should be, I am sure.

Q. (By Senator KYLE.) Do you think there is a disposition amongst the wealthy elevator men to depress prices from September to January each year?—A. Naturally so. I have not positive knowledge of that, but I think it is.

Q. Is it true that about 75 per cent of the farmers of the Northwest are compelled to turn off their grain during those months?—A. Yes; that is so. It is very easy to take advantage at such time, as lake navigation is closed.

Q. In your judgment, is it often done?—A. I think it is. A great many of those fellows go out and buy farm produce to carry in cribs, as well as to fill up their city elevators. Here is a question which our friend, Mr. Greeley, has been fighting—the question of an elevator man owning public elevators and dealing in the products of the farm at the same time. He is not only the custodian of the grain, but also dealing in a speculative way to advance or depress the markets.

Q. (By Mr. A. L. HARRIS.) Have you given any study to the subject of what are commonly known as trusts, the larger corporations now?—A. Yes. I think there are two sides to the trust question. Of course, to carry on great enterprises the organization of capital is necessary. Persons may call them trusts, but whatever you may call them I consider them to be a menace; they are a dangerous thing, unguarded against. I can see that one form of trust may not have a monopoly of a thing. Take the ice trust, for instance. There is no limit on nature's capacity for producing ice; so that is a little different from franchises which grant the rights to street railways, where all combine to put up the price of transportation. I can see how an ice trust may prove a great economy. Of course, there is another side still, because it throws men out of employment; but you can hardly say that it is not right to do so, if you can thus economize and deliver ice to poor customers for 25 cents a hundred instead of 40 or 50.

Q. (By Senator KYLE.) Have trusts always originated by capital? Are there not trusts among the labor organizations?—A. I think a labor organization is one of the most tyrannical trusts in existence.

Q. How about the plumbers' trust and the hod-carriers' trust and such as that?—A. I believe in organization thoroughly, and cooperation, but I believe these labor unions are the most tyrannical and dangerous institutions we have to deal with in this country. We must settle the question whether a man shall have a right to work and earn his living if he wants to without joining a labor organization. I understood that one contractor was limited by telling him how much stuff he should order and how he should sell his wares. And now go to him and want to name the hours of labor and the wages, and leave him only the privilege of paying his men.

Q. (By Mr. A. L. HARRIS.) Are you conversant with the provisions of the interstate-commerce law and its workings?—A. I am not very familiar with it; I have not studied it enough.

Q. What have you to say in regard to its extent, and whether any amendments are necessary?—A. I think the law needs amendment; it seems to be inoperative in a good many ways that it might be improved on. Of course, it was a compromise measure. I visited Congress previous to Mr. Cullom's election to the Senate, and carried down a large number of signatures in behalf of the petition. I found there were 3 or 4 bills in Congress, 1 by Mr. Reagan, 1 by Mr. Henderson, and 1 by Mr. Weaver, and I saw the difficulty of getting legislation on the subject of the regulation of railroads. Each one had his hobby and was unwilling to surrender anything in favor of any other measure, whatever it might be; and it required a compromise. So I went to see Governor Cullom, who was later elected to the Senate. I had no thought of his being elected to the Senate then, but I wanted his assistance in behalf of the enforcement of some State laws here, and some amendments that were necessary, and he promised to do what he could to not only enforce the law as far as he was concerned, but to see that there were men whom we could trust on the commission. And so he was elected to the Senate, and went down there and got the Cullom bill through, which was a compromise measure, and therefore not such a measure as we would like to have. We have not made much progress with it. It is admitted that the bill is not what it should be. Some say it is worse than nothing. A good many people have lost confidence, and say it is worse than no measure at all, but I do not think so. I think it is a step in the right direction; it only needs amending to make it effective. I am inclined to believe that if the railroads are allowed to pool and to then put on a pressure proportionally to regulate them properly, we have accomplished about all it is possible to accomplish in that direction.

Q. Would you give the Interstate Commerce Commission more power?—A. More power, yes.

Q. And in that way you think the law could be made effective?—A. I think so. Q. As I understand, you have not a pure-food law in Illinois that covers the entire ground?—A. No, we have not. We have a butterine law.

Q. I want to get your opinion on that subject as far as you have gone.—A. I think our pure-food laws are not what they should be. Even the butterine law is not what it should be. The packages are not marked on the table of the man who consumes them. The boarding house does not mark it, nor the hotel man. He puts it on his table and people eat it. They do not know what it is. So the law falls short in that. While it compels the large package to be marked, it is not marked when it is on the table, or the bill of fare. It is an injustice to the consumer. I believe in the protection of the consumer as well as the producer of farm products.

Q. (By Senator KYLE.) What do you think of the advisability of a national pure-food law?—A. I think it is a very good idea, and should be favorably considered by Congress.

Q. (By Mr. A. L. HARRIS.) Are you acquainted with the provisions of what is known as the Brosius bill?—A. I read it, but I have forgotten its terms.

Q. Putting the matter in charge of the Department of Agriculture?—A. Well, I would want to think of that. I would want to know what effect it would have.

Q. Have you anything to say in regard to the operation of the present laws of the different States to prevent the spread of disease among domestic animals?—A. I know something of the laws. I am not perfectly familiar with them. I think some of the laws in some of the States are rather arbitrary. The theories of the veterinary surgeons are dangerous, and I think the lawmakers ought to go very slowly in condemning the animals of farmers on the theory of some veterinary surgeon that they have some disease that may be tested by something of their own preparation, and on the strength of that destroy animals without due compensation to the owner thereof.

Q. Is there any uniform law on the subject of the spread of disease among domestic animals?—A. I do not know of any national law, and I do not think there is any uniform law. One State may have a very severe law, and another may have no law at all. They ought to have laws to regulate those subjects. When contagious diseases get into this country, they are not as dangerous as they are in the older countries. Where stock and cattle run out and have free access to the pure atmosphere of the country there is not so much danger in contagious diseases. Pleuro-pneumonia, for instance, is generally confined to animals kept in stables.

Q. Did you mean, when you said the earnings of capital in agriculture were 3 per cent, 3 per cent net or 3 per cent gross?—A. Three per cent net.

CHICAGO, ILL., August 10, 1899.

TESTIMONY OF MR. SAMUEL H. GREELEY,

Commission merchant, Chicago, Ill.

At a meeting of the subcommission on agriculture, in Chicago, Ill., August 10, 1899, convened at 2.40 p. m., Mr. A. L. Harris presiding, Mr. Samuel H. Greeley, being duly sworn, was examined touching agricultural matters, the topical plan of inquiry on agriculture being followed:

Q. (By Senator KYLE.) You may state your full name, residence, and occupation.—A. Samuel H. Greeley; residence, Chicago; commission merchant.

Q. How long have you been engaged in that business in Chicago?—A. Seventeen years.

Q. What has been the nature of your occupation during that time; have you been an independent buyer and shipper?—A. No; I am a commission merchant.

Q. Not in connection with the elevator companies in the city?—A. No.

Q. Are you a member of any elevator association?—A. No.

Q. We would like to hear from you in regard to the agricultural interests of the West, particularly what you know of Chicago as a grain center, the growth of Chicago as a grain center, and the effect of the elevator system here on the agriculture of the Northwest. You will begin and tell all you know about it in your own way.—A. Well, gentlemen, you naturally know that in making this statement to you it will be necessary for me to give my opinion in reference to certain things as I view them myself. Whatever that opinion may be worth, coupled with what facts I will state, is for you to judge. But I will say that we have reached a time in the history of the commercial interests of this city in reference to grain where the natural supply and demand, and those conditions which would naturally affect the market, no longer control prices. Values are controlled by an artificial organization, which includes four distinct systems. Of first importance we may mention the railroads; secondly, the public warehouse; thirdly, speculation; fourthly, bucket shops; and I might add a fifth, which is the ownership of private cars by individual firms operating through railroad companies.

In order to properly present this before you, I will first take up the feature of the warehousemen, and endeavor to state as nearly as possible when they were created and for what purpose. About the time the interstate-commerce law was enacted there was a system of rebates, in my opinion, extended by railroad companies to individual shippers, to bring grain to this market in order to meet competition to various other market points in the country; but the interstate-commerce law operated in such a way, in their opinion, that it became necessary, in order to protect the hauls on their systems, to put the rebate in the hands of favored individuals whom they could trust. In searching around for those individuals, they found that the party to whom they could give the lowest rebate and still bring the grain was the most desirable man to receive it. Therefore, they chose the public warehouseman, gave him an elevator on their right of way and favored him with facilities to draw that grain here; and in my opinion he received all the advantages that were given at about the time that law was passed, and receives them to-day.

Q. What date was that?—A. That was about 1887. The grain emanating from Nebraska and Kansas might be competed for in several directions; but rather than let that grain get away, for instance, at Omaha on an 8-cent rate, they gave a cut rate to a party who could give them the benefit of the long haul on their system to bring it to Chicago, preferring to give a cut rate on the entire system and thus net

them perhaps 20 cents a hundred, rather than let it get away at Omaha and get into the possession of another road and only net them 8 cents a hundred. The public warehouseman was appointed a secret rate getter, he was appointed the secret facility man, inasmuch as these public carriers gave to the elevators facilities on their roads to compete with the public in drawing grain from the West. The advantages of a man having possession of a public warehouse were that, in competition with the public, he would pay no storage whatever on grain. In other words, of the three-fourths of a cent charged to the public for the first ten days' storage, the public warehouseman, being the proprietor, would pay nothing. If he paid storage, he paid it to himself, which was equivalent to no storage. Now, if the railroad were to give a rebate to any man, it was only necessary to give this three-quarters of a cent to the public warehouseman because he got that advantage in storage. There is one place where the public warehouseman necessitated a less rebate than any other man that could possibly handle that grain. In other words, possession of the elevator acted really as a rebate in the freight. In addition to being able to carry grain in the public warehouse without paying the storage charge, the public warehouseman was able to select the best of a certain grade and keep it for himself as a merchandiser, and he could give the public the poorer of the grade and thus keep the public at a disadvantage at all times in the merchandizing of grain through the public warehouse. Those two points are of very great importance when we stop to consider that last year this city handled 300,000,000 bushels and over, making nearly 300,000 carloads of grain, and a large proportion of it passed through the public warehouses. This system of putting transfer facilities into the hands of a private individual in competition with the public gradually assumed such proportions that the shipping interests from Chicago to the East on the part of the public are what you might term absolutely dead. And that is the condition to-day. It also reflected upon the receiving interest from the West, because the advantages that the public warehouseman received from being able to store grain without charge and to mix grain and receive large benefits therefrom enabled him to give away a portion of those advantages in competing against the public. This condition has gradually increased to such importance and such proportions that to-day we find practically one set of buyers on the Chicago market and one set of sellers to Eastern markets and for export, those men being the men having these facilities from railroad companies or engaged in a business in a general sense similar. So that we find ourselves competing with one buyer on the Rock Island, perhaps one, two, or three, not over that number, a very few, on the Northwestern, one on the "Q," one on the St. Paul, the railroad officials granting these privileges to each particular warehouseman, giving him in many instances facilities, as I have referred to, for doing business in competition with the public. That is leading up to a state of affairs where the producer in the country is going to receive one price for his grain from one man, and which is going to kill general competition. It is leading also, and very rapidly, to the time when the buyer in the eastern and the Chicago market is going to get one price from one man. When I say one man, I refer to that combination. Each individual railroad has a man having these facilities, and this practically amounts to one set of men operating on similar lines on different railroad systems. This not only kills the competitor for the grain in the West but kills the number of men who have grain to offer from this market for the East, and it carries with it a very important effect on the values of grain. Fortunately or otherwise, the grain of the country is a speculative commodity. It is subject to sales for future delivery and purchases in the same manner, which have finally distorted themselves into a condition of affairs possibly favorable and possibly unfavorable to the producing community; but to explain how that speculation affects the values of grain, I want to state that the public warehouseman carries grain in his warehouse to accumulate storage charges. His object is to put it in there, to get possession of it himself, sell it ahead for future delivery, and the difference between what he pays for it and what he can get for future delivery, less incidental expenses, is his storage charge. They are willing to sell that grain for future delivery at a lower price than any other man connected with the general public could himself carry it and pay the regular advertised rates of storage. In that way he succeeds in retaining possession of the property. Then in retaining possession of the property, he continues to sell it from month to month for future delivery, and by the speculative public taking that grain of him at the price at which he is willing to make the future sale, the warehouseman simply waits until the time comes for the buyer to sell that property out. He is standing ready to take it of him and sell it ahead for another deferred delivery and thus accumulate another storage charge. This has produced what you may term an endless chain of forced liquidations on the part of buyers in this market. Not only do they, the warehousemen, carry this grain for storage, but they so manipu-

late the grades of the grain in store by reducing the quality to what is termed the line grade, or just such a poor grade or good grade as will just pass inspection, reduce it to such a low level that the man who buys it for future delivery does not want it as a merchantable commodity, and he sells it back to the warehousemen, thus continuing its life in storage and tax on the public. Now Chicago has probably in public and private warehouses over 60,000,000 of bushels of capacity; and I believe that I am not far from the truth when I say that the larger proportion of this capacity is operated on this same basis of making storage charges out of the speculative public.

Q. Accumulate, as it were, so much funds in bank upon which to draw interest?—A. That is it, exactly. Then when this forced liquidation takes place, as I said, these men are ready to stand by and take it and sell it ahead again for future delivery. These storage charges which these public warehousemen make are not the only storage charges that are made from the speculative public which buys the grain, but an indefinite amount of grain in the country in store is also sold in this manner; and the result has been that in 15 years the storage charges, amounting, I should say, on an average of at least 6 cents per bushel per year on the enormous quantities of grain which have been sold in this market from month to month for future delivery, have so worn out the speculative public until it no longer exists except in a moderate way. Therefore it puts the control of the market into the hands of the men that hoard these vast volumes of grain. It will be noticed that being carriers for storage, one prominent point always arises before them, and that is, the lower they can get the prices of the product, the more money they make, because the less insurance and interest to carry the stuff. It is more to a man's profit to carry wheat and sell it ahead from year to year to the speculative public at 50 cents a bushel than it is to sell at \$1 and pay interest and insurance on dollar goods while carrying, until the buyer gives up.

Q. Storage charges are always the same?—A. Storage charges never disturb the prices. The speculation on the board where the markets of this country are made is getting to a very low ebb. The general speculative public have caught on to the game, and they are getting out of it. Now, then, they have got just about enough trade left to properly hedge what they carry—in other words, to sell against what they carry. They can not succeed in getting an overplus of buying and speculation to come in and maintain prices. So that we have arrived at a condition where there is not buying enough—enough trade in the speculative grain markets, over and above the amount of cash property for sale, to carry the market against the current which they produce. In my opinion these public warehousemen and some private warehousemen, as carriers of grain, store up these hoards on this market for the purpose of not only hedging their grain, but otherwise freezing out the man who buys the stuff. Not content with getting a commission of the man who buys, they go after all the money he puts up to secure the deal, and freeze him out, because, when delivery day comes, these buyers see these vast floods of grain right here for immediate delivery all carried without paying a cent of storage by the man who is given facilities by the railroad company. If the public warehouseman were not a great dealer, this grain would never be carried in Chicago and pay these large amounts of storage, and act as such a club to batter values.

Q. Then what would be the condition?—A. Then, when grain got so low that it looked like a purchase, and the grain was not in hand, but in the invisible supply in the hands of the farmers, speculation would come in here and not have starting it in the face the enormous quantities of grain hoarded up in storage. In my opinion this condition led up to the panic of 1893. It was one of the important conditions that led up to such a reduction of the values of grain that people became ready to repudiate their debts. That is one circumstance connected with the market in this city; but we must not overlook the fact that these facilities are given to public warehousemen by railroad companies to protect the railroad companies, in my opinion, from grain being attracted from what they consider their legitimate territory to other territory. I believe, as the elevator men have often said in their discussions of this subject, that the system of through billing that has been established and all these matters have combined to make it necessary, looked at from their standpoint, to protect their railroads; but at the same time they are so endeavoring to protect their railroads they have produced the condition to which I have referred. In my opinion it is almost impossible to properly conduct the grain business on the railroads in this far western country without special rates to give the railroads what is their proper haul. But there is a question in my mind as to what they consider a fair proportion of the business. It seems to me that if the Gulf or the Northwest or any other geographical condition should arise that makes it possible for a Gulf shipment to take a

lower rate than a shipment via Chicago to the seaboard, it would simply be the misfortune of the railroads that run through Chicago.

Q. In regard to this class of elevator men getting rebates from the railroads, is that a surmise on your part or do you speak from your actual knowledge of the matter?—A. The elevator men get rebates from my actual knowledge in this way, that the railroad company gives the facility to a warehouseman, which puts him in possession of a warehouse where the warehouseman pays no storage. It is a portion of the railway facilities. They have no more right to give a public warehouseman a place to store grain there and charge me for it than they have to give a man a place in the freight house to store a piano and charge me \$25.

Q. They give such facilities, do they?—A. They do; yes. Neither have they the right to give a man such a place as will permit him to mix his grain with mine or keep mine and his separate and compel me to take any sample they are a mind to give any more than they have to take a freight house and have 1 stove belonging to me and 1 to some other man and 10 to some others and mix up the stoves and give me any stove that the man in charge of the freight house may see fit. I desire to have my own personal property preserved as far as possible.

Q. What was the function of the public warehouse as to those products as originally intended?—A. It was originally created for the purpose of handling the grain of the public by mixing in all samples of the same grade as they happened to come in, in the same bin, thus in reality insuring an average quality of that particular grade to those desiring to take such grain from storage.

Q. So that, under those circumstances, you would not get your own grain specifically?—A. Not specifically; but I would get a fair average. I will admit my illustration of the stoves was somewhat stretched, comparatively.

Now, if you will permit me, I will refer to a condition affairs which has not been very thoroughly discussed, but which to my mind is a very important factor to the grain producers of this country, and that is the existence of bucket shops, in this way: The bucket shop is a place where people can go for the supposed purpose of buying and selling grain, and which in reality is a place in which a bet is made with the proprietor as to whether the price shall go up or down, the winner to take the profit and the loser to pay the loss.

Q. A good deal like bookmaking on a horse race?—A. Somewhat. It is distinctively a brace game, inasmuch as the man who is the customer puts up his money with the man with whom he makes the bet. To that extent it is a brace; at least, one party to the bet has the money. The larger per cent of dealers in bucket shops are supposed buyers of grain. I want to call particular attention to that, for the reason that when a man supposedly buys grain in a bucket shop, there places his order, it does not enter the general market and have its influence on the prices where the values are made. I should judge that from 75 to 90 per cent of the outside trade that goes into the bucket shops is purchased business on the part of the customers. I believe bucket shops are successful as profit-making institutions, and I believe that their success as profit-making institutions is and can be nothing else than the depression of the price. Now what makes it possible for the price to be depressed? That reverts right back to the privilege granted by the railroad company to a public warehouseman to store large quantities of grain on the Chicago market. That condition operates in the bucket shop to the detriment of the purchaser there, as it operates on the board of trade to the detriment of the purchaser there also. Therefore, indirectly I claim that railroad companies are largely responsible for the success and existence of bucket shops, owing to the fact that such large quantities of grain are bought in bucket shops in this country, and the market therefore so seriously affected; that railroad companies are one of the most potent factors in the consideration of the welfare of the producers of this country. Now, what would happen if the bucket-shop proprietor took as many chances as the man who bought the stuff? In other words, suppose this large quantity of grain did not exist. The short seller or the bucket-shop proprietor would find himself subject more to the natural conditions that make a market, and you would see more frequent rallies because these volumes of grain would not exist here, and it would force bucket shops out of business, the short side being unsatisfactory. Not only do bucket shops assist in killing buying speculation with the assistance of these conditions, but there is born out of this public warehouse system another very serious menace to the wealth producers, and that is the professional bear speculator. He is encouraged on the same lines held up, as I have represented, in favor of a bucket-shop proprietor. It operates very much in favor of the short seller, the large volumes of grain, the storage charge fixed as a tax on the man who buys grain for future delivery, forcing the man who buys it to pay a constant premium for the property, and all these hoards together, with the mixing of the grain to such a low ebb that the speculative public does not want to take it when

the delivery day comes, make a bad condition in this market, notwithstanding a condition of general business prosperity that should naturally put the price of grain from 10 to 20 cents a bushel higher.

Now, I have taken up railroads, public warehouses, and bucket-shop speculation. I invite you men to take a trip to the Board of Trade and examine for yourselves upon which side of the market the preponderance of speculation exists; and I believe you will find that it is the professional raider and warehouseman against the outside buyers; generally men who come in and want to buy and make up what we term our bull trade; but they are continually up against it, for, as I say, if this quantity of grain did not exist, these men would not dare to sell these millions and millions of bushels short in those pits, because they would never know where they would get it; but being here, the weight is so heavy that the man who buys it is forced to run.

I want to call the attention of this committee to another condition that exists in the trade, and that is the ownership of private cars, with which, no doubt, you are all familiar. I believe there is one man in the city of Chicago that owns between ten and twenty thousand private cars, and who can lose money in the merchandising of his property and still get enormous profits from the railroad companies on account of this special facility granted him. If \$15 is paid a man for the use of a private car on a railroad system for a round trip to New York—a freight car that he owns—as against the general public, which receives nothing for such a haul, the public is out of business in anything that that man attempts to deal in. If there is any recommendation to be made on any condition that exists in this city or throughout this country, I know of no other more important than this growing custom of the ownership of private cars by private individuals and corporations. A public warehouseman has no more right to deal in grain in competition with the public—and pay no storage on his grain, and have the privilege to mix his grain—than the collector of the port of New York has to engage in the tea or coffee or silk business in competition with Marshall Field and Sprague, Warner & Co. How long would the people of this country stand it if he should pay no import duty or should pay below full tariff rates? But an exactly similar condition exists right here in the handling of these cars. I would like to know how long the commercial interests of this country are going to stand it for a railroad manager to be able to dictate what rate of freight I shall pay or what rate of freight my competitor shall pay, and be able to make or unmake almost any business man or almost any community. That is the condition in the grain trade to-day.

Q. Do you regard a stable rate as the essential thing, whatever it may be?—A. Whatever it may be, it must be a stable rate, as stable as it is possible to secure.

Q. And the same to everybody?—A. The same to everybody, but that will never come until the Government owns the railroads. If the railroad companies of this country were permitted to pool, as they desire, by any legislation, how would that prevent cut rates? How would it prevent any man from receiving special facilities in the way of warehouses? There would be no protection. As long as it is possible for a railroad official to divide a rate with the man to whom he gives these facilities, which in my opinion exists, I do not believe it is ever possible to have general competition for any commodity in which those men divide the rate. I believe that has existed in this city between public warehousemen and railroad officials, and I believe it exists to-day, but I can not prove it. I could not tell you how it is paid; I believe it is done. I do not know how it is done, but I have an indefinite amount of evidence that leads me to believe that these men are very close together.

Q. Would one evidence be the fact that a great many enterprising buyers on the outside have been driven to the wall?—A. Oh, they permit it and are willing to permit it, and the more they drive out competition the better the railroads seem to like it; and the public is treated with the utmost indifference in regard to getting redress. The railroad men recognize the warehousemen, and the general public cuts no figure. I have served on committees and I know all about it. This condition has taught the eastern roads a lesson. I have been referring now to the roads entering Chicago from the West; but we have already noticed in our trade that the eastern roads have placed their transfer houses, some of them, in the possession of a grain dealer. Now, for instance, I get a car in here on the North-western road and I want to ship it to New York. I order it to the Lake Shore and Michigan Southern Railway Company for transfer to the eastern car, to go east in the regular way. It is transferred through the Lake Shore transfer house. But instead of the Lake Shore road operating that transfer house for the interests of the public, they place a grain dealer in there who transfers my grain; and they have clipping facilities in there; and if I desire to have my oats clipped my competitor clips my oats; he turns out my product for me, and to the best

of my belief he knows the destination of every car that goes out of that clipping house, or can if he wishes. What show have I to do business in the East? That exists on the Lake Shore; it exists on the Wabash; it exists in the Pennsylvania transfer house. What is this market coming to for competition and open trade? We are narrowing right down to the man that is right next to the man that runs the road. He gets the rate and does the business. Speculation is becoming dead; prices are suffering in consequence; and when I say suffering in consequence, you can see the condition here. Grain for December delivery now down in the twenties, in the neighborhood of 28 cents a bushel, and not a kernel of it out of the ground; and they had September oats selling in Chicago at 19½ cents a bushel before the crop was hardly planted. Almost absolute safety is guaranteed the short seller in pulling out these sales by the conditions that have been made possible under these existing circumstances. When you stop to consider that we raise in this country in the neighborhood of 3,500,000,000 bushels of grain annually, worth even at these low standards of value between \$1,000,000,000 and \$2,000,000,000, and that it is possible for a system to be inaugurated that will put half a dozen men into such power that indirectly they can make the prices, and the lower they make the prices the greater their profits, it is time legislation took place somewhere. I challenge any member of this committee to obtain a state of facts that will truthfully deny what I have stated. I do not think you can do it. I believe you can summon witnesses and procure evidence and get a basis for a report that will serve as the greatest argument before the people to-day as to why the railroads should be under Government ownership.

Q. Your idea is that they should come under the ownership of the Government. Is there no way short of that?—A. Thus far we have taken up the conditions; but I myself feel far from capable of even making suggestions in regard to the remedy, that is, any immediate remedy. This question has been too largely discussed in regard to not only grain but to merchandise, and the conclusion we all reach is about the same; but as to the remedy, I do not see how it is possible to ever have a remedy until the people are educated to a sense of duty, and to the recognition of the existence of a system of civil service that shall be perpetually known to be a success, and then grapple these questions; until we feel that we can intrust these things into the hands of men who are perfectly competent; and it seems to me that time will only come when we have tried a system of civil service and know it to be a success. But the idea of attempting any of these gigantic undertakings, when we absolutely refuse to adopt the system of civil service, seems to be absolute folly and incongruity. That seems to be quite a different thing.

Q. Would any national legislation, amendments to the interstate-commerce law, suggest themselves to you?—A. I listened to Chairman Knapp the other night at the Auditorium, where he favored railroad pooling, and I have also listened to very able men, notably Secretary Stone, of the board of trade, a student opposed to that idea; but I do not seem to believe that they can ever rectify this matter by any system of pooling as long as one man has the power to make a rate to an individual. I do not believe we can ever rectify it as long as that exists, because I believe human nature will be tempted, and see so many good things in the granting of special rates that they will be after the money. But I believe, under Government control, properly administered, with a high moral spirit of the people intending to see that it is properly administered—until that spirit is awakened I do not believe we will see any good result.

Q. Did any good result from the decision of the Supreme Court declaring this amendment to the law of 1871 unconstitutional?—A. I do not believe that cuts any figure. The condition still exists where a man can name the rate.

Q. The public warehouse will be a thing of the past, then?—A. I think so. I think we will see the time before a great while when every man can put his grain through the public warehouse at the same cost. This temptation put into the hands of men conducting public warehouses has led up to some of the most gigantic, I might term, robberies known in commercial life; and I would be delighted, if it would do any good, to furnish this committee with a little information on that subject at some future time when they are at leisure.

Q. (By Mr. CONGER.) Who was robbed?—A. The public.

Q. And was the public in this case the consumer or producer, or somebody else?—A. General trade; and it had its influence in affecting prices at that time, and at other times, and all times. I believe there is a continued system of underhand shady business on the part of at least a portion of these warehousemen. There is something, if the truth were known, that is absolutely abnormal; and there are certain things that can be shown to have existed in the past, and I think they still exist, with which the matter of rate cutting is on a par, to say the least.

Q. Can you be a little more specific and say what these are? Do they consist in manipulating the grade or short weights, or how?—A. I believe, from my experi-

ence, that there is a great deal of shady influence attempted on the grading of grain.

Q. Is that at present done by State officials?—A. I don't think it is done on the part of the State officials. I think it is done on the part of the elevator proprietors. I think they use the influence; that is my opinion. I do not believe it is possible for a man to be the custodian of the people's property and his own without the temptations being so great as to lead up to a great deal of shady work.

Q. By shady work you mean manipulating the grades and weights?—A. Manipulating the grade and weight and attempts to manipulate inspections, and attempts of various kinds, and our commercial life here is very unsavory with the odors of what has taken place within the past few years.

Q. Earlier in your testimony I think you said that the elevator capacity of Chicago was about 60,000,000 bushels?—A. Public and private.

Q. What portion of that is public and what portion private?—A. Well, I should say they were about all private, the way it is managed. It is almost impossible for the public to do anything in a public warehouse, but the capacity of those which are advertised as public, I should judge, is in the neighborhood of about 20,000,000; without being particularly informed, I should judge so.

Q. About how many of the public elevators are there, and are they increasing or decreasing?—A. They are decreasing. I believe the railroad companies are assuming the position—some of them are—that they will furnish no facilities for the public—do not intend to give the public facilities—do not want the public to have any. I believe we are reaching a time when they want favored parties to do the business on their lines. It looks that way; everything points to it. I believe the stockholders suffer and the officials divide the swag. That is my opinion. I do not care particularly about going on record on all those things, but I have no objection to it.

Q. You stated earlier in your testimony that because of being compelled to pay a smaller elevator charge the public warehouseman who was purchaser of grain was able to pay more to the farmer than the others?—A. That is true.

Q. It would seem at first glance, at least, that if he was obliged to pay more this arrangement was for the benefit of the farmer.—A. That is the one, sole, solitary foundation point that these men have rested on in all their trials and tribulations in court and before our representatives in Springfield. That was, that they paid more to the producer. They will go out and give away a portion of their storage as against me and gain possession of the grain. That is all they want, just to be enabled to get possession of it. But where they pay that amount to get possession of the grain, they bring it up here and hoard it and take from 5 to 10 cents a bushel off the entire crop.

Q. The remedy for these evils is what we are particularly interested in. Have you something to suggest in that line?—A. I think the first remedy would be to take those fellows down to Springfield and choke them off. That would be a good start. I believe enough money was spent down there to overthrow the decisions of our courts, and I believe that the legislation they secured was all done through the use of money. That is another one of my opinions which I believe is quite generally accepted by men who were there.

Q. (By Senator KYLE.) Are the branch elevators, small elevators, through the West and Northwest branches of these great central elevators?—A. They are becoming so, I believe.

Q. Simply buying houses, supply houses?—A. I believe these men here are gradually securing possession of private warehouses in the country, where they propose to buy direct from the farmer; and I believe that will eventually lead to the larger owning of what are termed line houses on the different systems where one price is made to the farmer, as I understand the condition exists in the Northwest.

Q. We have 3 or 4 companies that operate, as a rule?—A. It is not always necessarily limited to 1. There is generally enough business to distribute between 3 or 4 or half a dozen.

Q. Do you think there is any collusion?—A. Oh, yes; I do, most assuredly. I see that here every day on our market; five of them get together and make a price every day.

Q. These warehouses get together and fix a price and that is sent out?—A. These warehouses get together and fix a price and that is sent out to this grain trade. I believe men are buying grain right along west of the Mississippi, where they pay the freight to the Mississippi, and we pay the freight right to Chicago. This is an advantage of a cent a bushel. They pay a cent a bushel more for Nebraska grain than they do for Iowa, to get possession of that far-western grain which is likely to slip off somewhere else, and they bring it here and make money, train loads, store it here and sell it ahead until your trade has gone to blazes. As soon as they get it they jump into a pit, sell it ahead for future delivery and

make a hedge, and then some other fellow is carrying that and paying storage charges, and they just wait until he is dead and then they look for a new sucker.

Q. I gather from what you have said that this storage charge is the great evil. What has the tendency been in recent years; are these charges more now than they were a few years ago, or are they less?—A. Well, I don't know as you correctly represent me in stating—unintentionally, of course—that the storage charges are the chief detriment. I do not object, or neither does the public, I take it, to paying storage on grain held in an elevator at a reasonable fair charge, but it is a fact that one grain man can get that storage free of charge; that is the evil, among others.

Q. And that man a competitor?—A. That man is in the grain business. He is not a custodian appointed by the State and licensed to be the custodian of the public's property, which was the original intention of the law and constitution of our State, but he overrides the law and becomes a merchandiser, and then he can hoard up these storage charges.

Q. (By Mr. CONGER.) What are these charges now?—A. Three-fourths of a cent for the first 10 days, and one-fourth of a cent every 10 days thereafter.

Q. Do you know whether they are greater or less than they were?—A. Less. I think they are lower than they ever have been. One of these fellows can take grain and transfer it from the car into his elevator, into another car, and do it for a cost, in my opinion, not to exceed \$2 a car of 1,500 bushels. The public pays three-fourths of a cent a bushel, or \$12; and I pay it to my competitor in the grain business, and the railroad gives him an elevator to do it; but he don't want to transfer anything through there until he has to do it; he holds it there and makes this storage charge year in and year out, and lets these bear speculators hammer the values, and thus assist him to freeze the buyers out and continue the grain in storage.

Q. Would it not almost seem that if these elevator charges have been growing less, and these elevator men pay more to the producer than the independent grain dealers are able to pay, that those who are injured most, at least, are the independent grain dealers here in Chicago?—A. The man that is injured most is the man that raises the grain. If we had a free, open market here without these hoards of grain, our values would be 15 to 25 per cent higher. It is proved so. You and I remember the time when it was a novelty to see wheat much under \$1 a bushel and corn 40 to 50 cents and oats in the forties and thirties.

Q. Your idea is that these elevators and the manipulation of them has had most to do in bringing about these results?—A. Yes; they are killers of competition. What was corn of late years in Nebraska?—8 cents a bushel. Oats at 13 cents in Chicago—and these fellows are and have been hammering away and selling everything until the producers in the West get nothing for their product, and then they yell the money question. If you will look into the face of Phil Armour—he is the high cockalorum among those who are stifling competition and depressing prices in the grain trade—the chief of the whole outfit; he is the representative of cheap-rate getters; he is the champion highway robber of America, and I can prove it, and he knows it.

Q. (By Mr. A. L. HARRIS.) Is the price of grain fixed in Chicago?—A. Yes; I believe that the prices of the crops of the world are largely made right on that floor, and largely controlled through the influence of one man.

Q. Then the idea is not true that Liverpool is the market of the world for the crops of the United States?—A. No; I said in the commencement of my remarks that I no longer considered the legitimate supply and demand as a factor.

Q. By what authority do you make that statement?—A. By the authority of the knowledge of those conditions I have just stated.

Q. Of course, you have kept track of the price of grain in Liverpool?—A. No; I am not familiar with it, because I am not an exporter, and my knowledge of the foreign markets is somewhat limited.

Q. Does not the price in Liverpool to-day have some effect on the price in Chicago to-day?—A. I believe it has, but I believe Chicago is in the lead—is the leader.

Q. Do you mean to say that Liverpool fixes her price after Chicago?—A. No, I do not say so; but I believe the general trend of prices of grain are made on this floor.

Q. In treating of the Board of Trade, what effect does a rise in the price of wheat in Chicago have during the hours of trade?—A. It generally calls forth a new army of those short sellers, to weigh it down again from where it started. If I answered that without any attempt at jest, I believe a rally simply calls forth another army of sellers. It is such a novelty now to see a reaction or a little rise that we welcome it very freely—the men that are favorable to a better condition of affairs.

Q. I was under the impression that if we had 100,000,000 bushels to export, and with that 100,000,000 bushels on the boards in Liverpool, or any other amount, it substantially fixed the price in this country, less the carriage and commission.—

A. Well, it is the overplus of production, in regulating the price, that is more or less of a consideration, but only secondary. Now, I will call your attention to this: What has the Liverpool market to do with the price of December corn to-day? The corn is not out of the ground. How much of the new crop of corn do you suppose Liverpool has bought? But here they have raided December corn from 35 until it closed at 25 here to-night. I will admit that I think the foreign demand is a factor in the markets, without any question, but I believe that foreign demand could be absolutely encouraging to the producer and every condition suggest higher prices, and the markets here go all to smash right in the face of it. Not being so conversant with foreign trade, and confining my business almost entirely to the operations in this country, I can not give you very much information on the foreign situation. I believe you could get evidence on that question to show that a firm demand did exist on the other side and that prices were very materially depreciated here at that time. There might be a good foreign demand at a particular time, and still there might be some local condition here that would depress us.

Q. (By Senator KYLE.) Is Liverpool given as the export point?—A. Why, you have cash grain being bought by everybody that can get hold of it. Our September corn is at a heavy premium over the far-away futures. Our cash grain premiums over September. Our very poor grades are selling at a par with the best grades on account of the demand, and here we have a weak market to-day; that is, the general markets are very heavy indeed. It shows the influence that can be brought to bear by these speculators on the futures, regardless of the cash price—of the supply and demand; they can win every bound here when the markets go down. They are the establishers of the future prices.

Q. What do you think about that?—A. I believe speculation in grain is a good thing, because when it gets too low speculation will come in and take it as an investment: outside investment will take it; money will take it; but I want the conditions on the market as favorable to the man that buys the stuff as it is to the man that sells it. The buyer is handicapped in every way by these conditions I have enumerated. The board of trade is all right in itself. It is an institution organized for the dispatch and convenience of business. As far as that goes it is all O. K., but it is the system that has grown up within the board, which is not, as a matter of fact, a part of it. The murderers of competition and speculation have created conditions that hurt business and hurt producers. I believe the time is not very far distant when you will have no general competition in grain. I believe there will be one price sent out from every railroad by one man, or a favored man who has the power, and that will be a dangerous speculation; and speculation will be killed just as it was in oil, and that floor will be deserted up there and the building sold to protect the bondholders.

Q. (By Mr. CONGER.) Would not that be a good thing?—A. No. You must make the conditions natural. We have had an open market there, but when we get the conditions good—our laws executed—we will be all right.

Q. (By Mr. A. L. HARRIS.) You speak about legislation. What legislation is necessary to do that?—A. In relation to legislation against the railroads I do not feel competent to speak, because I believe that that is for far wiser heads than mine to treat of; I am a young man and something of a novice. But I believe that there ought to be national legislation to prevent the existence of a bucket shop. I believe that is one of the greatest remedies that can be possibly found.

Q. (By Senator KYLE.) That is one of the features of the Hatch-Washburn bill that was before Congress?—A. That has been passed upon, but I take exception to many on that subject. I am no friend to anything but what I consider is for the interest of the producer, and I do not care whether speculation is abolished or not, although I am somewhat interested in the attack on that kind of business. But, as I say, speculation in grain is all right if the man that buys it is on an equal footing with the man that sells it in the market; but where there are conditions that are absolutely crushing the men that are selling the goods, it is an evil, and these railroads, bucket shops, and public warehouses, I believe, should be legislated upon so as to make it impossible for the bucket shops to exist in this country, and that legislation enforced.

Q. You think that in order to make the business live in this country you must have equality, an equal basis in such a case?—A. If we are on an equality with things that are public we do not fear competition, but where it is possible for one man to pronounce an edict whether or not I shall be living a commercial life it is time to make a protest; and that condition exists right here.

CHICAGO, ILL., August 11, 1899.

TESTIMONY OF MR. BERNARD W. SNOW,*Statistician of the Orange Judd Farmer, and member of the commercial staff of the American Agriculturist and of the New England Homestead.*

At a meeting of the subcommission on agriculture in Chicago, Ill., August 11, 1899, Mr. A. L. Harris presiding, Mr. Bernard W. Snow, being duly sworn, testified as follows:

Q. (By Mr. A. L. HARRIS.) Please state your full name, your residence, and occupation.—**A.** I am statistician of the Orange Judd Farmer, and also a member of the commercial staff of the American Agriculturist and New England Homestead. My name is Bernard W. Snow; and residence, Chicago.

It seems to me that the results that have come to our export trade in meats, through the operation of the laws requiring inspection and branding of meat products intended for export, have been so entirely satisfactory in the way both of increasing our export trade and of removing the prejudice which existed abroad against our meats, that the time has come when it would be wise to increase the field of operation in the matter of inspection. At the present time we inspect the meats that are prepared for export not only to those countries that require it, but to other countries as well; and it has resulted, as I say, in removing some of the prejudice against American meats, and also in encouraging the trade in American meats in those countries where the inspection was not required. At one time this country enjoyed a very large and growing export trade in dairy products, especially in cheese. That trade has been almost entirely destroyed. It has gone down to a very small figure now, on account of the shipment of products as cheese which in reality were filled cheese, the natural fats being taken out and replaced by different forms of cheap greases. The boards of trade of England, and of Liverpool especially, where a very large part of that trade once centered, protested a number of times against shipping as cheese products those which were really imitations; and it seems to me that in order to regain that trade and enlarge it, it might be well to authorize the Bureau of Animal Industry to inspect all dairy products offered for export trade at the export points and brand them for exactly what they are, and perhaps establish certain grades as export grades and brand them, so that the purchasers abroad of these products would have the guaranty of the Government inspector that they were getting exactly what they call for.

Q. (By Mr. CONGER.) Are you familiar with the recent efforts of Secretary Wilson to promote the exportation of butter?—**A.** Yes; I am in a general way. I have talked the matter over with Secretary Wilson, and I believe that he has done there a magnificent work, and that it should be further supplemented by a provision that would authorize him to have such goods inspected and branded for what they are before they are shipped.

Q. Do you know if results have followed those efforts? Are we exporting butter to any extent now?—**A.** The effort has been recent and is continuing yet, so that it is hardly time to show up largely in trade returns, but my impression is that it is increasing the trade to some extent.

Q. And your idea is that an inspection of cheese products would help those products?—**A.** That particular product, and it might be extended to a number of other products. Now, for instance, recently the German Government has raised objections to the importation of American apples on the ground that there was danger of importing the San Jose scale with the fruit. If that is carried out as part of the agrarian movement, it will amount to cutting off a very considerable part of the foreign market for American fruit. I have no doubt that if our products were honestly inspected by the Government inspectors before they were shipped it would remove the ground for that prejudice.

Q. Is it possible to detect the presence of the San Jose scale in examining an apple?—**A.** Yes, by an expert.

Q. Have you any other particular products in mind that would be benefited?—**A.** Those are the most promising export products that we have now. It might be that the thing carried out to its logical conclusion would induce trade in other products to some extent, but at the present time it would be the proper product to begin with.

Q. Your idea is that this inspection should be under the supervision of the Agricultural Department?—**A.** Yes; I think it should be under the supervision of the Bureau of Animal Industry. Of course, with the fruit products that might seem something of a mislocation, but at any rate it should be under the supervision of the Department of Agriculture, and, the inspection machinery all being

organized in the Bureau of Animal Industry, it might be proper to assign it there, and probably would be. Now, I am not certain as to just what regulations the Canadian Government have for the export trade in cheese, but they have a very large trade, starting some years ago. Our trade in cheese was larger than theirs; theirs has continued to grow. Cheese has grown in popularity abroad, and they now do an enormous export trade in cheese, where we do practically nothing.

Q. (By Senator KYLE.) What jurisdiction does the Agricultural Department now have over this export trade in connection with exports of any kind?—A. None, so far as I know of, except in the inspection of meat.

Q. Under what act?—A. The act creating the Bureau of Animal Industry.

Q. Is it not a fact that the Canadians and English both have very rigid rules in regard to the marking of goods, indicating the quality?—A. Yes; that is one thing that I should recommend, that they should be marked for what they are and marked plainly.

Q. Did you examine the Paddock pure-food bill some years ago?—A. I did.

Q. And the bill recently before Congress, the Brosius bill?—A. The Brosius bill I have looked at to some extent, but not closely; I could not call all its provisions to mind.

Q. In your judgment, could not all this be looked after in the bill drafted for pure food?—A. I think it could in a pure-food bill. I single out the export trade for inspection, because at home we have the advantage of State laws to some extent, and there would probably be less objection on the part of manufacturers to branding the goods for the export trade than there would be for the home trade.

Q. What is your observation as to the working of the pure-flour law passed by Congress?—A. There is no question at all but that it has resulted in the almost entire abandonment of the adulteration of flour with corn flour, or the mixing. I think there have been very few licenses taken out by public mixers; and it is my belief that the practice is pretty nearly done away with.

Q. And the Treasury Department have taken off the inspectors, have they not?—A. They have taken off some of them, if not all. I did not know they had taken off all.

Q. What was the reason of that?—A. There was not enough business done by the mixers to justify the expense. I think it has pretty nearly if not entirely corrected the evil.

Q. I would like to know how general the demand and the desire is on the part of the farmers for a pure-food law?—A. There is no question but what the agricultural community is interested in that proposition. It is a matter that has been very largely discussed at the conventions and meetings of their organizations. As individuals I don't suppose that they are any more interested than the general public, or than the city public; but it is a question that is being very largely discussed.

Q. In your judgment, what are the antagonizing influences to the enactment of pure-food legislation?—A. Well, I suppose it grows out of the unwillingness of manufacturers to submit their business to any public inspection. There is no doubt but that there have been organizations among manufacturers in different lines to postpone pure-food legislation.

Q. In Scotland the laws require all these things to be up to a certain standard, and they have a public analyzer, where the consumer can take the article and have it analyzed. If it is not proven to be what it was sold for the party is responsible. Is that the end aimed at, generally, by the farmers of this country?—A. There is no question but that they are interested in that proposition as largely as in any abstract question before them; and it is a question, too, that in the agricultural community there is but one side to. We all favor it. The opposition undoubtedly has come, heretofore, from combinations among manufacturers of products that might fall within the purview of such an act.

Q. (By Mr. CONGER.) Are you familiar somewhat with the existing Federal or State laws to prevent the spread of disease among domestic animals?—A. In a general way. Several years ago, about the time the Bureau of Animal Industry was organized, there was a great deal of pleuro-pneumonia among the cattle herds of the country, and the fear of it had begun to affect our export trade in meats and resulted, I believe, in an English regulation that requires the slaughter of imported animals at a certain point within a very short time. At that time the Bureau of Animal Industry was organized, and an appropriation was made to be expended in eradicating pleuro-pneumonia in this country wherever it had obtained a foothold. Here in Chicago at that time the examinations were carried on by Dr. Salmon, chief of the Bureau, and it was shown that there were herds around Chicago that were rotten with pleuro-pneumonia. In the case of a contagious disease of that kind it is almost impossible to get legislation from the various States which shall be uniform and in such shape that the disease can be stamped out in

each State independently; and on that account it was taken up by the National Government, and the result has been that pleuro-pneumonia is almost completely eradicated from the herds of this country. In my judgment there is less now than practically at any time in modern times. It is a disease that is nearly gone. Now in the last few years we have had an increasing knowledge of tuberculosis among cattle and especially among dairy herds. Down in the East, in New York and in Massachusetts, the States have spent a large amount of money in attempting to stamp the disease out. They have succeeded to some extent, but not completely. In this State we are just beginning to face it. It is a condition that has existed a long time. It is undoubtedly increasing, and it is a serious menace to public health, through the consumption of milk from tuberculous cows. There is less danger in the consumption of meat from a tuberculous animal, although there is some. The cooking of meat, as it is practiced in this country generally, is sufficient to remove almost all danger; but in milk, which is consumed in its natural state, the milk of a tuberculous animal is a very fruitful cause of consumption in the human family. The experience of the States in the last few years, that have taken active measures, has not been entirely a satisfactory one. In the first place, the different State officials made different regulations, and the States provided different means of stamping out the disease. It seems to me, therefore, that it would be well within the purview of the Bureau of Animal Industry to make the matter national and thus undertake to eradicate the disease, as it did the pleuro-pneumonia.

Q. (By Senator KYLE.) What was the pleuro-pneumonia law?—A. That authorized the condemning and killing of animals that the inspectors found to be affected with the disease.

Q. Those in transit from one State to another?—A. As well as those in the various States.

Q. (By Mr. CONGER.) Wherever found?—A. Wherever found. Chicago was probably a worse center than any other, and there were large numbers of animals that were condemned and slaughtered. I do not recall just what the provision was for payment for those animals, or whether there was any. The scientific knowledge of the disease of tuberculosis is not entirely complete at the present time. There is some difference of opinion among scientists as to the exact stage which the disease must have reached before it becomes a menace to those using the products; and in drafting a law of that kind, providing for that extermination, it seems to me that there should be some provision for a graduated payment for the value of cattle that are condemned for the benefit or conservation of the public health. If an animal is thoroughly diseased, and the disease exists in the udder or in the milk veins, so thoroughly diseased that its recovery is absolutely out of the question, it is dangerous to use the products. Then there is no reason why that animal should be paid for, and it should be condemned on grounds of public policy; no more reason than there would be in paying for hogs lost from hog cholera. The disease has reached such a stage that he has no property right in the maintaining of an animal of that kind. The tests for tuberculosis, however, will reach where the disease has made but small progress, and where the animal itself might be useful for a number of years yet. In that case, it seems to me, there should be a graded payment for animals of that kind condemned and slaughtered. The disease can make considerable progress, according to the best expert opinion now, before it affects the healthfulness of the products from that animal. For instance, in the case of a dairy cow, unless the tuberculosis existed in the udder and in the milk glands, the milk may not be affected. Of course the disease will in the course of time progress to a point where it is affected; yet in the earlier stages the disease is contagious and the animal should be slaughtered.

Q. Is it not transmitted from one generation to another, the same as in the human family?—A. That is not settled. It is claimed by good authority that a cow may be diseased and yet raise healthy offspring; but they should not nurse; it will be transmitted to the offspring through the udder rather than by birth. Animals might be diseased to some extent and still be valuable for breeding purposes. That, I say, is the best opinion. I believe there is some doubt on that score, but that is the best opinion among veterinarians now. It would be just, if animals are to be condemned which still have a breeding value, that provision should be made for some payment to their owners.

Q. Do you know if such provision exists in any of the State laws now in force?—A. It exists, I think, in Massachusetts and in New York, but just what the provision for payment is there I am not familiar.

Q. Has Illinois such a law?—A. Illinois has a board of live-stock commissioners who have just begun to move in this matter. Governor Tanner became very much interested a short time ago in the matter, because it was discovered that

the herd of cattle that were furnishing milk for the executive mansion were infected with tuberculosis, and he was present when the animals were slaughtered; and it was shown it did exist very badly in that herd, and since that time the board has taken up and is pushing the question.

Q. (By Senator KYLE.) What breed of cows are most liable to be affected?—A. I should say that the most highly organized dairy cows; but it is not exclusively in the dairy cows; it affects all classes of cattle.

Q. How could the disease go on for a length of time without being noticed?—A. It is one of those things that existed but was unknown until brought out by scientific research.

Q. How is it noticed? In the appearance of the cows?—A. No doubt it is in its last stages; but it is very difficult to get it from any outside indication. Of course, when the animal is finally ready to die, the general physical effect is apparent; but in its incipient stages it is not apparent, and it can only be located by the test called the tuberculin test. It is an injection of virus and then watching and taking the temperature; where there is what they call a reaction of as much as 2° the disease exists in a dangerous form.

Q. (By Mr. CONGER.) Your idea is that a Federal law would be much more effective in its operation than the State laws?—A. Than the State laws, from the fact that it would be uniform. The Bureau of Animal Industry, having done such splendid work in the eradication of pleuro-pneumonia, could do equally good work in the stamping out of this disease.

Q. Referring again to the effort of Secretary Wilson to promote the selling of dairy products abroad, is it or not a fact that there is considerable reluctance on the part of those people to consume American products or American food products?—A. There is in a number of countries of Europe a prejudice against American food products, and I believe that this prejudice has grown out of the fact that our people have not been careful to export the best goods. Our export trade has been largely considered as a means of working off that surplus which was not desired at home, with the result of building up a bad reputation for goods. Exactly the opposite course has been followed by some of the other exporting countries, Denmark, for instance, and even Australia and New Zealand, and their shipments are of the very best grades of their dairy products.

Q. Have you an idea that the Government could aid in the introduction of the American products abroad in the way of an export commission or anything of that sort?—A. I believe that that could be done, and I think it is a matter that would be of very much value to the agricultural industry. A little along that line was done when Secretary Rusk was Secretary of Agriculture. He secured an appropriation, I believe, amounting to about \$10,000 a year, to be expended in introducing American products abroad. It was an effort that was especially made with Indian corn and its products. Some results have followed that work, but the work was stopped within 2 years after its institution. So we never had a fair opportunity to judge what might have resulted. To illustrate what the little that was done accomplished, when Mr. Murphy, who was the agent Mr. Rusk selected, went to Denmark in 1890 or 1891—I have forgotten the date—Denmark did not import a pound of American corn products in the shape of meal or flour or the various food products. Mr. Murphy was there a short time, and practically all that he did was to personally solicit grocers to handle some of these products, told them where they could get them, and gave, in connection with Clark E. Carr, who was United States minister to Copenhagen at that time, a dinner of distinctively corn products. This was practically all that was done in Denmark, and yet from that time forward there has been an increasing trade in corn products with Denmark until it now amounts to 20,000 or 25,000 barrels of corn meal a year, and it is doubling up very rapidly. I believe an intelligent and concerted effort along commercial lines through a commission of that kind might result in opening a market for a number of our American farm products.

Q. (By Senator KYLE.) Isn't that a better field for operation along that line than the case of many other products? Europe does not, as I understand, come in competition with us in that line.—A. I think corn is especially favorable for an effort of that kind, but a similar effort might build up the trade in our dairy products—a continued effort along the lines that Secretary Wilson had undertaken; and that, with the developments that are coming along in the East, in China and the Orient generally, there should be opportunities there for their development. It seems to me that the Government might well afford to have a commission for several years endeavoring, in the various markets of the world, to open a market for American products. Of course, the objection is raised at once on the part of some that the individual manufacturers or the individual producers should look out for themselves in finding a market; but among the agriculturists the

individual interest is very small, and the impossibility of uniting them in a comprehensive private movement makes it sure that the trade will develop by individual initiative very slowly.

Q. (By Mr. A. L. HARRIS.) To what extent could our consular service be of assistance in enlarging the demand for American farm products?—A. It could do the work completely if the service was organized so that the consular officers were absolutely in touch with the interests that they should represent; in other words, if the consular service were brought down to a commercial basis, instead of appointing men for political preferment, substitute the latter with men who are familiar with trade in products that might be demanded in the localities to which they are sent. We have a number and have had a number of very valuable consular agents who have done great work in exploiting American products abroad, but the service as a whole has not been as successful as it would be under other conditions.

Q. Do you think in some instances the consuls have not fully appreciated the importance?—A. I do not think there has been an intentional overlooking of anything, but the mere fact that a man is not in close touch with the trade which he is supposed to represent would weaken his usefulness.

Q. (By Senator KYLE.) What do you note as to the drift of the consular reports to the State Department?—A. I should say that the drift, decidedly, is toward a belief that there is an opportunity for a large increase in American exports.

Q. Are they reporting chiefly upon the economic and political conditions of foreign countries?—A. In a considerable measure, yes; and yet there are a number of them who make very valuable trade reports. A man goes abroad as a consul, perhaps into some district where we might work up a trade in cotton goods. He never has seen a cotton mill in his life, and knows absolutely nothing about the cotton trade. He is not in a position to make as intelligent and helpful reports for the cotton trade as a man who is familiar with it—in other words, as a commercial agent.

Q. (By Mr. A. L. HARRIS.) Isn't the consular service at the present time showing more interest in introducing agricultural products for trade than heretofore?—A. I think so, decidedly. I think the service is improving and that there is an improvement in the personnel of the service.

Q. And there is room for it?—A. Oh, there is room for further improvement along the lines I have indicated—in the line of selection for special fitness.

Q. (By Senator KYLE.) The fact that men have to pass a rigid examination before being sent over is a good thing?—A. Undoubtedly that has been instrumental in bringing about the betterment of the service.

Q. (By Mr. A. L. HARRIS.) Is it not a fact that a few years ago, even if American products were introduced, or rather an effort made to find a foreign market for American products, it was chiefly for manufactured products rather than the products of the soil?—A. Yes, I think that is true; and I think that is largely true at the present time.

Q. You think that agricultural products are now receiving more attention than they did formerly?—A. There is one fact that must not be lost sight of, and that is that within the last few years our enormous increase in manufacturing ability has made it necessary that we look more and more to a foreign market for our manufactured as well as our agricultural products; and on that account the consular service must continue to improve, in order that we may get the full benefit from it under these changed conditions. When we had very little or nothing to export, then it made very little difference what kind of a consular service we had; but now that you have reached a stage where the markets of the world are being sought, the consular service should be made up of men who are really what they profess to be, commercial agents. They should be commercial travelers for the United States.

Q. (By Mr. CONGER.) Have you any further suggestions to offer that would benefit the farmers?—A. I am inclined to think that the suggestions I have offered now cover the more important things that can be done for the present benefit of agriculture—that is, in the way of action.

There are questions growing out of the settlement of the problems forced upon us by the result of the war with Spain, in the correct settlement of which the agricultural interests of the country are vitally interested. For the last 25 years the owners of farm lands through the older settled communities have been brought into competition with the homesteads given away by the Government, practically given away. That land now is generally all taken up; that competition is over. The result is that we are now beginning to see a rise in value of farm lands and a corresponding improvement in the position of the American farmer. There has been a good deal of opposition at one time and another during all these years of depression, on the part of the farmers of the older sections, to the Government

distribution of lands to homesteaders or citizens generally. Now, if, as a result of the war, Porto Rico and the Philippines, and possibly Cuba, eventually are to become integral parts of the country, it follows that a new competition with American farmers will arise, as those countries or colonies produce to some extent products which we grow at home, and which up to the present time paid the tariff duties charged against them. If these possessions are going to come in as Territories, and eventually as States, no duties can be maintained against them. This would mean a meeting in unequal contest in two lines of production, tobacco and sugar. At the present time we are developing very rapidly the beet-sugar industry. The beet-sugar territory largely lies west of New York, almost in a direct line; and in the Central West we are developing a very large industry in the manufacture of beet sugar. The Philippine Islands at the present time, under the most shiftless methods of agriculture, produce something like 600,000,000 pounds a year of raw sugar. That, if admitted duty free to the greatest sugar market in the world—and this is the greatest sugar market—will be sufficient sugar, grown under the present shiftless method, to supply all the sugar needed for consumption by the people living west of the Missouri River.

Q. (By Senator KYLE.) Have you the accurate figures?—A. Yes; that allows for home consumption. The export trade has reached almost 600,000,000 pounds in some years.

Q. And to what countries?—A. United Kingdom, China, United States, and Spain, with small amounts to other Continental countries. The United States has never taken a very large share. Now, if the duty was suddenly stricken off and that sugar could come here free, as Hawaiian sugar does, it is reasonable to suppose that practically all the sugar grown in the islands would come here, and it would suddenly stimulate sugar production there. The same result followed in the Hawaiian Islands under the reciprocity treaty of 1876. Up to that time Hawaii produced annually something like from 20,000,000 to 30,000,000 pounds of sugar a year, and it was insisted and promised very positively that she had reached the limit of her production. From that time on the sugar production of Hawaii increased by leaps and bounds, and last year the United States alone imported 500,000,000 pounds—practically all they grow. That is nearly 24-fold what they claimed as their productive power.

Q. Has this been a detriment to the sugar industry in the United States?—A. It undoubtedly has.

Q. What is the annual consumption of sugar in the United States?—A. Something around 4,000,000,000 pounds, I think—2,000,000 tons a year.

Q. That is about the correct figure?—A. Yes.

Q. How much of that do we import?—A. About 1,700,000 tons.

Q. We imported between 1,600,000 and 1,700,000 tons?—A. Yes.

Q. We are compelled to import it because of our inability to produce about three-fourths?—A. A little more.

Q. That being the case, there is plenty of market, is there not, for American sugar right at home?—A. Under present tariff conditions, yes.

Q. There has been a good demand for beet and cane sugar—the sugar we can raise right here in America—and will be for some years to come?—A. Necessarily must be, because this is the largest consuming country in the world.

Q. And we are obliged to import three parts of our sugar in order to supply the demand of our own people; so that the sugar growers have not been crippled in any degree by the importation of sugar from foreign countries?—A. It is hardly fair to say they have not been crippled. I would rather put it that, if they had been given the full advantage of tariff discrimination, they would have rapidly grown to a point where they would furnish a much larger proportion of the sugar. Within the last 2 years there has been a constant and enormous increase in the production of beet sugar.

Q. We produced nearly 40,000 to 50,000 tons in the United States?—A. Something like that.

Q. How many years, in your judgment, will it be before we arrive at a point where we will be injured to any great extent by the importation of sugar from foreign countries—that is, will have to seek an export market?—A. In other words, your question is, How soon will we displace entirely foreign sugar?

Q. Yes.—A. That will depend entirely on how much the industry is favored in its beginning, because the beet-sugar industry is in its beginning now.

Q. (By Mr. CONGER.) Your idea is that if it is not favored it will not develop?—A. No; my idea is that if it is not favored its development will be very slow; whereas if it is properly favored it will grow very much more rapidly.

Q. (By Senator KYLE.) Your idea is that by shutting out foreign sugars by a duty you can raise the price of beet sugar at home?—A. What I am objecting to is the admission free of duty of foreign sugar. Let the matter stand in statu quo.

Q. So long as we are compelled to import three parts of our sugar, and the American people are eating the sugar, I want you to figure out exactly how a good stiff duty of 2 cents a pound, or whatever you put on, is going to benefit the American people?—A. In the same way that the establishment of any large industry in the country is a benefit to the whole country. Now, I might say, we have every facility for sugar production in this country. For the last 100 years they have been making beet sugar abroad. It is only within the last 2 years that we have been making it to any extent. In other words, the industry is just beginning here. Now, with the same facilities for the manufacture of iron goods, the raw material and everything in equal profusion at least with every other country, we have been 200 years in building up an iron industry such as we have now, where we are at the head of the world. With anything anywhere near equal in the way of fostering care, we should be able to build up our sugar industry in a much shorter time. No matter what the legislation is, eventually we are going to make our own sugar; there is no question about that in my mind; it is bound to come. But my belief is the sooner it comes about the better it is for all concerned, and that by the fostering care of the Government it may be brought about much sooner.

Q. (By Mr. CONGER.) Do you think any fostering care of the Government is needed greater than the tariff that is now collected?—A. I do not. I believe that if the matter remains in the present status the sugar industry is on a basis where it will develop rapidly.

Q. Your idea is that if the present tariff is held up the sugar industry is bound to develop very large proportions in the very near future?—A. In the very near future.

Q. And that if the Philippine Islands and the other sugar-producing countries are annexed and the duty removed— A. [Interrupting.] That an avalanche of free sugar will set us back in our development. If the Philippines show the expansion capacity that Hawaii has; if their production increase only 10 times where Hawaii increased 25 times, after saying they had reached their limit, then the Philippines could send us sugar enough to supply our whole demand.

Q. Is it or not a fact that it is possible to produce cane sugar in Cuba or the Philippines so cheaply that beet sugar could not be produced in the United States at a profit, if there were no tariff?—A. In my judgment, in the end beet sugar will more than hold its own against cane sugar, under any conditions, but that it will be a matter of very slow growth and slow development. It must be built up slowly.

Q. (By Senator KYLE.) Have not the beet-sugar growers generally shown remarkable ability to take care of themselves and compete with the world?—A. They have in European countries, where the industry was built up almost entirely by the fostering care of the Government. They have reached a point where cane sugar is simply excluded. The beet sugar has crowded cane sugar out entirely.

The question with me was whether or not it was not wise to call attention to the fact that in framing a government for those colonies it should be so done as to leave them, so far as their import trade with us is concerned, on practically the same basis as now. There is considerable feeling in some classes in the country that the prosecution of a war in the Philippines is largely for the benefit of organizations of capital, in order to allow them to exploit the islands later. However unjust that feeling is, it exists to some extent. But if it became apparent, in framing a government for those islands, that the interests of the American agriculturists were to be taken care of, it would remove, in my judgment, nearly all of the opposition that seems to be growing up among the farmers of the country to the policy of expansion.

Q. (By Mr. CONGER.) Is it not a fact that quite a large portion of the revenues of the Government are derived from the duties on sugar?—A. Yes, a very considerable portion.

Q. Isn't it quite probable that the needs of the Government are likely to be such in the future that it will be impossible to take that off, and it must be kept on in order to pay the expenses?—A. That would seem reasonable, but the duties were remitted in the case of the Hawaiian product at a time when revenue was needed more than or equally as much as it is now.

Q. (By Senator KYLE.) How much had they been receiving from the Hawaiian Islands?—A. Up to that time, only something like 30,000,000 pounds.

Q. I mean revenue.—A. It could not have been very much at the time the reciprocity treaty was enacted, in 1876.

Q. What have you to say of the fear on the part of the agriculturist? Is there any ground whatever for a statement or a feeling that the war was originated or is being carried on by certain lines of capitalists, with a subsequent view of

exploiting the islands?—A. I believe myself that it is absolutely untrue. There is a point here that may be important. It must also be borne in mind that all of the country involved in this dispute lies in tropical regions, and that it is already thickly populated. This country does not need lands upon which to colonize its surplus population, and if it did, it is the history of the Anglo-Saxon race that it does not successfully populate tropical lands. It follows, therefore, that these new acquisitions will not be exploited by immigration of our own people, and that their agricultural capabilities will be exploited by capital which, by direction of special intelligence, will bring the labor of the orient into competition with labor at home. This is on the assumption that they are going to become States. It is this belief that is crystallizing a sentiment against expansion throughout the agricultural districts of the West.

CHICAGO, ILL., August 11, 1899.

TESTIMONY OF MR. OLIVER WILSON,

Farmer, Magnolia, Ill.

At a meeting of the subcommission on agriculture in Chicago, Ill., at 2.40 p. m., August 11, 1899, Mr. A. L. Harris, presiding, Mr. Oliver Wilson, of Magnolia, Ill., having first duly affirmed, testified as follows concerning agricultural conditions, the topical plan of inquiry on agriculture being followed:

Q. (By Mr. A. L. HARRIS.) You may state your name, residence, and occupation?—A. Oliver Wilson, Magnolia, Ill.; occupation, farmer.

Q. Please state what official positions you hold in connection with any farmers' organization?—A. I am master of the State Grange of Illinois, and director of the State Farmers' Institute for the Fourteenth Congressional district.

Q. How long have you been master of the State Grange?—A. Six years in December.

Q. To what extent have you traveled over the State visiting subordinate granges?—A. I have been over the greater part of it, especially the northern and central sections: over all of it, probably.

Q. You are conversant with the condition of the agricultural industry?—A. Somewhat, yes; more especially in the northern and central sections of the State.

Q. Please state what, in your opinion, has been the increase or decrease in the number employed in agricultural labor, in the last, say, 20 years?—I mean the wage-workers, not including in that the small farmer who does his own work?—A. I think there is very little difference. As far as I know there is just about the same number employed. Most localities differ; some have become more densely populated and others again have not as many in population as they had about 20 years ago. I think they would average about the same.

Q. Has the condition of the hired laborer improved in the last 20 years, socially and intellectually, or otherwise?—A. I do not know that it has particularly. There has been a different class to deal with. Very largely the hired help of the farms now are of foreign birth. Twenty years ago we had a great many of our native-born citizens.

Q. What has become of your native-born citizens?—A. Largely gone into the towns.

Q. For what purpose?—A. For all purposes.

Q. (By Senator KYLE.) Why?—A. That is a pretty big question. I suppose it was because they thought there was more money in other business than there was in farming.

Q. (By Mr. A. L. HARRIS.) Was it the money question alone or was it social?—A. Not altogether. Financial and social conditions were considered better in the cities.

Q. (By Senator KYLE.) Is there a disposition among the young men to feel that other vocations are looked upon as more respectable and offer a chance to climb the ladder, and that the ladder reaches up from the farm?—A. There is not as much feeling in that line as there was 20 years ago. The young farmer to-day believes he is as good as any other man. He possibly thinks perhaps that other vocations offer a little better chance to, as you say, climb a little higher.

Q. Sometimes feels that he does the drudge work for humanity on the farm?—A. Sometimes; but that is largely done away with by improved machinery. There is no drudge work on the farm any more. There is hard work, but not drudge work.

Q. (By Mr. A. L. HARRIS.) Has improved machinery increased the amount of labor that the employee is able to do?—A. Certainly.

Q. Is there any irregularity of employment among the farm laborers in your part of the State?—A. Now, I don't quite understand that question. What do you mean by that—irregularity of chance for employment?

Q. No. Of course it is affected by the seasons to some extent. It is not like the manufacturer who works all the year round. In former years the hand would be hired in the summer and probably until the fall, and in the winter season he would not have employment. Is there any change in that?—A. Very little; a little bit. There are more hands employed by the year than there were 20 years ago; but then it is very largely hired for 9 and 10 months.

Q. What becomes of the hired men the other 2 or 3 months?—A. Many of them stay throughout the country working, some by the day, or looking after feeding of the stock, or something of that kind, for their board.

Q. They do not spend then in the winter what they make in the summer, in the way of paying board, if they are inclined to work?—A. No; not generally; the average of them do not pay board in the winter time; they manage to make their board in the winter.

Q. (By Senator KYLE.) Are they professional agriculturists? Do they look forward to the time when they can rent a farm of their own and begin operations?—A. Part of them; I could not tell what per cent, but I suppose 50 per cent of them do, possibly. I do not know what per cent do get them.

Q. Do many hoboos, so called, go into the country and remain a little while and go around through the country?—A. Very few in northern Illinois; more in southern; a great many more.

Q. (By Mr. A. L. HARRIS.) Have you any demand for transient labor in busy seasons?—A. Yes.

Q. What are your opportunities for getting it at the present time?—A. Poor.

Q. Why?—A. It is not to be had; they will not work.

Q. How are you able to supply that deficiency now?—A. By getting what men we can out of the towns and villages who do not work on the farm regularly but go out for extra occasions and extra pay.

Q. What is the usual number of hours upon the farm at the present time?—A. Do you mean in the field?

Q. Yes.—A. About 9 hours.

Q. (By Senator KYLE.) Changed somewhat from former years?—A. Yes; when I was a boy. From about 7 o'clock to half past 11 and from about 1 o'clock to half past 6 is the prevailing custom in central Illinois.

Q. That is amongst farmers who do their own work as well?—A. Yes.

Q. (By Mr. A. L. HARRIS.) The hours, then, have become shortened?—A. Shortened.

Q. Is that the effect of any organization among the agricultural laborers themselves?—A. It is more the effect of organization among the farmers themselves.

Q. They have been willing to concede shorter hours?—A. They did it for their own benefit. They want a little time for something else, and with improved machinery it is not necessary. It is long enough for a man and a team both.

Q. What is the average number of days of employment in a year of the average farm laborer?—A. I suppose from 250 to 300 days.

Q. How is the hired labor paid?—A. Hired by the month almost altogether.

Q. (By Senator KYLE.) Or by the year sometimes?—A. Some few by the year, yes; but they are generally hired for a year at so much a month; that is the rule; of course some are hired for the year.

Q. (By Mr. A. L. HARRIS.) What are the maximum wages?—A. In central Illinois the maximum would be this year \$21 or \$22 and board.

Q. (By Senator KYLE.) For how many months?—A. Nine or ten.

Q. (By Mr. CONGER.) How does that compare with a year ago, and with other recent years?—A. Very little difference; no difference that I know of in recent years; higher than it was 20 years ago.

Q. (By Senator KYLE.) When you hire a man by the year, how much do you have to pay, as a rule?—A. You mean a man that boards in the family?

Q. Yes.—A. Probably \$18. Some heavy cattle feeders will pay \$20 by the year.

Q. That is, with the present price of agricultural products. You say that is better than it was 20 years ago. How about the relative price of the farmers' commodities?—A. Not so good. I want you to understand I am not comparing this year with absolutely 20 years ago.

Q. Just about the time now, and about that time. So that the agricultural laborer has nothing to complain of as compared with those times?—A. I can not see that he has.

- Q. (By Mr. A. L. HARRIS.) Does he complain?—A. No; I don't think so.
- Q. How do you pay?—A. Cash payments almost altogether.
- Q. (By Senator KYLE.) You would not attempt to bull the market on the part of these laboring men?—A. No.
- Q. As it is in the federation fields in cities?—A. No.
- Q. Here are large bodies of these men working in the cities, and members of the federations, keeping up the price. Why don't they seek the fields and farms, where there is a good living to a good man?—A. They are, a little bit; the tide is turning from the city to the country. A laborer of this city is coming right into our neighborhood now, moving his goods right there, to go to work by the day or month. He has lived here for 20 years and been fairly successful, so far as I know; that is, fairly so for a laborer. He is the second one that has come in there this spring.
- Q. (By Mr. A. L. HARRIS.) If your hired man is married, do you furnish him a house?—A. Generally.
- Q. On what terms?—A. Married men, as a rule, get about \$25 a month, house, patch of ground varying from a quarter to half an acre, either cow furnished or pasture for his own, and team free of charge to do what hauling he may need, such as his fuel.
- Q. Who boards him?—A. He boards himself. That would be by the year. Only a few married men will hire for 8 or 9 months; they want place all the year round.
- Q. (By Senator KYLE.) These are dairymen or stockmen, as a rule?—A. No; they are farmers and general feeders. I am not in the dairy region myself. I am speaking more for that section.
- Q. (By Mr. A. L. HARRIS.) Have you any crop sharing or renters?—A. A great deal of it.
- Q. On what terms, as a rule, do you rent to the crop sharer?—A. The landlord receives from one-third to one-half. Probably the average would be two-fifths.
- Q. What does the landlord furnish?—A. Nothing but the land and the buildings. He gets two-fifths for the land, and receives, as a rule, cash for all grass lands.
- Q. That is on crop sharing?—A. Crop sharing for the grain. It is pretty hard work to share on pasture unless they are in partnership in the stock.
- Q. Do you have anything in the shape of partnerships?—A. Yes; some; not a great deal.
- Q. Where you have that will you please inform us what the landlord furnishes and what the tenant furnishes, and the terms of division?—A. There is very little of it done, unless they go into partnership with stock, and that varies generally. The landlord will furnish the land, and where they go in equal partnership on the stock—that is, in owning it—the man puts his labor against the land, and receives half the proceeds.
- Q. That system prevails pretty much in the State, so far as you know?—A. So far as I know, or nearly so. Of course, there are some minor conditions; as a rule the landlord pays the taxes on the real estate; sometimes the tenant has to pay a part of them.
- Q. Which of the two plans is the most advisable in your estimation—crop sharing or partnership?—A. It would depend altogether on circumstances. One might be better than the other. It just depends on the man and the locality. There are a great many tenants in this State that could not rent a farm, or could not furnish half the stock; they have not the capital.
- Q. (By Senator KYLE.) What do you know of a plan which is in operation in the West, by which the owner of the land will furnish a farm and a certain amount of stock—horses and cattle—and divide the proceeds equally; the farmer furnishing the labor, the owner furnishing the seed for the farm and the original stock for the stocking of the farm, and getting half the increase of the cattle, hogs, and horses, and letting the renter make the original stock good at the time of the severing of the contract?—A. I have known of that, but it is not general. There is another system that is coming in just a little, on corn; I don't know that I have noticed it on small grain: A man pays so much a bushel for the raising of the corn. That is the way he pays his help, instead of by the month; but it is not general.
- Q. (By Mr. A. L. HARRIS.) You spoke a moment ago about your help not being native; do you mean they are foreign immigrants?—A. Largely so; yes.
- Q. Are they an intelligent and prosperous class of farm laborers?—A. It depends on just what section you go into; in many sections they are.
- Q. What nativity usually?—A. Through central Illinois they are usually German, Danish, and Swedish.

Q. Are they an intelligent class of people?—A. Seem to be.

Q. Is there any tendency, where they have an opportunity, of colonizing or getting by themselves to preserve their customs and language?—A. Considerably so.

Q. Where they are able to maintain farms of their own, are they inclined to congregate into communities?—A. Nearly altogether.

Q. Do they become American citizens as quickly as where they are distributed?—A. Not as quickly.

Q. It is more advisable for them to distribute themselves among the natives?—A. If it was left with me, I would have them distributed. I wish it had been so for the last 75 years.

Q. What is the effect of such immigration upon the agricultural industry?—A. If there had been no immigration here agriculture would have been very primitive in this country.

Q. If there is a large amount of immigration, is the tendency to increase the supply beyond the demand? Is there any part of Illinois, to your knowledge, where there has been a surplus of labor of that kind?—A. I have never known yet the time but what a good hand could find work on the farm.

Q. Then the immigrants have not affected agricultural labor to its detriment?—A. It has. I suppose if there had not been so many immigrants more of our own boys would have stayed at home on the farm.

Q. Do you think the immigrants have driven the boys from the farm, or have they gone of their own volition?—A. Of their own volition; but then probably that was one of the causes.

Q. (By Senator KYLE.) Was that the cause in New England?—A. The cause in New England was that they had no farms to stay on; as far as I know. I don't know of anybody leaving the New England farms.

Q. Does the method of farming and living of the German farmers in this country have a tendency to depress the prices of agricultural products?—A. I don't think their manner of farming does. They follow out the usual manner of farming. The Germans with us are good farmers. Their manner of living may depress local markets some.

Q. What do you think of the statement that in some portions of the United States they can do without the ordinary luxuries that the American farmer thinks he must have, and can raise a crop of wheat for about one-half what the American farmer can?—A. I don't understand that they can raise it any cheaper, and there is a great part of them whom it will cost just as much to live; there are classes that live plainer, use coarser food, and don't care for a variety.

Q. I mean money outlay in the raising of crops?—A. They probably will not lay out as much money, for the simple reason that many of them get more help out of the women and children than the Americans, and in that way they will not spend as much.

Q. (By Mr. A. L. HARRIS.) Have you any colored labor in your section of the State?—A. Not in our section; there is very little colored farm labor in northern and central Illinois; a great deal in southern Illinois.

Q. Have you had an opportunity of observing the character of that labor where it exists?—A. Somewhat.

Q. Is it efficient?—A. As a class, not as efficient as white labor; that is, in the aggregate. I have known just as good men that are isolated, just as good hands. But take it where they depend on colored labor very largely, it is not nearly as efficient as white labor.

Q. What is the school age of children in this State?—A. Six to 21.

Q. Are your school facilities good?—A. Compared with other States, yes; compared with what they ought to be, no.

Q. (By Senator KYLE.) Have you compulsory education here?—A. Yes.

Q. (By Mr. A. L. HARRIS.) Have you any means of knowing the per cent enrolled?—A. I have not, outside of my own county, and of course that does not give it all. We have about 80 per cent enrolled in our county, of school age.

Q. Your county an average, is it?—A. Well, I presume it is above the average, because we have no cities in our county; strictly rural.

Q. Are the public school facilities sufficient in your county, and so far as you know, in your State, considering the schoolhouses, distances, size of the districts, and all that would go to make the common school system?—A. We probably have about enough schoolhouses.

Q. What is the character of your houses?—A. Better than they were 10 years ago, a good deal. A great many of them are not what they should be.

Q. What is the character of the teachers, as to ability to teach and efficiency?—A. They claim they pass a sufficient examination, but it is not up to where I think it should be in three-quarters of the schools, probably.

Q. Do you look upon your common school curriculum as being sufficient for the needs of the agricultural people?—A. I do not.

Q. Is there a tendency to improve?—A. Yes.

Q. (By Senator KYLE.) You refer to the ordinary country school?—A. Yes.

Q. You do not have what is called township schools?—A. It is not general; there are a few in the State, working very satisfactorily, I understand, but I don't know personally anything about it.

Q. Do many of the young people go off to the high schools in the villages after they complete the country schools?—A. A great many go to the State institutions more largely.

Q. But a great many, the majority, can not go to the State institutions?—A. A great majority of the school children stop with a common country school education; taking the agricultural districts, I suppose, probably 80 or 90 per cent.

Q. (By Mr. A. L. HARRIS.) What advantage, if any, to an agriculturist, would a technical education be?—A. The same as to anyone else, I suppose.

Q. Should it be encouraged, in your opinion?—A. I think so.

Q. Is it in your State?—A. Very little.

Q. What, in your opinion, is the earning of capital employed in agricultural pursuits, compared with former years, say 30 or 40 years ago?—A. I don't think the earning is as great, because there is so much more capital invested in the same area. I do not think the earning is as great, because rents are very little higher and land has doubled in value over a great part of this State in the last 20 or 25 years.

Q. What, in your opinion, are the earnings of such capital as compared with other lines of business?—A. My opinion would be that it is not so much, from observation.

Q. (By Senator KYLE.) That is, in your section of the country?—A. In my section of the country, land running from here to 25 and 40 miles south of Bloomington runs from \$75 to \$125 an acre.

Q. You don't raise more corn, and you could buy that land years ago for \$30?—A. Then we had slews of it; but now the country is filled up. To my earliest recollection, a man gave a third for rent. Now the most of them don't give more than two-fifths. Land then was worth from \$15 to \$25 through central Illinois. Now it is worth from \$75 to \$125.

Q. They bought land from \$5 to \$20 per acre and at the same time raised wheat for 60 cents, so that they got \$12 or \$15 worth of crop out of the land that they paid \$5 for?—A. Yes. I have known right in my own section where I crop of small grain was worth more than the acre of land it was raised on, but you can not get it here now. I am speaking of northern and central Illinois, and I believe that is correct.

Q. What do you think about the present system of taxation, whether it is just or unjust, and what are the remedies you would suggest?—A. The farmers of this State are not satisfied with the system of taxation.

Q. (By Mr. A. L. HARRIS.) I wish you would, in the first place, state your system as nearly as you can, and then state the reason why it is not satisfactory.—A. I do not know whether the system varies much from other States or not. The system is supposed to tax all property at its cash value; that is the supposition.

Q. (By Senator KYLE.) Personal and real?—A. Personal and real. They have per cents. I am not able to give now just the different per cents—certain per cent for State, county, township, and district taxes. There seems to be a growing desire that there should be some system whereby all property shall bear an equal share of taxation. The claim is—and I guess but few dispute it—that the farmers of the country are paying the big share of the taxes, probably 78 or 79 per cent.

Q. Why is that?—A. I only know two reasons. One is the system, and the other is that the farmer can not cover up any property, even if he is so inclined. His property is all out under the assessor's eye. Of course, real estate is the same everywhere, but personal property is not; it is impossible for the farmer to cover up anything he has. The farmers are not, as a rule, great money lenders, so of course their surplus is generally invested in real estate or improvement of stock or something of that kind; so they keep it all out, open before the world. The farmer gives an itemized account of all his property, and I believe he is about the only man in the country that does. When the assessor comes around, he goes out on my farm and says, How many horses have you 4 years old, and how many cattle, and how many hogs, and how many chickens? I believe they say there is a license on dogs; but then they take them all the same. They go into any little village and little city, and they take it all in one question. They ask the merchant, what is the amount of your merchandise; and some merchants are honest and probably give it.

Q. He does not say how much calico, etc., but how much merchandise?—A. That is on the listing sheets; that is the way it has been from time immemorial—the

only ones I ever saw. There should be some way to make them all alike. If one man itemizes his property, every other man should do it. Why this discrepancy is, I don't know. I don't know whether all the States are the same. I think our merchants are just as honest as the farmers, but I notice when the assessor comes in they will say, "Let me see, what was I listed at last year? My stock of goods was never quite as low the 1st day of May as it is the 1st day of May this year."

Q. How about the banks?—A. They manage to get out of paying any personal taxes, pretty nearly. I am not a banker; I don't know just how they do it.

Q. (By Mr. CONGER.) Under the custom in this State of taxing banks, do they escape?—A. They don't escape entirely; they are assessed.

Q. Are they not assessed on the cash value of their capital stock?—A. I never knew it to be done.

Q. Do not the farmers make complaints in Michigan about taxation?—A. I don't think the farmer complains about a just system. He likes to pay his tax, but he likes everybody else to pay his also.

Q. You believe he complains because he thinks someone is paying less than his fair share?—A. He knows it. It is just like your governor came out 2 years ago and said the railroads were paying one-eleventh of their taxation. I think you will remember that statement of the governor to the legislature. I suppose what is true in Michigan is true in Illinois.

Q. (By Senator KYLE.) That is, he thinks they should pay taxes upon watered stock as well as the money actually invested?—A. Certainly should.

Q. Make the roads earn interest on that amount?—A. I have paid mileage on watered stock coming up here to-day all right.

Q. (By Mr. CONGER.) The railroads of Michigan, however, are paying \$1,000,000 a year, and if that is only one-eleventh of what they should pay, would that statement mean that they should pay \$11,000,000?—A. I suppose so.

Q. Their total earnings are only about \$30,000,000 inside of the State, which would mean a tax of 33½ per cent of their gross receipts. If the farmer had to pay that, would he not think he was pretty heavily taxed?—A. Well, you may look it up and see if I am quoting him correctly. You have no right to question your governor.

Q. (By Mr. A. L. HARRIS.) You have stated the shortcomings of your system. What suggestions have you to make in regard to amendments to your system that would remedy the evils complained of?—A. Any just system would suit me.

Q. Have you ever thought out any improvement over the present system?—A. Yes, I have thought of them, but I do not know that I have a system that I would care to give out here. All our organization asks is a just and equitable system of taxation; it does not outline any.

Q. Is not the trouble to get at some system unless someone makes a start?—A. Certainly; and we suppose that you fellows are to make the start. We tell you what we want, and you figure it out.

Q. (By Senator KYLE.) Legislatures will never figure those things out unless some person takes the initiative. If the farmers of Illinois or the State Grange would figure out something and place it before the legislature, are not the chances that they would get an improvement?—A. We are working on it, but there is nothing definite yet which we can give out as to new systems. We want every man to pay according to what he is worth, no matter whether he is a miner, a farmer, a merchant, or a lawyer.

Q. (By Mr. CONGER.) Isn't there a new system of assessing personal property now being put into operation in Chicago?—A. I believe so.

Q. Does that extend over the State?—A. I think there is a different system in this city from that existing over the State. There is supposedly a different system over the State. They are working a little different. There is very little change. I think there is a law especially for Chicago.

Q. (By Senator KYLE.) You would advocate the plan you suggested a moment ago—a modification of the present system of scheduling property?—A. As long as we schedule property I would make it obligatory upon every man to make his own schedule and itemize his property.

Q. How often is your land appraised?—A. Every two years.

Q. So that the new improvements are added to the value of the property; how?—A. New improvements may be added each year.

Q. (By Mr. A. L. HARRIS.) The statement has been made that there has been a serious decline in the price of agricultural products in the last few years compared with 10 years ago?—A. I think so.

Q. With 5 years ago?—A. Yes; just about 5 years ago. You can go back just 5 years for the decline. They were as low 4 years ago as they are now; but 5 years ago and the preceding 5 years they were higher than they are now.

- Q. Is the tendency still to decline?—A. It seems to be at the present time.
- Q. Is that true with all classes of agricultural products?—A. All grain products.
- Q. How about live stock?—A. There is not much difference in that, I suppose.
- Q. Has there been any decline in the value of agricultural lands in this State in 10 years?—A. No. Agricultural land in this State is higher than it was 10 years ago.
- Q. The price is going up?—A. The price of land is. The price of products is going down.
- Q. (By Senator KYLE.) Land is rising, you say?—A. In the last 10 years. There has been no rise in the last 3 or 4 years.
- Q. (By Mr. A. L. HARRIS.) Land is no higher than it was 4 years ago?—A. No, I would suppose not; not as high as it was 3 years ago, quite. Very little change.
- Q. Any decline in the producing capacity of your soil?—A. Not for northern and central Illinois, and I think not for southern. There is an increase in central Illinois, rather than a decrease.
- Q. From what cause?—A. Rotation of crops, largely, and fertilizers.
- Q. Do you use commercial fertilizers?—A. None used in the State, as far as I know.
- Q. Barnyard?—A. And clover. Clover is the largest I know of.
- Q. And the increase in the production of the soil is brought about by careful farming?—A. Careful farming and tilling. That has been a great thing in the State among farmers. Many farms have increased one-fourth and some one-half by the mere matter of tilling.
- Q. You mean the increase in the productiveness?—A. The production of the farm.
- Q. Taking the increase of production into consideration, does it equalize the decrease in the price of the farm products over a few years ago?—A. Well, almost. I suppose not quite. It will not do so for the last 10 years.
- Q. Have you any statement to make in regard to the benefit of small farms?—A. It is a great benefit so far as the community is concerned, in my estimation, and, so far as school advantages and social advantages are concerned, it is a great advantage, and I feel it is a great advantage to the country at large. In other words, if every man were able to own his own little farm we would have a much better state of affairs than we have now.
- Q. Is there any advantage in the large farm over the small farm?—A. I think not. The only man that I know of that has made any money in the last few years farming is the small farmer.
- Q. (By Senator KYLE.) What is the tendency with reference to large farms now—to break up into smaller ones?—A. Not much yet.
- Q. We used to have 25 years ago what is called bonanza farms, like the Sullivan farm in Ford County and Champaign County. What has become of them?—A. Of course they are nearly all broken up, but in the last 25 years I suppose the ordinary farms have gotten larger rather than smaller. Of course Sullivan's and those like it have been divided up.
- Q. Those are the only ones that could be styled bonanza farms?—A. Yes. They have broken up.
- Q. Is there no tendency to aggregate quarter-section farms into section farms?—A. Not that I know of in this State.
- Q. What is your opinion as to the cause of the depreciation in farm products?—A. I presume there are several reasons.
- Q. You think there must be several leakages then?—A. I think so.
- Q. Which, if stopped, would materially improve the condition of the farmer?—A. I think one leakage is the transportation. I think transportation is too high, and that it costs too much to handle the grain; it costs the consumer because he is so far away from the producer; or, in other words, there are too many between the producer of farm products and the consumer. I believe the consumer to-day is paying about as much as he should pay, and that there are too many between the producer and the consumer.
- Q. Those called middlemen?—A. Called middlemen. Of course they must all have a living.
- Q. Are they feeling the depression?—A. I don't know how they could.
- Q. (By Mr. CONGER.) You say you think transportation charges are too high. Are they higher now than they have been in the past?—A. Not in the past, as far back as I remember. I don't know where it was many years ago.
- Q. Say in the last 10 years?—A. Very little difference. They fluctuate with us a little, sometimes a little higher than others. I think they are about the same.
- Q. You don't think transportation charges are lower now than they were 10 years ago?—A. I don't know. I never looked the matter up.

Q. Or 20 years ago?—A. As long as I have had anything to do with shipping the rates have averaged about the same.

Q. How long is that?—A. Probably 8 or 10 years.

Q. (By Mr. A. L. HARRIS.) That is, local rates.—A. Local rates are all I know about. I don't know anything about through rates—that is, I could not give figures here.

Q. Has the amount produced had any effect?—A. No doubt of it.

Q. (By Senator KYLE.) What has been the effect of the competition from foreign countries—Argentine Republic, Russia, and so on?—A. That has had quite an effect, there is no doubt of that.

Q. Those are variable factors, but at the same time are not the transportation charges a sort of a fixed factor?—A. Of course. In the last 20 years we have opened up great fields west of us, even in our own country, that we have come in competition with, and those things must all be considered.

Q. You say there are too many middlemen. You want to get to the consumer by the shortest possible course, is that your idea?—A. That is the idea.

Q. Have you any plan devised that you think will secure that?—A. Only, as far as agriculture is concerned, through organization.

Q. (By Mr. CONGER.) How can the farmers be organized for their own benefit?—A. By merely getting together and being organized. Somebody said the way to resume was to resume, and the way to organize is to organize.

Q. (By Mr. A. L. HARRIS.) What are the causes to induce the organization of the farmers?—A. Several causes; one cause being that everything else is organized. Some may say they are organized against the farmers, but I believe they are organized for their own interest. That one thing has forced them to organize. They see that people in towns and cities have better social and educational advantages; they see the only way out of it is to organize, to get together and discuss matters of mutual interest to them; not only the best manner of cultivation, but discuss the great economic questions, discuss transportation, the foreign markets, and all other questions that are of interest to the agriculturist.

Q. (By Mr. CONGER.) Are the farmers of Illinois better organized now than they have been in the past 10 years?—A. Yes, I guess. There are some organizations that were better 10 years ago; our organization is better now.

Q. (By Senator KYLE.) Is the Grange as effective as it was 25 years ago in this State?—A. I think it is more so, in legislation.

Q. You have effected some good legislation, then, as the result of organization?—A. We think so, State and national as well.

Q. Can you state some of the things you have accomplished?—A. Well, back some years ago we effected some legislation in regard to railroads, which is on the statute books to-day and known as the granger laws of Illinois, giving the railroads to understand that they are amenable to State laws. That was when the bill was up to reduce the passenger tariff from 4 cents to 3 cents. There was not a railroad in the State that obeyed it when the 1st of July came and the farmers carried it to the supreme court for decision, and the decision was given to the farmers. They have done that much, and the effects you know in the oleomargarine fights, the pure-food law, and the raising of the Commissioner of Agriculture to a cabinet position; and the organized farmers of this country are entirely responsible for free rural mail delivery, which is becoming more general all the time. I believe there are 5 or 6 stations in this State working satisfactorily. The organized farmers have largely instituted the farm telephone, which is going to be one of the greatest factors of civilization, if I might use the term, that has ever come about. In other words, it is going to bring the farmer into closer relations with the world than anything that has ever been invented.

Q. Is that put into use in this State?—A. Very largely, in different sections. We have a system in our section. There are 4 systems there with which we have reciprocal service. Right from my own home I can talk to over 200 families.

Q. In your county?—A. Not all in the county. I am very close to 3 counties. They are reciprocal lines under different systems. All that has been brought about largely by being advocated in organizations. That is a great improvement over the old condition; it is one of the great improvements; it is going to benefit the farmer; it is going to bring him into touch with the world. I would not have been here if it had not been for the farm telephone. Your message would never have reached me in time unless you had hired a messenger.

Q. You live out of the village?—A. Live out quite a way. It is going to keep the farmer in touch with the markets.

Q. (By Mr. CONGER.) Does your organization in this State attempt to assist the individual farmer in the marketing of his fruit or in the purchase of his supplies?—A. Well, we have made arrangements whereby he can purchase his supplies. The State organization is not in business for itself. It has made arrangements where he can purchase supplies at very satisfactory prices.

Q. The members of the grange have received some considerable benefits in that way in their organization?—A. Yes, those that use it.

Q. (By Mr. A. L. HARRIS.) What is the condition of the Grange in the State to-day, flourishing?—A. In a very flourishing condition, yes.

Q. Increasing in numbers?—A. Increasing in numbers. I have not the figures now showing the increase; the last reports show an increase, gradual increase.

Q. (By Mr. CONGER.) About what would be the approximate increase in the membership of the Grange in the State of Illinois?—A. Oh, I hardly know now what it is; it is not so strong as some. I believe it is, approximately, 20,000.

Q. (By Mr. A. L. HARRIS.) Now we come to the matter of the cost of transportation, which you think changes the cost of production, this cost of production including the interest account.—A. I can tell you pretty nearly what it costs per acre to raise a crop in our section of the State, and of course the same condition exists in other parts of the State. You know the condition of Illinois. There is a large strip of central and northern Illinois that is almost identical in soil and climate. In estimating the cost of production we could take account of interest, which will vary some, according to the value of the land. We consider that it costs from \$10 to \$11 per acre to raise a crop of corn and put it in the crib, counting interest on the money. Of course, that is land valued at \$80 or \$90 an acre.

Q. How many bushels of corn do you raise per acre on the country at large?—A. We seldom get under 40.

Q. (By Senator KYLE.) Will you average 50?—A. You can not take that belt to average quite 50.

Q. Down around Champaign is it over 50?—A. The Illinois average is 26.

Q. I know a good many around Champaign that get 60.—A. Some get 75.

Q. What is your average price per bushel?—A. Twenty-six cents now, I believe 27 in the local market.

Q. And it will run about that way all the year, and sometimes a little higher?—A. Yes. It was 30 this last spring.

Q. At 28 it would be \$14 per acre?—A. You are taking the garden spot.

Q. I am counting 50 bushels to the acre.—A. Count it at 26 and see where we are.

Q. (By Mr. CONGER.) Is your average of \$11 per acre a fair one for the State?—A. It would not cost them quite as much. It takes more work, but labor is not quite so high.

Q. (By Senator KYLE.) Is corn their crop? Is it not a fruit center?—A. Fruit and wheat.

Q. So you have to take them both; fruit is the staple crop?—A. Fourteen dollars; it is put for the whole country \$8—the cost.

Q. That is for the seven staple products?—A. I believe that is the way Secretary Wilson puts it.

Q. You say it costs you \$11 to raise corn?—A. From \$10 to \$11.

Q. That leaves you \$3 per acre, and at the same time you have had the interest upon your investment; a 160-acre farm at \$80 per acre is \$12,800; in addition to your \$3 per acre you get the interest at 6 per cent—if you think that is a fair rate—on \$12,800. You are in the banking business and also in the agricultural business at the same time.—A. Yes, if you always had that. It varies on the bushel. It costs from 20 to 25 cents a bushel to raise corn. That is the general experience in the great corn belt. I put it at 23 cents; but you must understand one thing: My estimate is putting it on the farm; it is not counting anything for the marketing; that varies according to the locality.

Q. You count the farm, I believe, of 160 acres at \$12,000. A man that is capable of running any other \$12,000 business his services run from \$1,500 to \$2,000, I believe, to manage the business.—A. He would expect that for his services. It requires just as good a man to run a 160-acre farm as it does to run any other business; so if you take that out, you have not counted anything for his services. The grain farmers in the last 10 years, take them as a class, in this State have really made but very little money. They have made a living; most of them make a good living, and they have educated their children.

Q. And have their capital left?—A. And have their capital left; but they have not cleared anything.

Q. Have they had as much worry about the possibility of failure as the merchant operating on the streets?—A. If you count a certain amount of worry—he can worry on a farm. He has the elements to contend with. If he knew in the spring what the weather would be he would know how and when to plant and plow, but he don't know anything about it; and if he fixes for a dry season he may have a wet one, and vice versa.

Q. (By Mr. A. L. HARRIS.) In your opinion, do combinations formed to control prices affect the prices of farm products?—A. I think so.

Q. In what way are they forming, and how do they control prices?—A. Well, they have never let me into the exact secret of how they operate a combination, but combination, as a rule, cuts off competition. We find right here that the grain elevators in my town in the last 5 years, I will say—and I guess I am safe—these elevators have not varied one-eighth of a cent. When you go to one man to sell grain it is not necessary to go to the other fellows; they are paying absolutely actually the same price. It is virtually the same as if we had but one grain man in the town.

Q. (By Senator KYLE.) That is, at the initial point of shipment?—A. Yes.

Q. There is no open market at all?—A. No open market at all. Sometimes towns vary a little; rates may vary a little on different roads; but the grain men themselves are paying about the same.

Q. (By Mr. A. L. HARRIS.) How many elevators have you in your city?—A. There are only the two at our shipping point.

Q. They are on the same road?—A. Same road.

Q. Owned by different parties?—A. Run by different parties. I think they are owned there, but it is pretty hard to tell who owns an elevator simply because there is a man in it; but I think these are both individuals. I think they are not company warehouses such as are scattered around.

Q. Have you any company warehouses in your section of the State?—A. No.

Q. (By Senator KYLE.) What do you mean by those?—A. A company is formed that owns a line of warehouses along a certain line of railroad.

Q. A company of nonresidents?—A. Yes, possibly.

Q. The company has a name?—A. Generally.

Q. What is the name?—A. That don't generally get out—about the name. All we know is the man that is running it. They don't generally tell anything about it.

Q. You know he is part of the system?—A. Yes.

Q. The headquarters of which is at a distance?—A. Generally.

Q. (By Mr. A. L. HARRIS.) Do they put up more than one elevator at the same place?—A. I have never known of it; they put them on the same line of railroad.

Q. If two elevators happen to be in the same place, do they try to get them to pool?—A. I don't know.

Q. If they find an elevator at that place, do they buy that one or build one?—A. They will buy if they can. They are trying to do that along the line. The Illinois Central, extending from the north to the south end of the State, is trying to buy the elevators, I am told.

Q. If you owned an elevator, and this company should come along and try to buy you out, and you refused to sell, and they should put up an elevator and commence business, what would be your end?—A. If I could compete with them, I would get along; but if I could not, I would go down.

Q. Would you expect the same advantages from the road that the company would get—the same terminal advantages?—A. I am always under great doubt whether I would get them or not, even if I expected it. I have never been able to get absolute proof, but I think there is a little advantage to big shippers.

Q. You say there are two men in your town, and they pay substantially the same price; but do they sell at the same place, and are they shipping to the same point?—A. Not always. Our local grain dealers now sell very largely right on the track, supposedly to some big shipper. That would go to substantiate my answer to your other question, that probably the big shipper gets a little rake off somewhere.

Q. (By Senator KYLE.) Do you think he would not gain anything by shipping on to the terminal point?—A. Well, at times they ship to the terminal point, but very largely now in our town they sell at so much on the track.

Q. Their belief being that the other fellow can afford to ship better than they can?—A. Well, that is the supposition.

Q. (By Mr. A. L. HARRIS.) You ship your grain to Chicago, I suppose?—A. Our grain mostly now comes here to Chicago. We ship corn south to the Gulf considerably.

Q. (By Senator KYLE.) To New Orleans?—A. Not this year. Our corn was not good enough for export.

Q. (By Mr. A. L. HARRIS.) You say there is not one-eighth of a cent difference a bushel between your 2 warehouses. How do you account for that?—A. That they don't want to work against one another. They know the grain has to come.

Q. Your supposition is that they have agreed on the price in the morning?—A. Well, they mostly have to do that. You and I understand the markets, and getting the markets here we know exactly our margin. They do confer sometimes. It was made up, I have no doubt at all—well satisfied of it as I can be, but I don't absolutely know.

Q. (By Senator KYLE.) Does each buyer get a card indicating the agreed price?—A. I believe so; generally a telegram.

Q. Where do they come from?—A. Different points where they buy. All go to the Chicago market, no matter where they sell. Our home market is governed entirely by the Chicago market, and that is what they sell at.

Q. Somebody must send out these cards?—A. Yes; I suppose they must.

Q. Do they come from the same party or different parties, if they come from Chicago, for instance?—A. I don't know. The cards look about the same.

Q. (By Mr. A. L. HARRIS.) If there is an understanding between your local dealers the Chicago man would not cut much figure, would he?—A. I don't know.

Q. Where, in your opinion, does the trouble exist, at this end of the line or at your end of the line?—A. This end of the line in fixing the prices, and that end of the line in working together without competition there.

Q. In your opinion the large elevator men substantially control the price of wheat in Chicago?—A. I think they do, very largely.

Q. Without regard to the price of wheat at other points?—A. Oh, no. Of course they are governed somewhat by the foreign markets.

Q. Is the present system of selling grain satisfactory to the farmers of your State?—A. Not very.

Q. Have you ever made a study of the difference between the prices in Liverpool and the prices at Chicago?—A. Yes.

Q. And your own town?—A. We have studied it up some.

Q. And what do you find to be the result?—A. Quite a difference. It is pretty hard to figure out exactly as to all the causes. Still there is quite a difference in favor of the grain man.

Q. As against the producer?—A. Against the producer.

Q. (By Senator KYLE.) Have you any personal knowledge of the operations of the elevator system of Chicago?—A. No personal knowledge, other than superficial knowledge. Of course, I know something about it.

Q. Do you express the general opinion of the people with reference to the institution?—A. That is what I have tried to do in the matter. I don't know what they call it. We call it gambling. On the board of trade I believe they have another name for it. Our people have never been able to see where it benefited the producer, although some of the members of the board of trade have tried to show us that it increased the price of our products from 20 to 33½ per cent. We haven't been educated up to that point yet.

Q. You have an idea that, but for the manipulations on the board of trade here, you would get a better price for your grain?—A. Sometimes it goes that way. As a rule, I do, yes. I think there is nothing gained by manipulating the markets. We realize sometimes. Now, at the time when they raise the price here by any manipulation on the board of trade, it very seldom affects the average farmer. At the time of the great corner, for instance, I remember the time that grain was sold here in Chicago for 35 cents more than it was sold the same day in my home town—just a certain condition in manipulation. Who did it help? It did not help the farmer; it helped the speculator. They had grain here, but no local buyer could buy on these markets because probably it only lasted 24 hours.

Q. (By Mr. A. L. HARRIS.) Have you, as an organization, ever attempted to have any legislation regulating public warehouses or elevators?—A. We have taken some action on that.

Q. Has your action been beneficial?—A. Well, it has never crystallized into anything definite yet, as far as legislation is concerned.

Q. This being the great grain center of the country, from a shipping point of view, could not you benefit your condition very greatly by proper legislation, after studying into the conditions that surround it?—A. That is what we have attempted to do, but we have never been strong enough yet.

Q. How much have the railroads had to do with this combination?—A. I presume they have had considerable.

Q. In what way?—A. Working on the inside, in this way. For instance, this new line of road being extended through the central part of this State is refusing to allow any individual elevators to be put up on that line; evidently they are working in with the elevator men.

Q. The company itself?—A. The company itself is refusing any land-grant privileges for elevator purposes to individuals.

Q. Are elevators being erected on the line of the road?—A. Not yet; it is not completed. There are to be. The lumber contracts have been let for the elevators. They have just begun grading the road in the last few days.

Q. (By Senator KYLE.) Have you any system of public elevators here in the State, public warehouses?—A. I have understood so. I don't know anything about it.

Q. Don't know anything about the law of 1871 regulating public grain warehouses, and the contest before the courts?—A. Do you refer now to the law by which they were not allowed to buy grain?

Q. (By Mr. A. L. HARRIS.) Yes.—A. I know something of that law. I understand they are not living up to it very closely.

Q. (By Senator KYLE.) Was it amended so that they could buy a few years ago?—A. That was the law. I thought you referred to an amendment, and whether our organization had done any work.

Q. (By Mr. A. L. HARRIS.) You spoke a moment ago about the effect of grain gamblers. I wish you would describe to the subcommission, as far as you can, in what way they affect the price to the producer?—A. You are speaking of a speculative market?

Q. I am speaking of puts and calls.—A. As I understand the farmers of the State, we have no objection to the legitimate work of the board of trade. We realize that that is a necessity, and we also consider that there is no advantage in selling more wheat in the city of Chicago probably in a day than is produced in the United States in a year; that the facts are misleading, and that the work and the manner in which it is done at present depress agricultural products.

Q. Does it rob the producer of the benefit of the natural law of supply and demand?—A. I think so. Supply and demand have something to do with it, but not altogether by a long ways.

Q. Have you studied into the working of the interstate-commerce law?—A. Not very much.

Q. How does your organization look upon the work of the Interstate Commerce Commission?—A. It was through the organization, largely, that the interstate-commerce law was passed; but there are probably some loopholes in it that were not expected by the organization to be in it.

Q. How were those loopholes made?—A. I don't know that I can define clearly.

Q. In other words, were they made by conflicting interests?—A. Most likely.

Q. Would there be any advantage in enlarging the powers of the Interstate Commerce Commission, in your opinion?—A. I think there would. It could be made of great advantage.

Q. Is there a demand among the agriculturists for that legislation?—A. There is a general demand, so far as I know, in this State for the Interstate Commerce Commission to have more power.

Q. (By Senator KYLE.) Do you think the law should be amended to permit the railroads to pool their freight rates?—A. Well, if you want to know what I think, I do not know whether we should have railroad companies or not at all, if you come down to that. I think the Government had better control them entirely.

Q. (By Mr. A. L. HARRIS.) Are you in favor of Government ownership?—A. I am in favor of Government control, if possible; if it can not control them, then I am in favor of Government ownership.

Q. (By Senator KYLE.) What do you think about the proposition to allow these people to pool their freight income, legally?—A. I can't see where any possible benefit can come to the producer. The benefit must be the benefit to the railroads, which undoubtedly there is. Individually I would be opposed to it on principle.

Q. Have you given that matter much thought?—A. We have talked of it.

Q. (By Mr. A. L. HARRIS.) If the rates were substantially fixed by the Interstate Commerce Commission, by consent of the roads, and they were placed under the supervision and control of the Interstate Commerce Commission, to see that the rates were carried out and observed as agreed upon, would you still have objections to pooling?—A. I would. In fact there would be very little need of it if it was carried out fully. Let each one take its own share. It would not make the difference it does now, of course, if you had a set rate that was carried out at all points.

Q. Do you believe in open competition with railroads as in everything else?—A. As in everything else.

Q. Are you in favor of a Federal pure-food law?—A. Yes.

Q. Have you, as between the different bills that have been introduced in Congress, an opinion as to which one would be of most advantage to the agriculturists?—A. I could not name it just now.

Q. Have you ever examined the Brosius bill, putting the matter in the hands of the Agricultural Department?—A. Yes, I have looked at it; I have not studied it very carefully.

Q. You think there ought to be some legislation at least in that line?—A. I think so; I think so.

Q. From the operation of the Federal and State laws against the spread of disease among domestic animals, do you think they have been sufficient for the

wants of the agriculturists?—A. They seem to be carrying them on very carefully in this State now, as to tuberculosis at least.

Q. What is the effect?—A. Have not been at it long enough to know. They are slaughtering lots of cattle.

Q. What has been the effect of the law upon the disease of pleuro-pneumonia?—A. It has reduced it very largely; stamped it out entirely in this State, so far as I know.

Q. Have you any, either State or Federal, remedial legislation that you care to suggest to the subcommission?—A. I think not.

CHICAGO, ILL., August 12, 1899.

TESTIMONY OF PROF. EUGENE DAVENPORT,

Dean of the College of Agriculture, University of Illinois, and Director of the Agricultural Experiment Station, Champaign, Ill.

At a meeting of the subcommission on agriculture in Chicago, Ill., at 10.30 a. m., August 12, 1899, Mr. A. L. Harris presiding, Prof. Eugene Davenport was sworn as a witness, and upon being examined on the topical plan of inquiry on agriculture, testified as follows:

Q. (By Senator KYLE.) State to the reporter your full name, address, and occupation.—A. Eugene Davenport, dean of the College of Agriculture, University of Illinois, and director of the Agricultural Experiment Station.

Q. How long have you resided in Champaign?—A. Since January 1, 1895.

Q. During that time have you been engaged as professor of agriculture in connection with the State University?—A. Yes.

Q. Have you examined the syllabus prepared by the subcommission on agriculture?—A. Very briefly.

Q. In looking it over do you find some items to which you could particularly address yourself?—A. Yes; some on which I have more information than others, of course. I have indicated on my copy here those which struck me upon which I have put the most study and have the most information; they are topics Nos. 2, 3, 4, 8, 23, and 24 in Part I; and upon the others I may have some information, but these are the ones that I know most about. In Part II, I have marked 26, 30, 31, 32, 36, 40, 41, and 44. In Part III, 49 and 50.

Q. Part I relates particularly to the labor employed by agriculturists. What do you say with reference to the comparative condition of parties employed in agricultural pursuits?—A. Does it relate to their condition now as compared with 40 or 50 years ago?

Q. Well, in former times; and state whether there has been an improvement, and so on.—A. Upon that I was going to remark simply that there seems to be a tendency to employ older men. There are more married men employed now on the farms than were employed a number of years ago, as far as my experience has gone.

Q. Twenty or 25 years ago?—A. Yes. Then there were more young men than now, although still the bulk of labor is young men.

Q. Would you characterize them as men under 30?—A. As between married and single, there are more married men now employed as laborers than there were 25 years ago.

Q. Both the husband and wife, you think, employed?—A. Oftentimes the wife affording some of the help in the way of housework.

Q. In this case is the house provided by the owner of the land?—A. Almost always the house is provided.

Q. What is the arrangement made, as a rule, for occupation?—A. Generally the man is employed for a year by the month, for a stated amount, and he is to have furnished a house with a little patch of land, perhaps a cow kept or something of that sort, with the understanding sometimes, with one of them, of course, that extra labor shall be boarded, and sometimes not. Oftentimes they are simply engaged for the labor of the season.

Q. What is the nationality of those laborers?—A. So far as I have observed most of them are American born, in the sections that I know most of.

Q. That is Illinois?—A. Illinois and Michigan. I am speaking of the two States I have known most of. I am speaking especially of Illinois now.

Q. Have you noticed that young men are coming from foreign countries, Germany, Scandinavia, and all those countries, seeking employment on the farms?—A.

Yes. I was speaking of these married men. A great many of the unmarried men employed on the farm are foreign born, especially German and Scandinavian, not from southern Europe as a rule.

Q. Is the demand as strong for employees along this line as it was formerly?—A. For agricultural employees? I think it is.

Q. Particularly this year, I presume?—A. Well, I think it is every year. There is difficulty in securing good men. The demand is, perhaps, for a better class of men than before, because of new machinery. The labor is more complicated than it once was.

Q. That might introduce the question now of the use of improved machinery along agricultural lines, and its effect upon the employment of help on farms, the quality of the help, and also whether it diminishes the demand for help.—A. Upon the first it has certainly called for a higher quality of labor; at least that some of the labor employed upon the farm should be of a higher grade, but not necessarily all of it. At least a portion of the labor on the farm should be of a better quality. Along with that has certainly come a state of affairs in which there is perhaps less manual skill shown upon the part of farm laborers than was at one time found. We do not have the expert cradlers, expert binders, expert men of that class, that we had 25 years ago, because there is no such call.

Q. I used to hear it stated here in this State 25 years ago, with the introduction of these twine binders and so on, that hundreds of agriculturists would be crowded out of employment, and they would be walking the streets, etc.—A. That was a very common impression, but I think it is entirely groundless. I think there is as much call for labor on the land as there ever was, and that the call is as sharp and continuous—that is, as far as my observation goes. The introduction of machinery has vastly extended agricultural operations; it has extended the acreage under cultivation, and has increased the amount of labor bestowed upon the land per acre. I do not think it has decreased the number of men or the total employment of man power on the lands of the country. In other words, it is not to be taken for granted that if a machine is introduced which can do the labor of 10 men, that 9 of them will be crowded out of employment. I would like to add in that connection that it is oftentimes forgotten that the amount of labor that may be put upon an acre of land varies between very great limits. It may be very slight in which the crop produced will be one of the gross crops, yielding very light revenue per acre; or it may be very great, yielding such a crop as sugar beets, or some of the more intensive products. I think the introduction of machinery has intensified the labor which has gone upon the land, enabled us to put more labor on our land per acre than we would otherwise be able to do.

Q. What is the general feeling amongst employees with reference to making farming a permanent pursuit?—A. That is very variable. I think the most characteristic point in it is what seems to me a decided change in the object before the laborer on the farm. Twenty-five years ago, and of course longer, a man generally worked upon the farm for the sake of getting a little money with which to buy some new land for himself and become a farmer. This man was likely the son of a farmer. But now that lands can not be had at \$1.25 per acre, or \$5 per acre, there seems to be a decided tendency for the farm laborer, if he is unmarried, to work for money without a very definite object, and this money is likely used for whatever his fancy dictates, most likely for a horse and buggy of his own.

Q. No object in life at all?—A. That would be putting it pretty strong, perhaps; but not a very definite object as compared with the object that stood before a man when lands were cheap.

Q. Not as a stepping-stone to some other business?—A. No.

Q. What have you noted with reference to the disposition of farmers' sons as to remaining upon the land?—A. That again varies greatly with individuals. It has seemed to me that there has been an increased tendency on the part of farmers' sons to leave the lands, but there have been many indications that in the last 3 or 4 years this tendency has received a check. I think there is to-day a stronger tendency on the part of farmers' sons to remain on the land than there was 5 years ago or 10 years ago.

Q. With the introduction of improved machinery, do you regard farm work in the line of drudgery, or is it so considered?—A. I don't consider it an occupation in which labor is drudgery.

Q. How do you regard it as compared with day-laborers' positions in the cities—plasterers, masons, and hod carriers?—A. I regard it as infinitely better.

Q. How do you account, then, for the fact that the cities are overcrowded with laborers that are seeking employment along these lines, with labor organizations, and that the farmers over the whole vast country to-day are seeking far and wide for help and can not get it.—A. I have jotted down three reasons that it seems to me are fundamental there. They are reasons that are not always mentioned.

First of all, I think a large percentage of humanity is strongly desirous of an environment that is exciting. It is more than simple companionship; it is a desire to be where there is much going on. The simple noise and bustle of the streets is entertaining to them; therefore those men enjoy themselves best where there are a great many other people; where there is a great deal of machinery in motion; where there is a great deal of excitement in the environment that is about them, and those men are lost when they labor alone, and therefore they seek this natural excitement. I think that is one reason. Another reason is that labor on a farm is more exacting upon a man in the range of ability that it requires of him than most of the labor of the city, which is organized and gauged in such a way that the labor of any one individual is comparatively simple. An average man upon the farm is expected to be able to do a great variety of things, and do them well. He must care for horses so that they remain healthy; he must care for his machine so that it will continue to run; he must know a good deal about crops; he must be a fair judge of the condition of the land, so that he may report this with intelligence; and the range of his ability should be somewhat broad. He is left a good deal to his own resources under the best and most exacting régime on the farm. It requires a better man to be a good farm laborer than it does to go into a gang.

Q. The ordinary man don't like to be a "better man?"—A. The ordinary man don't like to do anything that he is not compelled to do, and therefore he goes where it is the easiest—the line of least resistance; that is one reason. Then the third that I have jotted down is the apparently higher wages paid in the city. I say apparently, because the wages paid in the country are above the cost of living. The wages paid in the city include the cost of living; and there is the strongest tendency to compare the one with the other directly, as there is in salaried positions. The wage paid to the farm laborer is so much per month, and he is boarded, as a rule—as we say, "washed and found." In the city he gets a wage per day or per month that seems vastly larger, but he is expected to find himself, and of that cost of living he knows very little.

Q. It is an indefinite factor in his mind?—A. Absolutely indefinite.

Q. With a possibility, probably, that he can reduce that to a minimum and save probably more than he could on the farm?—A. He does not think anything about that, and he says, "I worked on the farm for \$20 a month; I can go to the city and get \$30 or \$40," and he goes, he says, "for higher wages."

Q. Is it your observation that this class of labor is better off than 25 years ago on farms?—A. In amount of money, yes; but I do not think that it is as valuable to them, because it can not secure so much land for them. It can not secure the opportunity for a man that it could 25 years ago.

Q. That is a question of the investment of his money?—A. It is a question of investment of his money and the opportunity.

Q. Would not the same thing apply to the man that takes a position with a street railway?—A. Exactly, but the wages are higher now than they were 25 years ago on the farm.

Q. So there is really no cause for complaint on the part of employees as to the treatment of the farm class of the population?—A. I suppose they would find cause for complaint. The farmer or landowner feels that he is paying everything for labor that he can afford, and that by the time he adds the cost of taking care of them, he is paying as good wages as other employers—all that he can afford to pay. I know that is the feeling of the farmers.

Q. Do you regard the position of the farm laborer as a good one for the person who is considered an unskilled laborer?—A. I certainly do; good in two senses. I think its income is good to him; and I think the surroundings that come to him are helpful and healthful; and I can not see why the same grade of labor is not as well paid on the lands as in most lines that I know of.

Q. Is there a better opportunity, in your judgment, for a young man to rise, to get to a position of independence in the laboring line on the farm than there would be in the city?—A. That depends, of course, upon the kind of a man. If he is a man that is able to control large interests, he will likely come into that control, I was going to say, in the city more readily than in the country; but of the class of men that we call laborers on the farm, and who would remain laborers in the city, even laborers of good grade, I think it is decidedly true that the farm laborer has a better opportunity to become a better citizen and a man of influence in the country than in the city, as far as my observation has gone.

Q. The tendency has been for 25 years the other way; even farmers' sons were desirous of getting off the farm. What do you notice as to the disposition of farmers' sons now?—A. I know a great many who have trained themselves for the technical professions, as, for example, electrical engineering, which is a new profession and calling a great many men. I know a great many of them who have fitted themselves for this business and have abandoned it very quickly and gone

back to the land. These were sons of landowners who are not to be considered as farm laborers simply. There is a growing appreciation of the value of land to the landowner.

Q. Within the last few years?—A. Five years.

Q. Formerly—25 years ago—the young men were very anxious to get away from the farm. What do you assign as the reason for that?—A. I think the anxiety was stronger 15 years ago than 25 years ago. The reason for it, it has seemed to me, was a complex problem. In this country we have experienced a wonderful development along mechanical lines, and the American is naturally a mechanic. He is skilled in mechanical matters away beyond most other nationalities. The demand that has come for good men for these positions almost necessarily has come to the American boys, I think. It has not come in a good sense to the foreign immigration. That is one thing. There has been an immense tide of foreign immigration that has in a sense competed with common labor, and to some extent on the farm, especially the Germans and Scandinavians of the Northwest. Until the last 5 or 10 years the occupation of farming has hardly been considered a scientific pursuit. The drudgery of the farm has been wonderfully lessened during all of that period, so that the whole business of farm life and farm labor has taken on a new aspect within the last decade. The two things together, I think, the sharp call for young men trained along mechanical lines, coming at the time of the largest development of our lands by unskilled methods, involving a great deal of drudgery, have operated to keep a great many American boys off the lands.

Q. Do you think there is a feeling amongst the American young men that farming, as an occupation, is one of a degrading position—a menial position?—A. A great many of them feel that way.

Q. Why are they made to feel that way, in your judgment?—A. Well, agriculture, from the Middle Ages anyway, perhaps—

Q. (Interrupting.) Biblical history has given the first phase, has it not?—A. Yes; but after the fall of the Roman Empire, and during the days of the Roman Empire, agriculture was largely the occupation of the enslaved, the conquered nations; and in almost all the European contests—and our civilization is European—the conquered were put upon the lands as laborers; and I think there is a kind of inherited feeling that gentility goes along with government position, military, law, or something of that kind. That is one thing. Then, again, the farmers themselves have fostered this feeling. They have rather accepted the position as to its being an inferior calling; not that they have been willing to accept it so. They have galled under it, but they have accepted it in the family as a part of their life. There is a reason for that. This country has been undergoing an intense and very rapid development, especially in the last three decades, after our recovery from the war. That development, the intensity of it, and the rapid changes that are involved in it, seem to require frequent meeting of men interested in large enterprises. This tends to form centers of population more favorable to rapid conduct of business than in scattered populations. It is well illustrated by the fact that farmers have only within the last 5 years commenced to take daily papers—only been able to get them within the last few years. And only recently have the farmers commenced to really concern themselves with all the questions that interested the country; only recently have they commenced to feel in their bones that every other occupation in this country is interested in agriculture; and there is coming a self-respect among farmers that is not very old; it is new. I think that this native feeling that farming is a somewhat ordinary and, perhaps, a degrading occupation has been fostered sometimes by local politicians during the campaigns. They have considered it good political capital to inform the farmers that all of the other occupations were combined together against them, and they have accepted it as being true, because it was told them by men who ought to know.

Q. He has been made the butt of ridicule by newspapers and politicians?—A. Cheap politicians.

Q. And comic newspapers?—A. I think, as far as my observation goes, that even yet the average farmer has no conception of the light in which agriculture as a business and as a productive industry, or in which agricultural people as a part of the great American commonwealth, are esteemed by the leading men in the country.

Q. Where do the comic newspapers get that idea? When they wish to put a man up as a butt of ridicule before the country they dress him up as a farmer. Is it because the farmers are as a class ignorant, or because his calling is considered by them as degrading?—A. It is a literary habit. Why is it that a storm at sea is described always in the papers after a fashion that nature does not imitate? We have our literary Dutchman, our literary Irishman, our literary negro, that have

very slight existence in fact; but he has gone into the papers and on the stage until we accept him as a real natural product of the world, and a typical specimen of the kind. In the same way we have the literary farmer; that is, the farmer—if it ought to be literature—constructed by men who know little and care less about what the occupation of farming is, and he has his language, his dialect that is ascribed to him. His spelling is always bad in order that they may bring out the language of the typical farmer.

Q. The typical farmer of 100 years ago or 150 years ago?—A. The typical farmer of 100 years ago was almost exclusively a Yankee, and he has passed out of existence.

Q. The grade of intelligence is rising?—A. Yes, it is rising. It is different in every sense than it used to be. Now the agriculture of America is represented more especially by that great section that lies west of the Allegheny Mountains and east of the Rockies. There is a population that is now made up of a mixture of the New England type, the Dutch from Pennsylvania, the old English aristocracy from Virginia, and some of the southern element, with the addition in the North of the Scandinavian immigration; it is a great mixture, and there is built up in this great agricultural section a class of people that has no parallel in the world as to blood lines, and as to activity, and as to the lines of development.

Q. And was it not formerly looked upon as a business a man could revert to when he could not do anything else?—A. Yes, and in a sense it is true. The land is kinder to its occupant than any other industry. One can go upon a very small piece of land and secure an existence with less effort, I am satisfied, than would fill his stomach in any other calling; but that is not farming in the American sense of the term. There has been a great confusion in that thing, that possibility by which a man of very low order of intellect and knowledge, low capacity of all kinds, could go upon a small piece of land and live, and not starve to death—there has been a great confusion between that thing and what is the typical American farming; an occupation, an industry, a profession just as truly as the law or medicine or the ministry or any other profession of man, or any other money-making enterprise—an enterprise which has for its object the development of the family, their education and their advancement.

Q. You think that would lead us then into a changed condition, the bettering of the condition of farming lands, to scientific farming in the technical sense, and the education necessary to ameliorate the conditions?—A. It would. This one class of people that occupy the land, who are there by accident, are to be compared, I think, strictly with the class of people in the cities that are in the slum districts. They are the accidents. I do not think they are to be looked upon as normal land occupants any more than the people of the slums are to be looked upon as normal city residents. I think attention should be directed to better lands, the class of men who farm for an object which is a little above that of simply existing; and there is need of scientific methods.

Q. You can elaborate somewhat on the adaptation of our public-school curriculum, the technical training in our public schools and universities, and the education of the common schools?—A. I think we had better begin at the upper end of it, the technical education in the colleges or universities, and speak later of the common schools, if we may, because there is where the work commenced. Secretary Wilson said to me last fall in his office that our method was surprising to foreigners; that the American Government is interesting itself officially in agriculture in three ways: First, in collecting information about agriculture as a mere commercial enterprise, perhaps, as other countries are doing; second, in actually investigating the principles of agriculture through its department in Washington and through experiment stations in different States, which is almost new to the world; and third, through the establishment of colleges in each of the States, where these principles are taught; this last way almost peculiar to America. The colleges of agriculture, founded upon the land grant of 1862, have been attempting to discover and to teach the principles involved in this great business. It was 20 years before they succeeded to any reasonable degree, because the principles must be discovered before they could be taught, and not enough was known of agriculture to even outline a proper course of study. The subject-matter of instruction was not known. The first attempt was to simply recite the practice of the country as it was at that time to young men, and tell them how to do these things; but later on, with more experience, and especially with the establishment of experiment stations, there has developed an immense literature in agriculture covering the principles involved, which has only commenced. There is more unlearned than has yet been learned, vastly more. But there is enough now upon which to base a strictly scientific course of study, and the student sees now that he is dealing with scientific problems all the time on his land, and that he may in all honesty

do a hard day's work upon the land which is a money loss to him; he may better have been in bed and asleep, as far as money is concerned, than doing that day's work. In other words, the student realizes now that he is dealing with live problems all the time; that his plants are living things; that the soil is alive; that he is liable to do damage as well as good by his labor, and that labor must be bestowed at the right time and with a definite purpose in view, scientifically. This is necessary if we are to develop agriculture strictly as a profession. As we are practicing these things in very recent years we are hearing a great deal of complaint from the farmers themselves who neglect to practice them; as, for example, in the dairy business, with the invention of the Babcock test, by which the actual butter production of an individual cow can be learned for each year of her life if necessary. For the first time in the history of the world the farmer was able to tell which cow was producing butter and which one was not; which one was making him a profit and which one was making him a loss; and the farmers have actually destroyed oftentimes as many as 25 per cent of their cows and found that they were producing more profit out of their herd than when it was 25 per cent larger. This will force other dairymen to do the same thing, because the first resultant of it would be a cheapened production of butter, and those who neglect to cull out these bad cows will, of course, be unable to produce in competition with them. This is an illustration. The same thing is going on in other lines. We have at the university a piece of land that has produced corn each year for over twenty years; it is prairie land. Last year and each year the amount of corn that it produced per acre was only about 50 per cent of what is produced by other unmanured land which has been devoted to diversified farming during this time.

Q. You mean this 20 acres has been destitute of fertilizing?—A. It has been. It has simply been drained dry; no fertilizer has been applied to any of it in the last period of 20 years; but this piece of land has raised nothing but corn each year successively—corn, corn, corn. Last year we raised corn, if I remember the figures correctly, according to the statement of Professor Holden, that cost us all the way from 15 cents a bushel up to 45 cents. The difference lay in the character of the land which was devoted to corn; and that difference depends upon the previous treatment of the land—whether it had been devoted to one crop or not, the amount of labor it took to produce a crop on that land, and the resulting crop, both conspiring, of course, to affect the cost of production. All these things make it seem absolutely essential that the successful land operator of the future must be well acquainted with the scientific principles involved.

Q. Do our young men take to this scientific farming in our universities?—A. They have taken well to those courses of study in the colleges of agriculture separate from the university. For a long time the universities failed to see that agriculture is a subject to be studied by itself, from its own standpoint, like every other subject. The universities where, from the nature of the case, the problem of education is complex, were longer in recognizing the proper basis upon which agriculture should be studied than were the agricultural colleges, where they had but one problem to work out, and that was how to teach agriculture. But latterly a large number of the universities have caught the idea that agriculture is a thing to be studied by itself and for itself, and have put in very strong departments of agriculture. As they have strengthened those departments and have actually given scientific and sound instruction students have responded just about in proportion as the instruction has been valuable or not.

Q. The experience of the University of Illinois, I presume, has rather been to develop the other lines, has it not?—A. The other lines have developed much more strongly.

Q. The institution, as I remember, started as an agricultural institution?—A. Agricultural and mechanical.

Q. And rapidly developed into a university of the first class, and agriculture took a rear seat?—A. It is the most natural thing in the world, because if an institution of that kind is started as an industrial university—and that was the name under which the University of Illinois was started—the word "university" gives an occasion for introducing any subject in which the people may be interested. Now, of all the subjects introduced in such an institution, agriculture and the mechanical arts are the new ones. Since the founding of these colleges and these universities, as we all know, we have gone through the most active period of mechanical industry, and the problems of mechanics and machinery are simpler than those of agriculture; they can be subjected to mathematical demonstration very largely; they are quicker worked out; and so, as between agriculture and the mechanical arts, in almost all our schools the mechanical arts have developed much more rapidly. In both subjects they must discover their own material before they can teach them; but in agriculture the problems were much more complex, involv-

ing the nicest questions of chemistry, botany, biology, physics, and geology, as well as economics. The development has been much slower in the discovery of really teachable matter, and not until the last 5 or 6 years can we say that really good matter has been given to our students of agriculture in any of our institutions. We are developing rapidly now at the university along agricultural lines. In every case, I think, where they were separate, where the college of agriculture stood alone, distinct from the university, it has developed these problems much more rapidly than where it is connected with the university under the same board of managers or the same administration, because where the college is distinct it has but one object in view—to develop agriculture. Where it was a part of the university agriculture was but one of forty, and of course the problem was much more complex. Our universities ought not to be too severely criticised if their development of agriculture has not been so rapid as in the colleges. In the end they ought to do better work in agriculture than the colleges can do, because their associations are freer; the environment is better. I do not think that in the universities, as a rule, there is any prejudice against agriculture as such. They have been compelled to admit that a good deal of the instruction given was poor, but there is a growing respect for the subject of agriculture and for the agricultural people.

Q. (By Mr. J. C. HANLEY.) I would like to suggest a question; I would like to ask the question how many of the graduates of agricultural colleges really go back to the farm and to the conditions of farming, to pursue the business of farming?

Q. (By Senator KYLE.) And what is the report of those young men after they have gone back to their homes?—A. Well, it is a long question to answer; the answer to it is a long story. The Michigan Agricultural College was the first of the kind in America, and we can get better data from that than any other. It was established before the Government aid came, and graduated its first class in 1861, and this ground was all fought over in the history of that college years ago. So often was this question asked that the college authorities took a census of its graduates and found that a little over 50 per cent of them were in agriculture. This census was taken about, roughly speaking, 25 or 30 years after the establishment of the college. The assertion is made that this is a very small percentage, that they ought all to be on the land.

Q. Was that distinctly an agricultural college?—A. That was distinctly an agricultural college.

Q. The supposition is that they did not all take the training with reference to going on the farm originally?—A. Well, that is a question; nobody knows about that. Personally I knew of many men who came to the college without the remotest idea of going on the land, because it was a cheap course to take, and I knew of many of them who did go on the land afterwards; but when it was discovered that about 50 per cent of the men were upon the land after the college had been running 25 or 30 years, the statement was made that it was a bad showing, that all or at least most of them ought to be there; but the college authorities made a careful study of the proportion of graduates of purely technical schools that followed through life the calling that they were educated for, such as lawyers, doctors, and ministers, and they found that they did not run as high as 50 per cent. So the Michigan Agricultural College makes the claim to-day that it has a larger percentage of its graduates on the land than have the technical schools, that follow their occupation through life.

There is another feature that I want to discuss a moment; some things must be remembered in this connection. It takes capital to own land and to operate it. A great many young men, sons of farmers, will say: "My father will help me to get an education; that is all he can do for me;" and we graduate a young man out of a college of agriculture with an agricultural training. What shall this young man do? There has been a great tendency for these young men to teach school or do something else for a number of years, in which they thought they could make more ready money than they could by doing ordinary farm labor. An investigation was made into that class of people, and it was found that of the other 50 per cent that were not on the lands, in a large proportion of the cases these men were landowners if they were graduates of long standing, and those of recent standing, in nearly every case, said that they proposed to own land as soon as they could afford it. But it is a more difficult thing for a man to acquire landed property and follow up the business of farming from nothing than it is to build up the business of the law, for instance, which does not require a very large capital to start with; and that must be considered as bearing on this question.

Q. How is it if he starts in as a renter and goes on through?—A. There is a great tendency to do that now, as lands are offered for rental. There is the greatest tendency for young men who are up on those things to rent that land, and I think the owner is ultimately the loser.

Q. I would like to know what report the university got with reference to the success of the 50 per cent. Had they been, on an average, more successful than the ordinary run?—A. Yes; much more successful. And we found that, generally speaking, these men were centers of better methods in their own communities; and that is more true of the recent graduates than of the earlier ones, when the principles of agriculture were hardly known.

Q. The time is not very long since when if a man set up like that in a township they would all make fun of him?—A. Oh, yes; they commenced that way; but now we send out our men with much more accurate knowledge than they went out with 20 years ago, and the whole sentiment toward what you might call the "educated farmer," or toward "book farming," has entirely changed in the last decade. They do not care who the man is or where he comes from. If he knows a thing, they are glad to learn it from him.

Q. (By Mr. HANLEY.) Of that 50 per cent that you say the report showed took up agriculture as a profession, how much of that was taken up by, you might say, teaching, such as professors in colleges, teachers of different lines of agriculture of teachers in schools, etc., while nominally living on the farm at the same time practicing other professions?—A. Of this last class, those living upon the land, but actually teaching local schools?

Q. Yes.—A. Almost none. Those men don't do that. In this particular instance of the Michigan Agricultural College—this college has, more than almost any other, supplied professors for other institutions, because it was older—I can not give you the figures as to how large a share of these were professors, but I can say this with respect to other colleges than the Michigan Agricultural, like Wisconsin, for example, that they are all upon the land. The teaching of agriculture in the universities, I should say, is more technical than that in the colleges of agriculture. The student does not take an agricultural course in the university unless he expects to go upon the land, and he almost always does it. As to our students at the University of Illinois, our agricultural students, they are all land men and will go upon the land, every one of them, excepting now and then one who is picked out for an instructor somewhere, and the call is sharp for them. So you may say that of the students in the university, the students of agriculture represent just about that many prospective farmers; they nearly all go on the land.

Q. (By Mr. A. L. HARRIS.) Is the tendency to support agricultural colleges greater than it was?—A. Vastly so.

Q. A growing interest in this matter?—A. Yes; and that is largely expressed by this public sentiment which suggests the topic of the curriculum of the common schools in your plan of inquiry. There is getting to be an intense call now.

Q. You consider that the money Congress appropriated to these agricultural colleges is not wasted?—A. I think it is the best investment of money the Government ever made, whether you consider the upbuilding of agriculture and the cheapening of our products, and the retaining of the fertility of the land, or whether you consider the good of the man that is occupying the land. I would say that, of all these things, I think the last two are the most important. This race has been in the habit of going west upon new lands ever since it started from India. We are about done going west, and here we must stay on these lands and work out the future of this race, probably. Now, the problem is not so much in agriculture how to produce this corn a cent or two a bushel cheaper, or how this generation shall make money; it is also, how shall the fertility of this land be protected for a thousand years; what rotation of crops, what system of farming shall be inaugurated; and, secondly, what shall be the class of men that shall occupy and control the management of this land? Under a system of farming by an American peasantry we shall lose the fertility of these lands undoubtedly.

Q. (By Senator KYLE.) Have we not lost that already in 200 or 300 years?—A. Yes; we have done that.

Q. I noticed over in England wheat growing 8 feet tall on land that they told me had been farmed for 1,500 years.—A. Yes. Now, it is a well-known fact that agriculturally good land will grow better and more productive under continued farming if the management is good; so it is infinitely important that these American lands be managed by men of ability.

Q. (By Mr. A. L. HARRIS.) Do you ascribe the decrease in the productive condition of the soil in the older States to nonintelligent farming?—A. Yes; very largely I do. American farming, until recently, has been almost exclusively a problem of raising cheap crops, and the management has been mostly directed to the labor involved, without much reference to the effect upon the land and the preservation of its fertility.

Q. (By Senator KYLE.) You think a man can farm 800 acres and get a crop off it; but he can not farm 600 acres and put back the necessary fertilization into the

soil?—A. That question, by the scientific principles involved, suggests the fact that he can get as great a revenue per year off that 800 acres and make the land grow better as he can and let the land grow worse.

Q. (By Mr. CONGER.) Do you think the farmers of Europe, or the peasantry there, are more intelligent or understand the soil better than do the American farmers?—A. I do not think they do. I do not think their knowledge of the soil compares with ours.

Q. What is to be the fate of those foreigners who are now, according to reports, coming into New England to take up those abandoned farms?—They will doubtless succeed pretty well, many of them.

Q. On what theory?—A. Because their cost of living is infinitely lower than ours in the West. It is the only way in which they can do it. The needs of the American farmer are rather high, and we are all interested that the farming of the great sections of good land shall be done upon a scale which will enable the farmer and his family to become educated, travel some, and become good American citizens. The foreign peasant has not that ambition. He comes more, as the other class I mentioned, with a desire of simply living. The better class of foreign people have gone into the Western lands, and have succeeded very greatly and become wealthy. The Scandinavian element of our population is ambitious for land and money; so is the German, and it succeeds. Now those who are willing to stay on the abandoned farms in New England are very largely of a different class, but I have no doubt they will succeed as well or better there than they did in Europe.

Q. Why have the farming lands of New England become so depreciated in fertility as compared with Europe, where the land has been used for a much greater period?—A. The New England lands are rolling, most of them, and they never were immensely fertile; they were fairly fertile lands, and some of the river valleys, of course, were very fertile; but the American is a pretty good tiller of the soil; he gets the soil in shape to raise a maximum crop at any cost to the land, and he runs his land pretty hard. They used to dump the manure into the river in the Mohawk Valley to get rid of it—considered it rubbish; and the American has never taken kindly to the use of manure, never believed in it. He found here a wonderfully fertile soil and he believed that it would last forever. The European peasants had learned by sad experience—they are recovering from the experience they went through several hundred years ago, when the land was so impoverished—that they must use manure; and they do that, and they raise fairly good crops. Take the agriculture of Belgium, la petite farming; it is of its own kind. It is successful measured by the type of man and his needs and desires. It is not successful measured from the American standpoint. Its returns are not sufficient, and that kind of labor, that kind of man, would not occupy our best soils to good advantage. He must stay on land of moderate fertility, and, of course, the product will be moderate. There is no way, I will say, so far as anybody knows now, of developing our poorest lands into strictly high-class farming lands. If it is ever done it will be in the indefinite future, and only after these better lands have become more exhausted than they ought ever to be allowed to become. The tendency of the world has been to retire—I mean now, for the typical farmer—to retire from the poorer land on to the better land rather than to put more labor on naturally infertile land; and what you can get out of poor land depends more upon the amount of labor than it does upon the land.

Q. Is my observation correct that many of the foreigners, that is, farmers from Europe, Germans for instance—have, as soon as they came here, had a higher idea of the value of manures and of the necessity of keeping up the fertility of the soil?—A. Oh, yes; and they have a higher idea of the value of fertility and of land than the Americans have.

Q. And you think possibly it is that superior knowledge, natural or inherited, of the value of manures, and of the necessity of keeping up the fertility of the soil, that will make the foreigner successful with these New England lands?—A. I think it will.

Q. (By Senator KYLE.) Do not the landlords stipulate in their contracts with these men that they must manure the land?—A. They are doing that much more than they did.

Q. That is, in foreign countries they are conversant with the subject?—A. A few agricultural occupations have been very carefully studied in Europe, as, for example, the production of beet sugar. That rests upon a scientific basis, well worked out by scientists in advance of its practice on the land, and we get from Germany now the most skillful sugar-beet growers that the world has known anything about; but it does appear that when they come in competition with our people here, the American is able to beat them when he puts his mind to it. For example, in Illinois the study of the growth of sugar beets is peculiar. They

spent last year in learning how to grow beets in a half a dozen different localities in Illinois. The best men in those localities formed a temporary company, put up some money and employed an expert from Germany to tell them how to grow beets in advance of building any factory. This year there was one large factory built at Peoria, one of the largest in America, and it is said now that the farmers in the neighborhood of Peoria are growing better beets than the company is growing upon other lands that they have rented and upon which they have put supposedly expert-beet tillers brought from Nebraska, and some from Germany.

Q. (By Mr. CONGER.) You refer to this season's crop?—A. I refer to this season's crop. In other words, the Illinois farmers this season are producing a better crop of beets on their farms as the result of one year's study of it than is grown by supposedly skilled labor from Europe.

Q. Does the State of Illinois give any encouragement to the cultivation of beet sugar in the way of bounty?—A. No; none whatever. Now, a little more on this other question, this technical education. I would like to say, if I may, that it is believed I think by those who have studied it the most, that this elementary training for agriculture should be carefully guarded. We should do better than the European agricultural school that aims principally to train the boy in methods of practice. We are believing here that we must take care of the citizen at the same time. We must turn him out a pretty well-trained man, so that in our course at Champaign a man graduates when he offers the same number of credits that entitle him to graduation from any other course in the university. One-third of them must be in technical agricultural subjects, one-third must be in science, and the other third he can select from anything the university offers. We do not say he shall not take that other third out of the agriculture. He may if he desires to do so, but we do not advise it; and in practice they will generally elect more agriculture than we require, and they will use about a quarter of their time for other subjects. That is an important difference in American colleges as compared with European.

Q. (By Senator KYLE.) What have you to say as to the curriculum in the common schools of Illinois, and its adaptability to the needs and wants of the farmer?—A. This is such a new subject that anything that is said upon it, I think, by anybody will be largely tentative. The demand seems to be for agriculture in the common schools. That is a term that is used a great deal, and it would look as if it were a call for technical instruction in the common district school in the matter of agriculture. Whether that is what is meant, I am extremely doubtful. One thing is certain. It is absolutely impossible to get it for an indefinite time to come, owing to the lack of teachers. We can not get teachers for our colleges that are up in what is known already as well as they ought to be, and the great bulk of what we would like to teach must be yet discovered; so that it is too early yet to give very much strictly technical instruction in the common schools. But I am one who believes that the appetite, when fully analyzed, is not so much for the actual principles of agriculture as it is for a curriculum which comes closer to the life of the student. Most thinking farmers say that they send their children to the schools knowing a good many things already. We all know that the life of the boy and the girl on the farm is a full one. The child comes in close contact with the business life of all the family every day: knows horses and cattle and sheep and plowing and cultivating and husking and harvesting; knows a multitude of things. Now the farmer complains when he sends his child to school that he sends him into an artificial world, having absolutely no reference to the matters upon which he already has knowledge; no reference to the affairs of the country and of rural life; that the child is living in an atmosphere that has come down to him from the schools and from very ancient times, which is largely literary and is decidedly unagricultural. I think all he asks for is that a portion of the instruction of this student should deal with the affairs of the country, as it deals with the affairs of literature, history, mathematics, and the sciences. I think that is what the appetite really needs, really calls for; so that this boy and this girl should actually study what is going on in its neighborhood, what is going on upon the land, study the habits of animals, and let his education begin where his experience leaves off, and be coordinate with it as it goes on. This work is probably well started in a tentative way in New York under the Nixon bill, in what is known as the nature-study work.

Q. Does that relate particularly to the public schools of the State?—A. The public schools of the State, and it aims directly at the students in the school, not the teachers, but directly at the students, and aims to enlist their attention to the things that are around them, to observe those things and study them, believing that not only inclination but training and sympathy with country surroundings will come from those influences. Farmers say this, that the family life on the

land is so closely identified with the business life of the farm that the child learns to know all the business hardships in the country, whereas in the city he does not; and then when he goes to school he is given to read day after day the story of the few phenomenally successful men in the world in some other than agricultural lines. So the boy reasons: I know this is a hard life of my father's; I see it; he gets up early, he works hard and late, and he never will go to Congress—never heard of a farmer that went to Congress. He has not heard of those that do go; he is not told of it in the books; but here he reads of this man, then of another, and then of another that left the farm and after a series of hardships succeeded. He is not told of the nine hundred and ninety-nine that did not succeed, and he is not very well informed of the hardships which they went through. So the feeling is that this child of the country through his life on the farm and his instruction in the schools is brought face to face with the hardships of one life, strongly impressed with them, and only with the phenomenal successes of other callings. And I think there is a call that these young people should be better instructed in the normal features of country life.

Q. Under Part II we have a very important subject—the comparative earnings of capital invested in agriculture. What have you to say in regard to the earnings of capital compared with 40 years ago?—A. Well, this is the thought I had in mind under that head; it is a subject I can not discuss fully, but there is this to be thought of: Much depends on the way capital is calculated. Forty years ago, or even more recently than that, 100 acres of land bought from the Government would represent a capital of about \$500—\$1.25 an acre. That is all a man considers he has invested. That same 100 acres, to-day, if good land, is worth possibly \$100 an acre in a good section. He considers, then, that he has \$10,000 invested in that land. Now, it is a question of how he calculates capital. If we consider that this man had \$10,000 invested in this land, I am satisfied that the returns are smaller, reckoned on that capital, than were the returns 25, 30, or 40 years ago, reckoned on the capital invested at \$1.25 an acre; but I do not think it is the fair way to figure the capital invested. If a man must purchase the land at that figure, then it becomes a fair way of figuring the capital invested; and then it is a serious question whether a man can afford to buy land at that rate and then say that his income is as great as it used to be. But it is apparently great enough, so that men are willing to pay \$60, \$75, \$80, and in some cases \$100 an acre for land.

Q. If a man has \$10,000 to \$12,000 to invest, and he decides to go into some line of business, the question is whether he shall invest it in agriculture or buy a stock of merchandise. Why does one man choose the farm and another the merchandise?—A. I think it is not so much the question of investment as of personal choice, place to live, or something of that sort.

Q. Is there not some compensation in the security upon the one hand—the freedom from worry, etc.?—A. Certainly. If we attempt to compare the profits from land with those from the mercantile business, and restrict ourselves to the eminently successful merchant, then, of course, the income from land will not compare; but the land investment is more in the nature of a permanent investment; some income is certain. There is no such thing as the owner being "out of a job," out of employment; he is bound to have some returns. To be sure, some years he may not make any very large net returns, but he is not at all likely to lose his capital or to impair it, except by bad management. So that while I do not know very much about the returns from the mercantile investments, he would suffer more in the mercantile business by losing his capital. Some merchants lose all their capital very quickly. There is another way of looking at it. There are very many excellent families, average families of 5, on 80 acres of land, that are living good successful lives, dressing comfortably, educating their children, many of them in colleges, helping themselves through sometimes, it is true, but instances are common in which the family on an 80-acre farm as a whole is surely progressing, and the sons are being left better than the fathers commenced. Now that is a small investment of capital. He invests his time; he never will get wealthy, he never will have a large bank account, probably none at all; but his 80 acres of land, with one man's time, has apparently, at least, supported that family, and supported it at an increasingly comfortable rate. And either we must reckon pretty large pay for that man's time, as compensation goes in the world, reckon a pretty large return for his capital invested, or else reduce the apparent expense of his living to a very small amount. There is a lack of appreciation in this country, although it is beginning to manifest itself, of the value of landed possessions to a family. I find that my students in no case have ever thought on that subject. I never have seen a student who has. We in America are developing so rapidly and so much appears to depend upon individual effort that each man seems to think that everything depends upon what he does. Of

course, it will not depend so much upon his effort after a few generations as it has in a new country under pioneer conditions, and I find that they have not thought very much upon the value of this land to the family. We can not strictly compare a mercantile business with farming, for the reason that when the merchant leaves his business he has left nothing behind to his sons or to his next generation but his stock of goods and his good name.

Q. And the stock of goods not always paid for?—A. Not always paid for. But it is not a family legacy; it is not a possession that will insure that family a foothold in that country, however well managed. If a single individual in the family line fails to be more than ordinarily successful the trade is lost to the next generation of that family. It is not so with a landed possession. If a family can stay upon the land for 4 or 5 generations, it becomes a power in its own locality—the family name becomes powerful, and that is an advantage that is not figured.

Q. Could you touch upon our present system of taxation and give your opinion as to the proportionate taxes which the farmer pays, and whether it is just and equitable or not?—A. I do not think it is, but I have passed over it because I do not possess any large amount of definite information, and what I can say upon it is no more than what a thousand others might, and what is very evident, namely, that all the farmers' property is clearly open to inspection. The assessor, under our present system, is one of his own neighbors, and he knows exactly how much personal property he has as well as how much land he has and what the property is worth, and it is all assessed.

Q. He is compelled by law to itemize it exactly?—A. Yes; and as an assessor I have personally chased a hundred-dollar note until I have found it. Of course such a thing as that would be ridiculous in a city. It is much more difficult to get at the personal property of any other profession than it is that of a farmer. That is, I mean a typical farmer. Of course some individual farmers possess large capital in the banks or other businesses, but that is aside from their farm work. I mean the typical average farm property is all open to the assessors, who can see it if they want to.

Q. Are merchants required to itemize their boots and shoes and clothes?—A. I believe in Illinois at the present time a man is required to itemize everything he possesses.

Q. Is that the new law?—A. I could not say as to what is the obligation of merchants on that.

Q. In most States I understand merchants are just required to say so much merchandise; they do not itemize it?—A. Yes.

Q. Just estimate in a lump; not itemize as a farmer does, so many cows, plows, harrows, and sewing machines; everything must be itemized?—A. So many calves, cows, horses, hogs, etc.

Q. Just so much capital?—A. Yes.

Q. Have you anything to suggest in the way of improving our system of taxation?—A. I can not, because I have not made it a study sufficient to have any suggestion that would be valuable.

Q. The decline in prices of agricultural products—what have you to say in regard to that, relative to the present condition of agriculture?—A. There has never been in the history of the world the opening up suddenly of anything like such an agricultural tract as this great West, and covering it almost instantly with rapid transportation. The farming of the Mississippi Valley and of the Northwest and of the Far West for the last 30 years or so has been eminently destructive to fertility; it has been a case of getting maximum crops from virgin soil regardless of the consequence, and it has been at a time when we have had exceedingly good machinery to assist us; much of it would have been impossible without the finest kind of agricultural machinery, reapers, mowers, and all that sort of thing; it has been very hard for foreign people to compete against us. An intelligent Englishman said to me that if they had either one of two of our American advantages the English farmer could take care of himself. One of them was the native fertility, that we have not yet exhausted, that we draw upon recklessly without feeling that we must restore it; and the other was our Indian corn—a gross crop, which is raised cheaply, most of which comes from the atmosphere and does not draw very strongly from the land. The two things together combine to favor the American farmer and to crowd the farmers of the rest of the world very hard. This has also crowded our own Eastern farmers to the wall, and made them unable to compete against the products of this great prairie country, requiring almost no capital to develop it, almost none at all, and requiring simply some labor and some machinery. We have thrown upon the markets of the world an immense output of food products raised at a minimum cost. Of course it can not continue; it is going to cost more to produce these things in the future than it has cost in the immediate past. It

seems to me there has been no greater decline in prices than would be fully covered by our improved and cheapened system of production. It costs less to produce a bushel of corn or a bushel of wheat than it once did. For example, I own a farm in Michigan; my father and I are in company, and I own another beside of it, and he has operated it. The last time I was home we were using an 8-foot-cut mowing machine. I used to drive a 4-foot-cut mowing machine on the same farm. We are not only reducing the cost of mowing by more than half, but we are also making the lifetime of the machine double what it would have been before, because it is no harder on the machine to cut 8 feet of grass than 4. It shows the way in which the cost of production is cheapened. The old-fashioned hayrake, a great improvement over the hand rake, greatly lessened the cost of making hay. It dumps it in continuous windrows behind the machine, and the hay could not be handled until it was all raked. Now we have a rake that delivers the hay in a continuous stream at the side, and you can follow immediately with a hay loader; 3 minutes after the rake has started you can follow with the loader behind. In other words, one operation does not have to wait until another is finished, but the two go right along together; and we have vastly reduced the cost of producing the hay crop. The same is largely true with the other crops.

Q. So you think it would not be fair to compare the price to-day with the prices of former times?—A. No; not at all. We used to cultivate Indian corn with a double shovel plow, and take one side of the row at one time and come back on the other; never could get back in the middle to kill the weeds. Now a good deal of the cultivation of Indian corn is being done with the Breed weeder, which is simply a series of wires, somewhat slanting, hauled by 1 horse, guided by 1 man, and it takes 3 spaces at a time—finishes 8 rows at a time, and does it better.

Q. That is the first time or two?—A. The first time it goes right between the hills and cleans the weeds from the hills; not only cultivates corn 4 times as fast as we used to, but actually cultivates it better for that time. It replaces several cultivations by the old method. Of course this all cheapens it.

Q. How about what the farmer has to buy, as a rule, such as the necessities of life on the farm, compared with former times?—A. Of course they rise and fall. There was a time when things were lower. Some things are higher now than they were 2 years ago. Sugar costs a little more now than it did a few years ago, but the same principles, speaking generally, I think, have operated in all lines of production to cheapen them.

Q. Within 2 or 3 years a farmer has shown me a suit of clothes, nicely made up and pressed, and so on, which looked respectable and made him look like a gentleman, that he paid \$3.50 for.—A. Yes. We are getting now more matches for 15 cents than we used to get for a dollar, and better ones, too. It seems to me that, broadly speaking, farm products have followed the development of most manufactured products in this country in being produced cheaper as the result of better machinery and better methods, and that in that same sense I think they have all gone down together.

Q. So, if you were to draw a comparison, in your judgment, what would you say was the condition of the farmer as compared with a few years ago?—A. I should say his condition is better than I have known it; he has been growing up.

Q. Were you brought up on a farm yourself?—A. Yes; I have always lived on a farm. I should say it is better, and steadily growing better every year, as I have known it in this country, remembering the fact that there are always rises and falls, waves and tides. There are years where they seem to go backward in their affairs. These things are not constant; there are rises and falls, but the general tendency has been upward, I should say, all the time. Now, there is another feature of it all. In all of this time I think that the labor of the farm has at least stood constant. We are paying as much money for labor now as we ever did per month, but the purchasing power of that money that we pay is vastly greater than it was 20 years or 25 years ago for everything but land. That is a feature that ought to be considered.

Q. That is, considering the wages of people employed on the farm?—A. Yes; that is considering the wages of the people employed.

Q. Is he not receiving really more in dollars than he received before?—A. Yes; so much more that it is a principle among farmers that when they can do a thing with a machine they do it because it is cheaper; and that has enabled us to intensify our farming, to do more. But when we consider the history of this man and that one and the other, we find they employ about as many men as they ever did, but they do more things.

Q. What have you to say in regard to the organization of agriculturists; what is the inception of this movement, the cause of it, and what the ends to be gained by it?—A. I believe that the original idea resulting in the organization of farmers

was the need of protection. There was a wave of sentiment that went over the country a number of years ago to the effect that everything must be organized in order to take care of itself. Everything did organize, and the farmers felt, from some cause or other, a good many years ago that their chief grievance was in the prices they paid for their purchases, and in the fact that their prices for their commodities were being manipulated. There was a strong feeling of objection to the middleman both ways. As they said, the middleman neither produces nor consumes. He simply acts as a transfer agent, and stands between the two legitimate ends of this business, and it is a good thing to be rid of him.

Q. (By Mr. CONGER.) Does that sentiment exist to-day?—A. I do not think it does to anything like the same extent. The grange was organized in many sections, and propagated with that idea principally in mind. The result was accompanied with grange stores, and attempting to buy and sell through the medium of this organization.

Q. There seems at present to be a sentiment among manufacturers that brings about organization to a great extent?—A. Yes.

Q. Does that exist among the farmers now?—A. Yes; but for a different purpose. I do not think the farmers now feel this prejudice; certainly not against the middleman, who is a seller to them, that they did 20 years ago. The large merchants have sought out the farmer. They have sent traveling men to him. They have dealt a good deal directly with the farmers, and the farmers have learned by experience that their own local dealers can order goods for them, and will do it, too, when their order is a large cash order, at rates considerably below the retail price; and they do come in direct relations with the manufacturers; so that they find the gap is not so wide as they once thought between the farmer and the man at the other end, and that this middleman will stand between them to the advantage of the farmer if he will make it to his advantage to do so. So I think that prejudice has gone out very largely, and I think, too, that the large dealers realize more than they at one time did the advantage which comes to them from dealing directly with the farmers for cash, even though they deal through this local man, who is a kind of a transfer agent between them. It operates in the farmer paying cash more than he used to, and buying in larger orders, in larger quantities. But I do think the feeling still is held among many farmers that when it comes to the selling of his commodities there is a middle transaction that is not to his advantage.

Q. (By Senator KYLE.) Too many middlemen?—A. Too many middlemen.

Q. He does not object to 1 or 2?—A. No.

Q. He objects to 4 or 5?—A. He can see it is a long story from the time his wheat is cut until it gets into Europe or into flour. He sees, too, that wheat at 60 cents a bushel is hardly compatible with bread at 5 cents a loaf and bran at \$15 a ton, and he sees there is a good deal of money that has appeared in this thing after it left his hands. It is a little bit of the same feeling that always existed toward the middleman, both who sold to him and who bought from him, but by no means so intense. It is not a blind hatred, but it is a disposition to try to find out, if possible, what the facts are, and whether there is any such thing influencing prices in standard goods through speculation.

Q. (By Mr. CONGER.) As a general rule, the farmer thinks much better of the middleman who sells to him than he did in the years gone by?—A. Oh, certainly. As a rule, the company stores were not successful, and that proved a good many things; and then the farmers learned what retail rates were; they learned margins that they never knew anything about. There was a time before that when the merchant felt bound not to reveal the secret of his percentage of profits to his customers; but in all this the farmer has found that an advance of 25 per cent on dry goods, for example, is not very big pay; so that the object of organizations of farmers now is primarily to study their business.

Q. (By Senator KYLE.) That is they see that all other business lines are organized, not in opposition to the farmers, but for their own interests?—A. Yes; and they do the same thing: organize to study the business. Of course, in a far-reaching sense that organization is political, but only in a secondary sense. The organization now among farmers is the farmers' institute. The topics they discuss are mainly the principles involved in their business; in fact, political and religious subjects are barred. A man can not make a political speech at a farmers' institute in any State that I know of. It would not be allowed. So that men of all shades of political belief meet there and discuss these subjects. There is another class of organizations among farmers that is very helpful. There is a strong tendency for farmers interested in the same line of agriculture primarily to effect organizations. There are a great many live-stock breeders' associations; there are a great many bee-keepers' associations, dairymen's associations, and horticultural societies, in which those primarily interested in the same thing meet and discuss

those affairs and talk about business. And then, of course, there are still other farmers' organizations built upon the original idea which perhaps gave birth to the grange, but which is broader, not so distinct, not so well-defined yet, which aims to consider farming as a business as compared with other business; there are some of them. It is economic in its thought. There is getting to be a much stronger desire on the part of farmers to study economic questions for their own sake, which could not be studied at farmers' institutes; would not be allowed.

Q. If they do not study them, who will?—A. That is it; who will? I do not think farmers think now that they are considered the legitimate prey of everybody, but they do feel that there are problems that will not be studied unless they study them. But they are disposed to do it in a straightforward way and discuss their matters along with other matters, and they feel that all the affairs of this country are so interlocked one with another that none of them can stand alone.

Q. Their study of these questions has been fruitful in securing good legislation in the State legislatures and National Congress, has it not?—A. Yes; eminently so. Take this National Pure-Food Congress and these national gatherings of farmers; they aim to discuss questions which are broad and which involve their economic relations with other people and other industries. It is devoid of bitterness, as was once exhibited, and it seems to me it is remarkably encouraging in the breadth of view in which these questions are considered.

Q. The farmers of the country are very much interested at the present time in the extension of foreign markets. What have you to say in regard to that question?—A. I think it is one of the greatest questions before us as American producers, and one that ought to be studied from its own standpoint. I have found, when I was out of the country, in South America, that that country is being supplied by European people. Nearly all its trade was with Europe, and I tried to learn why. In the last analysis it was apparently for two reasons: European nations had the shipping facilities, and they had made a study of the export trade. They had learned the lesson long ago that we Americans need to learn, that the prejudices, the tastes, often foolish, of the buyers must be consulted as well as their real needs. For example, I found that the English people were putting cloth into the South American countries 1 meter wide; that they would make it any width that the people wanted if they would only buy it. The American is a little inclined to say, "My cloth is a yard wide, and you will have to buy yard-wide cloth." I found that European peoples will cater to any notion if they can only make a sale. I believe we ought to study that in agricultural affairs as well as in other things, and develop an export trade of American products; but there is a feature of it, which is prominently before us now, which it seems to me especially needs study. A great many farmers in this great Mississippi Valley are producers of gross crops primarily, like corn and oats, crops somewhat easily raised in short rotation, and their principal question is how to get that into money; and while I would not say a thing against an attempt to stimulate a European demand for American corn, at the same time it seems to me that it is a good example in hand, and it is vastly better to export that corn in the shape of beef or pork or mutton, or some of these semimanufactured products, in which you condense 7 or 8 or 9 or 10 pounds into 1.

Q. Do you think the European nations will not take kindly to corn as a food product?—A. Well, I doubt it. Corn is a cheap grain, and their cheap grain is rye. They can not produce the corn. There is no danger of their ever producing corn extensively in Europe. They can not do it in northern Europe; but they can produce rye, and all the peasantry of northern Europe is accustomed to eating rye. Then, again, corn is exported in comparatively large quantities for cattle food and pig food in western Europe. So far as I have ever been able to discover, it is not customary in any country to use for human consumption the same grain that is fed to animals unless it is raised in that country. It is a peculiar prejudice, but I believe it exists, and, like all prejudices, can not be reasoned with.

Q. (By Mr. CONGER.) Would it not be an advantage to the land of this country in having the corn fed here?—A. Decidedly. Broadly speaking, in the last analysis, we ought not to export our grain. We should be developing a thing which some time we would need to retire from. Undoubtedly we could stand a heavy exportation of grain out of the Mississippi Valley for a number of years. It is a principle in agriculture or in soils that are very fertile that if they are once broken up and put under the plow and cultivated, and certain internal processes, whatever they are—not yet well understood—set to work, a great deal of fertility is going to be liberated and go off somewhere. They may as well go into a crop as go into the river. It will go into one place or the other. There is no way, in other words, of holding indefinitely all the fertility which may be in some of these richest lands. Putting it in another way, if the virgin soil is extremely fertile,

it must reduce itself under agricultural operations; there is no way to prevent it down to a certain point, whatever that may be. Then we must begin a method of holding that fertility where it is or else we shall suffer from it. So I say we might stand a heavy exportation of grain out of the better lands for a little while yet, but they are beginning to fail in almost all sections where they have been under the plow for years. After 15 or 20 years up to 30 or 40, on the very best land, you have reached the point where you ought to consider the question of fertility.

Q. Do these South American countries import food products to any great extent from Europe?—A. They import certain products extensively; butter, for example. They import hams from America; codfish from Newfoundland. I saw in cities along the Amazon more codfish than I ever saw in this country, 10 times over, although the Amazon River is the richest river for fish in the world.

Q. You spoke of Europe catering to their wants, and your illustration was of a manufactured product, cotton cloth, and I was wondering if that applied to agricultural products?—A. Oh, our people do the same thing in agricultural tools, and I think we need to imitate the whole matter in all our foreign products. In the class of meat that we prepare for the export trade I think we ought to have in mind that there is a people that likes fat meat; let us make it for them; if this other people want a certain kind of beef, certain cuts—

Q. (By Senator KYLE.) (Interrupting.) Canned roast beef, for instance?—A. Yes; canned roast beef—give it to them. If this people want heavy hams in their beefs, give it to them. We can do it.

Q. (By Mr. CONGER.) You say the American manufacturer of farm implements caters to that South American trade and makes machines that they want?—A. Yes.

Q. Is that of recent date, or have they been doing it for some time?—A. Doing it for some time; they make things especially for them.

Q. They want their reapers and mowers built on different lines?—A. Oh, yes. Some of the general designs can not be used in those countries. The laborers are not able to operate them. The machinery must be comparatively simple in most of those countries.

Q. Their farm labor there is not so intelligent as ours, at least in a mechanical way?—A. Nothing like it; it is not anywhere in the world.

Q. (By Mr. A. L. HARRIS.) What would you suggest as the best means of increasing our foreign trade?—A. I think that the method Secretary Wilson is employing now regarding butter in the test exportations for London and other markets is the place to begin. We do not yet know, as we have not made a study of the appetite of these foreign people, what their real wants are. The only way to find out is to try to see what they want and see in what shape our products can go most successfully to their markets; make a close study of their habits of eating, their habits of consuming all these products that we can produce, and meet these habits just as nearly as possible. But few farmers realize, and a great many tradesmen do not, that you can not afford to quarrel with a man's habits of life. There is a reason for those habits; they were probably inborn; they are certainly inbred, and it pays to meet them. There is no use, in other words, of trying to get a man to eat fat meat when he wants lean; it does not pay to argue with him about it. Make it as he wants it and sell it to him, and the possibilities in that direction are yet immense. As an illustration, I might mention the fact that farmers are only beginning to realize the wonderful difference in their animals—what we can produce in the way of an animal if we undertake to do it. We are meeting European horse trade now. The whole method of breeding horses has been changed within the last 4 or 5 years, simply under the pressure of the Chicago market, principally through the efforts of Mr. Berry to meet and cater to the demand of European horse buyers and our own as well. But we recognize general classes of horses that are called for in the market, and men are now systematically breeding them. There is a little attempt now to produce the bacon hog, if we know what that is, and it is the beginning of what ought to be developed, namely, the recognizing that there are classes of products, and that a man must go out deliberately to produce the right thing and do it every time or nearly every time. If he wants to raise an 1,800-pound horse he must not raise a 1,400-pound horse, but do it every time he tries, or nearly every time, and put it into the class where it is called for, and not go indiscriminately to raising horses at random, hoping that some will be in one class, some in another, and some in another. He has too much rubbish on his hands that nobody wants. We have had a sad lesson in the indiscriminate use of trotting blood on horses of all descriptions in this country. We thought it was a good thing, and therefore we would use it, breed it, and we have bred that natural instinct of self-will and ambition that goes with racing horses, must go with them; we have bred it into a whole

lot of horses, some of them phlegmatic by long breeding, and it amounts to ordinary crossness or foolishness with lots of horses, and they are as horsemen say, unclassed; they belong nowhere; nobody wants them. This country was full of that class of horses 4 or 5 years ago, when the horse market went to pieces.

Q. At the same time there has been a good market for heavy draft horses?—A. Yes. Now these animals are more flexible than even farmers realize, and they can be modified by breeding more than most people realize probably. Another point is hardly in this connection, but still it comes up to my mind, and that is that there is an inherent difference between animals that look alike that would be said by a fairly good judge to be equal for beef production or butter production. The inherent difference between those 2 animals is often found by direct experiment to be as great as 40 per cent, in what they can do with 100 pounds of food and what they can make out of them in the shape of some desired product. If a man wants to make butter, he ought to make butter and not beef; he ought to have something that would make butter, and not produce a whole lot of beef, which is not valuable beef, and vice versa.

Q. And it is your opinion that the leaks to the farmer are along many of these lines?—A. Yes; they are. If a man attempts to do a particular thing in order to meet a particular desire and he fails of that and gets something else, he may not realize out of this something else enough to pay the cost of producing, because nobody may want it. As my friend, M. W. Dunham, the great Percheron horse breeder, used to say in my class, "Now, boys, if you try a thing 10 times you must succeed 8 or 9 times or else you will fail." And that is what the farmers are beginning to study more closely than they have before, and in the last 3 or 4 years have learned that it will not do merely to go on raising horses and cattle and hogs as such, and not to look further into it; and I think this thing ought to be stimulated, and ought to be encouraged, for it all ends in the more careful use of pure-bred sires in our farm-bred stock.

Q. That same rule would apply here to the increase of the export trade?—A. Yes, and not only the efficiency of it but the certainty. The importer and consumer of imported goods is a scary creature. He wants them alike all the time. For example, when I was in the South, I used Danish butter, put up in Italy in red tin boxes with a certain brand on them, and although I paid dearly for it I never found but 1 box of bad butter, and that was immediately taken back and exchanged—a box of about 2 or 3 pounds of butter. It made no difference what other brands the dealer had that were good, I always took that one brand; I had no desire to change. The user of imported goods is using a thing the history of which he knows nothing. He can not go into the merits of its production nor the methods of its production, and he does not have any patience if a dealer, who also knows nothing about it, attempts to explain to him that this is just as good as that; he has tried the other. Now, I think that agricultural people ought to settle quickly into a disposition to produce definite things for the export trade, and see to it that they are always of one grade, and of course the dealer will have to help.

Q. That brings us very close to the important question of the national pure-food law, inspection law. What have you to say on that?—A. If I may say another word: I said that the dealer must help the farmer. The farmer can not meet this export demand. He does not know what it is, and every man who deals in these products all along the line must help him and be connected with him, and in that way he is going to feel that these interests must be friendly.

Upon the pure-food law I have not very much that is valuable, perhaps nothing. It is a subject upon which the farmers feel strongly, but perhaps no more strongly than other people. They feel this, that one of the objections to adulterated food is that they tend to unsettle trade values and to unsettle confidence on the part of the buyer.

Q. Where did you buy the Danish butter?—A. I bought that in South America.

Q. Why did you buy it?—A. Because it was good butter and always the same thing.

Q. Something in which you had confidence?—A. Yes. It was most commonly offered by the best dealers. You go to the stores here in Chicago, any of our great stores that have these goods, and they would say to you, "These goods are from the same firm"—perhaps on this side of the water and perhaps on the other side—these guarantee all these goods."

Q. Do South American buyers have any dealings in American products?—A. They do in certain lines; they do in Armour's hams. I know I bought a little ham no bigger than my two fists, and paid \$3 or \$4 for it, but I considered that I got my money's worth, considering the circumstances. Now, the farmer feels that way about the adulteration of foods. Of course he feels it as a consumer, but he also

feels it as a producer of food materials. He feels that adulteration, even though it may be with materials that he himself produces, is bad for the farmer. For example, flour; he feels that if corn meal in any form is put into wheat flour, and the whole sold as wheat flour, that it does him damage. Now, in this case both ingredients are produced upon his farm, and we might suppose that the farmer would be entirely indifferent as to whether they were mixed or not, but he knows that that flour can not extend the export trade, because it is an uncertain thing. He is interested in having certain brands of flour become standard and known the world over, not only abroad but here in our own country, thus stimulating the use of the flour. He is interested in bran being kept as bran, so that people will know what it is. Now, we buy one load of bran at \$15 a ton, and it is good wheat bran; we know it is wheat, and that is a good deal, and we know what we can do with that bran, what to feed on it, and how much milk it will produce and how much butter. The next load of bran we get comes from the same dealer, and has a large percentage of corn bran in it, nothing to feed, nothing but hulls in it, feeding value next to nothing, and probably it has not paid the cost of transportation from the city where it was produced down to the consumer, and it unsettles his confidence in bran, and tends to prevent his using it, too. So that the farmer feels that the general business of adulteration is antagonistic to settled values and the free and open use of products on the part of the people of the world, and of course he is interested in their securing all that they can of these things, and in stimulating confidence on the part of the buyer. We have in Illinois a pure-food association composed largely of farmers, and the principle they advocate is that everything shall be sold for what it is; that it should be labeled. If a man desires flour 4 parts wheat and 1 part corn meal, why he ought not to be prevented from buying it, but it ought not to come into the markets in cowardly competition with straight wheat flour that has a character to maintain.

Q. You are in favor, then, of national legislation along this line—pure-food laws?—A. I am, decidedly. It is naturally impossible for State legislation to control that, because the moment one State moves all the manufacturers will satisfy that law the best they can, and they will dump their other products into the neighboring State that has no food laws, and the temptation is to get just as close to the line as they dare.

Q. And the law has no application ultimately to their manufactured articles, as that is a subject of interstate commerce?—A. Yes; it seems to me that, both for home protection and for the protection of our export trade, we sorely need national legislation that shall at least provide that the brand on a thing shall be a true index of what it is, and I think the farmers are coming to feel pretty strongly that we must protect our trade-marks.

Q. I would like you to give something about the operation of Federal and State laws to prevent the spread of disease among domestic animals?—A. There is very little I can say. I marked it more for the sake of saying—without having any expert knowledge on the matter, because it is out of my line—that the aim and intent of those laws, it seems to me, are eminently wise; that we must protect the health of our animals, both for the good of the individual, of the live-stock interests here at home, and for the sake of meeting the foreign dealer who, of course, will neglect no opportunity to see an objection to our meat or milk supply.

Q. Both these questions are very intimately connected with our export trade?—A. Yes; I think so, and the ability to guarantee quality and protect any trademark, or any device, or any shape in which goods are offered and create confidence on the part of the buyer at the other end. Exported goods are very largely luxuries, even though they may be necessities of life, and some man can get something which will take the place of them in his own country cheaper; so that in all these products, in our dealings with the class of men who are able to pay a little extra for a good thing, and who are willing to do it, they are naturally at liberty at any time to discontinue buying if they have been deceived. And that is what I wanted to say on this matter. I do not think we can be too strict in our laws to prevent the spread of disease. Of course I may say that I think we are liable to go to extremes sometimes in attempting to put these laws in force. That must necessarily follow. Take tuberculosis. Personally, I do not believe it is such a dangerously contagious disease as some would say.

Q. Did it exist in former times, in your judgment, as much as it does now, or have we just discovered it?—A. In the world, I think it did. Of course the thicker our population gets and the more animal population we have the more we will have of it relatively. There is more disease here now than there was when the country was new, excepting cholera. A new country, of course, is not possessed of the germs of these animals or human diseases, either one, but as people and animals come in these diseases get a foothold, and they live and mingle; and this is a thing which we must be constantly on guard to relieve.

Q. (By Mr. CONGER.) Has the State of Illinois made any efforts to foster good roads or to promote their construction?—A. I am not able to say. I have an impression that there is on the statute books a provision by which localities may begin the construction of roads. I have not made a study of that, and I can not say.

Q. (By Senator KYLE.) Was there not a bill before the legislature here?—A. Yes, it has been very much discussed, very much talked about. As the question stands in the plan of inquiry, it is "The effect on the cost of local transportation." Now, there is a good deal of wrong figuring done about that. A man figures how much it will cost to haul a ton to market on good roads, and how much it will cost to haul it to market on bad roads; and he takes the difference and multiplies by the number of tons hauled, and computes that he could well afford to pay for good roads. The objection to that method of figuring is this, that the farmer is not obliged in practice to haul that number of tons to market on bad roads, and he does not do it. In other words, in any agricultural country that is producing crops extensively, through a large share of the year the roads are comparatively good. Through Illinois it is entirely possible to put heavy loads over our roads in a good share of the season, and there is an immense amount of unconsumed horse labor on our farms. And I think there is great danger of magnifying the financial necessity for good roads. There are many other arguments for good roads which are convincing: their convenience, their uplifting influence on the community, their advantage in making country life happier, and all that sort of thing. Those arguments can not be overdone; but upon the pure financial return to the farmer in marketing his crops, there has been a great deal of wild talk.

Q. (By Mr. A. L. HARRIS.) Do the good roads come always when the prices are higher?—A. Oh, no. Still an assistant of mine once made a study—this was some years ago—of the best time to market wheat. That was in Michigan. He studied the subject for the previous 20 years before, and he found that considering the interest on the value of the wheat and rottage, damage by rats, and the loss which the farmer would suffer by storing his grain in his granary for two or three months, there were only 2 or 3 years in the 20 in which he would have got more money for his wheat than he would have if he had sold the day he thrashed.

Q. Is there not a feeling among the farmers that prices are depressed?—A. Yes; there is such a feeling. Of course he does not study the market reports of other seasons so much.

Q. Do you know whether or not that is overcome to some extent now by the immense amount of wheat stored in great centers like Chicago, that can be dumped on the market?—A. I have no information upon that worth anything. Of course there is an impression that it has an influence upon the market, but I have no definite information.

Q. You never made that question a study?—A. I never made that question a study.

CHICAGO, ILL., August 12, 1899.

TESTIMONY OF MR. JOHN C. HANLEY,

General Business Agent for the National Farmers' Alliance and Industrial Union, and the National Grain Growers' Association.

At a meeting of the subcommission on agriculture in Chicago, Ill., at 2.40 p. m., August 12, 1899, Mr. A. L. Harris presiding, Mr. John C. Hanley was introduced as a witness, and being first duly sworn, testified as follows:

Q. (By Mr. CONGER.) Please state your name and residence.—A. John C. Hanley; St. Paul, Minn.

Q. And your present business or occupation.—A. I am general business agent for the National Farmers' Alliance and Industrial Union, and the National Grain Growers' Association.

Q. Have you any statement that you want to make?—A. I was going to state that aside from the matters you have assigned me in your plan of inquiry there are several items which I deem of sufficient importance that I should cover that are not incorporated in your list of questions, among which are the conditions of farming in general in the country, the low price of farm products, and to my mind a remedy for these conditions. I have prepared my statement in writing covering those particular subjects. Briefly it presents a state of facts showing

that farming, as conducted under the present conditions, meaning all the conditions attendant upon farming, that farming, as a business, is conducted at an absolute loss, as we can show by actual farmers engaged in that line of business, representing every section of the country—the natural conditions, from the intelligent farmers, poor and wealthy, and every shade of political opinion and every shade of nationality, showing all along the line that farming, as actually practiced, actually conducted on the farms of the people, is so conducted that unless the most rigid economy is practiced the farmer will soon lose his farm.

Q. What is your opinion of the comparative condition of farmers now and 10 or 20 years ago?—A. Well, that is a pretty large subject. I was raised on a farm, where my uncle, whom I lived with, preempted his claim, and he was only 12 miles from St. Paul. I was raised until I was 16 years of age on that farm, and experienced the early conditions of those people, digging out the grubs and stumps, the slow processes of farming which they had in those days, and the privations which they endured, something that I do not believe would be done under those conditions by our people of the present time, unless it would be by a class of people accustomed to greater hardship. I remember in those days that we lived as our neighbors did; we each lived as well as the other; we were content in those days to live on sour milk and potatoes; we got along well, we thought. My uncle is running that same farm to-day, and he is probably worth \$35,000 to \$40,000. His land has increased in value, but it is not due to the fertility of the soil; it is not due to the income that is derived from the soil.

Q. What is it derived from?—A. It is due to being adjacent to a commercial community that brought values up; it is on account of the building up around and about. I might say, in that breath, that all those farmers through that section of the country to-day are wealthy; probably none of them is worth less than \$20,000. I recollect one old fellow that we looked upon as a sort of a target for all boyish pranks in those days, an erratic old man, foreigner, a German, raising watermelons on a little side hill; we used to go and steal the watermelons, and all that sort of thing; he was the target for all the pranks of the neighbors for miles and miles. He plowed away in his unsophisticated manner, and to-day that man is worth more than any of those people around there. He has acquired property all around him from those who did not like farming. Farming became onerous and they departed, and he took up their land; and to-day that same man that was, you may say, a despised individual in that community in those days, is really one of the most prosperous individuals in that whole community.

Q. What section of the country or State are you talking about?—A. Minnesota, at a point within 30 miles from St. Paul. They come to St. Paul with their grain, of course. In that country they have the benefit of a terminal market.

Q. How long since you have had practical experience in farming, yourself?—A. Not since that time.

Q. How long ago was it?—A. I was 16 years old when I left the farm; that is about 24 years since I was an actual farmer.

Q. Was there much improved machinery in use on the farm in those days?—A. No, we used to do then with a cradle and with a sickle.

Q. Has machinery improved the condition of farm labor?—A. Oh, yes; very much, very materially.

Q. So that the drudgery of farm labor is not as great as it was in the earlier farming?—A. Not what you might call the actual drudgery. There is not so much drudgery attached to it as there was in those early days.

Q. Causes of irregular employment—what have you to say on that subject?—A. The cause of irregularity of employment is due often to those waves of prosperity and adversity, as you might call them, that sweep over the country at times, often brought about by the rapid and more expensive rate of living, people living beyond the measure of their income.

Q. On the part of the farmers or other people?—A. Upon the part of people in general.

Q. Including the farmer?—A. Including the farmer. Often these are due not to individuals at all, but as a general proposition. These waves of prosperity and adversity follow each other successively, about every so often, from general causes.

Q. You think when a period of industrial depression comes upon the country that there is less regularity of employment on the farm?—A. Yes, there is. Under those conditions the farmer who ordinarily would employ help either performs a greater portion of it by himself or his family; tries to get along with less help to make up for his restricted income, which he is not enabled to pay out in the shape of farm labor.

Q. Do you know of any other causes for irregularity of employment than industrial depression?—A. No.

Q. Do the farmers of Minnesota employ as many laborers in winter as in summer?—A. No; but as to that there are only certain seasons of the year that farmers work to any great extent with outside labor, outside of probably the large farms, bonanza farms, and things of that kind. The winter work practically eliminates the necessity of hired labor—that is, upon the average general farm, it is only in the summer months during the busy season. For instance, at this time now, in Minnesota and in the Dakotas, we have the greatest difficulty in getting sufficient farm laborers to go out into the wheat fields to save the crop. They are paying all the way from \$2 to \$3 a day to secure men, and they can not get enough to-day. There is another attraction also to divert them from the farms, and that is the great amount of railroad building that is going on this year in the Northwest.

Q. Do those contractors on the railroads pay as high wages as the farmers offer?—A. No; but it is regular work—that is to say, regular hours. The hours are not so long as on a farm, and there are other attractions. They know that the railroad work will last considerably longer than work on the farm, and they are a little more reluctant to accept the farm work in preference to the railroad work.

Q. How many hours of employment do the farmers want or desire for the \$2.50 and \$3 you say they are offering?—A. Different farms have different hours.

Q. What would be the average?—A. I presume from sunrise to sunset would be about the average. On the farm where we worked we worked longer than that, got up earlier and went to bed later.

Q. You say from sunrise to sunset would be the average hours now in Minnesota?—A. I think so, especially in harvest and threshing time.

Q. Do some of them work even longer than that?—A. Yes, they work until the moon rises.

Q. Does that condition exist generally in that country among the farmers?—A. Yes; in that section it does. The idea is this, the season is short and cold weather sets in, and every hour counts from the time that the grain is ripe until it is in the elevators and in the granaries. Every hour is valuable, and the amount of waste time, rainy weather or anything else in there, goes to take up that time; they have to put it in in order to get out whole.

Q. What hours do the farmers of Minnesota require of their hands at other seasons of the year than at harvest?—A. They are very reasonable after the rush of the season is over—the condition of farm labor. They are admitted to the family upon the same plane of equality, eat at the same table, partake of the same social conditions, practically, that a member of the family would, and the hours, I presume, are from 7 o'clock until 6 o'clock, and in the later months of the year even those days are long on the farm, because it gets dark early.

Q. Nine or ten hours of actual labor?—A. After the season, the rush of work is over. When there is a crowd around, everybody works late at night to finish up; they want to get through.

Q. Is there a tendency among agriculturists of your section of the country to seek other employment?—A. Yes.

Q. For what reason, or is that covered in your paper?—A. I covered that pretty fully, that particular feature of it. I will say that it is generally on account of the isolation, the lack of social enjoyment and intercourse, the yearning for the society of others, for excitement, for amusement, as compared with the drudgery and monotony of farm life. I show in my paper here where a very large per cent of the inmates of the insane asylums of the country are from farmers' wives and daughters, due to the result of monotony and irksomeness and the lack of social intercourse with others, long dreary winters and all that sort of thing, which go to drag down the systems of those less rugged than their neighbors, and due also from the education which the young men and the young women of to-day get. Their education is of such a character that it creates an ambition in their hearts to rise above their conditions. They see that they have been drudging along on the farm at hard laborious work, with little prospect of ever achieving any great results except the natural growth of the valuation to the land. The income from the land itself can scarcely keep up decent appearances and pay the interest, probably, upon the mortgage, taxes, and other fixed charges. They find very little hope of ever realizing any great amount of income from that source, and they seek other avenues of occupation which they hope will bring them better returns at less sacrifice than they endure as the result of farm life.

Q. Can you suggest any remedy for these evils?—A. Yes; I believe that if farming can be made profitable the condition of the farmer will be reversed. He will have in his house much of the necessities of life and some of the comforts. He will possibly have his children educated to some of the accomplishments, to music, have some books in his house, a library, papers, magazines, all the other attendant paraphernalia that goes to make home life pleasant and comfortable.

Q. Do you not think that quite a large proportion of the farmers, in the older States particularly, have those things you have enumerated now?—A. Possibly they have, but a great many have not. Most of those who have, unfortunately, are leaving the farms to tenants and going into the cities to secure the enjoyment of that which their means can secure for them in the shape of associations and all those attendant conditions.

Q. And you would take it then that if a farmer is able to get some of these luxuries of life, it makes him want to go to the city?—A. No; not particularly. I say that where he is without them, and as farming as a business proposition is not a profitable enterprise; he naturally directs his attention to somewhere else, some other mode of living, especially among the younger members of the family. They are not contented to stay upon the farm and drudge away without any reasonable prospect of ever getting any further up. As I said before, the education of the young man, which is much better than it was in the earlier days, has educated him to have the ambition to rise above his neighbors or his present condition, and when he sees no prospect for achieving that condition in life on the farm he naturally turns to the city and to other occupations, thus making farming unprofitable and unpopular.

Q. When I asked you for a remedy, you said if farming could be made profitable, why so and so would occur. How would you make it profitable?—A. By getting him a market for his goods, and not compel him to raise his goods at cost and less than cost.

Q. How would you get a market?—A. By getting to a place where people would consume his products; finding a country that has stomachs to fill with his products; utilize every agency, every means that can be employed to clear away every impediment and obstacle in the way of securing proper trade relations with those countries, and create a competition with those who combine together, and give him 15 and 20 cents a bushel more for his grain and 2 or 3 cents a pound more for raising his cotton.

Q. Where, in your opinion, is that opportunity for making this export market?—A. Most of the people of the world live in the Asiatic and Oriental countries. That is covered in my statement.

Q. Have you any other suggestions to offer as to remedies to improve the condition of agriculturists?—A. I have only one remedy, as I said before, and that is to make farming profitable; and there is only one way to make it profitable, and that is to get him better prices for the things he has to raise.

Q. And the way to get better prices is to give him better markets?—A. Yes; and that involves the question of American shipping.

Q. (By Senator KYLE.) That is covered in your paper?—A. Yes; I have covered both of those subjects.

Q. In general, what is your idea about the restoration of the merchant marine?—A. My idea is that it is absolutely necessary, and it is second in importance only to the foreign markets. It is necessary to have the shipping to extend those markets as a result of their own natural inclination. When we are dependent upon foreign nations to carry our goods to foreign markets, which are often in competition with their own countries' products, you can see at once we are very materially handicapped.

Q. Are we carrying our goods in foreign bottoms?—A. As far as we can get them. Lots of our products can not go because there are no foreign bottoms nor American bottoms to carry them in. Lots of the markets are waiting and open for them, but there are no bottoms of any kind for them.

Q. What is your idea in reference to restoring the American merchant marine?—A. It would be quicker to subsidize the merchant marine.

Q. That is very generally held by the farmers?—A. Yes; that has been passed by our general assembly as absolutely necessary, the National Farmers' Alliance; also the National Farmers' Congress, and ourselves. I could illustrate very clearly how important that would be. For instance, we would have facilities, vessels of, say, 10,000 tons—take 2 vessels that would leave our Western ports daily. Of course this whole question of American shipping is only applied to the Pacific Ocean trade, as the Atlantic Ocean trade is pretty well covered. But we would be at a disadvantage there in competing with foreign nations; but if we could go to work and have, say, 2 vessels of 20,000 tons capacity daily leaving our shores with agricultural and mineral products at a subsidy of, say, \$2 a ton, it would cost us \$40,000 a day; that would be paid out for shipping for 300 days in the year; that would make \$12,000,000, which could be taken from the appropriations for public buildings and river and harbor bills and scarcely missed, on account of the recklessness which very often is involved in the expenditure of these moneys. We have an illustration in St. Paul to illustrate this point in our public building. I

think there was something like \$300,000 put in in the first place, and they found that that was not enough, that they wanted more money put into it, and the only way to spend that money, according to my way of looking at it, was to run up a big tower 200 or 300 feet high, which was of no use, and to build a dam between Minneapolis and St. Paul that will never amount to three straws except to give the boys at the university a chance to pull their boats. Here are the great agricultural interests of this country left to be reduced almost to pauperism, while they are so lavish in their appropriations in other directions.

Q. Have you examined the shipping bill now before the Senate?—A. No; I have not; I have not seen it; I did not know that there was one.

Q. There is one—I expect it will be up before the next session—in the line of subsidizing.—A. I am glad to hear that. My idea is that our association will send a representative down there, possibly myself, to look after that feature of it.

Q. It is on the same line you suggested, only you have a little different idea maybe.—A. Never mind; if we can secure that it will be a guaranty that our products will get a proper share of attention. That is what we want. These countries will become our customers. That will naturally enhance the value of our productions in the United States and bring on a real era of prosperity and make the farmer prosperous. He can then employ men and pay them reasonable wages; he will not have to work so much himself; he can give his family some of the advantages of education, an opportunity to become educated rather than to be out hustling in the field. I tell you it makes a big difference between listening to theoretical farmers and going from house to house, as I am obliged to do in my capacity, and hearing what they say. Men can tell you who work for the colleges and write for the papers; you go into the farmer's house and sleep in his bed and break bread with him, and you will have a different idea.

Q. (By Mr. A. L. HARRIS.) What part of the country do you refer to?—A. I might say all over. I cover a considerable range in the course of a year. There are some—I don't say they are all that way—we have a representative of our organization who lives in a \$72,000 house and is a millionaire farmer.

Q. (By Mr. CONGER.) What is the nationality of the farmers as you have met them?—A. Well, they are of all classes. Up our way there are a great many Scandinavians among them, and a great many Germans and Irish.

Q. Do they make a good class of citizens; all industrious, hard-working people?—A. Yes.

Q. Successful farmers?—A. Practically; they work hard.

Q. Is there or not a tendency among them to colonize?—A. In the communities where they colonize I can not see that they make as rapid progress as they do where they are promiscuous.

Q. Do they not assimilate with the Americans and become good citizens as quickly?—A. Well, no; not exactly that. They are good citizens all right enough, but what I mean is, they seem to import the ideas of their own country and are slower to Americanize themselves and catch up and keep pace with their Yankee neighbors.

Q. Do they seem to desire to reserve the use of their foreign tongue and customs?—A. Yes; there are sections of the country in our society where they can not understand English.

Q. Do you think that is beneficial or otherwise?—A. No; I think it is otherwise. I think if they would fraternize and mix up with their neighbors that the exchange of different country ideas and American ideas would sharpen up their intellects and make them better and more prosperous and more adaptable.

Q. Does the tendency to preserve the use of their foreign language tend to retard the education of the coming generation?—A. I think it does.

Q. What do you know of the public-school facilities among the farmers; are they sufficient or otherwise?—A. They are pretty well, except up in the frontier countries; they are pretty well established, pretty fairly represented.

Q. Has Minnesota a good public-school system?—A. Very good, indeed.

Q. Do you think that it is tolerably well adapted to the needs of the farming community?—A. I do, so far as the public schools go. I don't think they go far enough. I have very peculiar ideas about our public schools. I believe that there is too much theory and less of real practical knowledge taught to children, but that is more so in the cities than in the country. We are not considering the cities, I suppose, in this case. There is not enough of education of any kind in the country, because it don't last long enough. It don't go far enough.

Q. What is the average school year in the country—how many months?—A. Oh, I wouldn't want to say. They have a certain number of days.

Q. (By Senator KYLE.) In that you imply that the curriculum don't extend far enough?—A. Well, the child don't study long enough to get to the end. They

don't have enough practical knowledge. In the agricultural districts my idea is that a certain amount touching on agricultural subjects should be taught with the other rudiments, arithmetic and grammar, and these other things—the nature of plants, and the stock and the animals and other things raised on the farm. Give them some idea of theoretical farming, and they would like it; give the girls some notions of sewing and baking and some of the practical and useful employments which they will be afterwards probably called upon to carry out rather than a superficial idea and the general notion that prevails, especially in the city schools, that labor is disreputable and children are better than their parents, and all that sort of thing; and they learn a little of Delsarte movements and notions, and are absolutely unqualified to take up the duties of wife or servant in the house. They must all be typewriters or something of that kind—clerks in stores.

Q. (By Mr. CONGER.) Your idea is that the curriculum of the country schools is not adapted to the needs of the scholars?—A. I don't think it is.

Q. And you would transplant from the cities some of the features of the manual-training schools, as far as the girls are concerned at least, to the country schools?—A. I would certainly teach them something practical.

Q. Have you any further suggestions to offer along the educational line?—A. Well, that is as far as I would like to go upon the subject of those small schools.

Q. Taxation—anything to offer on that?—A. Yes; that is a very fruitful and important item to the farmers.

Q. Do you think the farmers pay as much taxes as they ought to?—A. I think they pay a great deal more than they ought to as compared with other industries.

Q. Any remedy to offer for the evil?—A. I have. I believe in taxing every article of property, whether it is visible or invisible, on its full cash value, and not a percentage of it.

Q. Isn't that the theory of most present systems?—A. No; I don't think so. At least we find a difference up our way.

Q. I said theory.—A. Theory? Yes; possibly. It is supposed to be. I will give you an illustration. I appeared a year ago before our State board of equalization. There was a question of raising the taxes all around. Some of the cities imagined that they were paying too much taxes, and they went to work and cut down the valuation of the real estate so as to reduce the total valuation and reduce the State tax; and the farmers, of course, objected considerably, and I was sent before the board. And we found the merchants in the city coming up there to object to being raised, and that everybody else opposed the valuation of real estate being reduced all over the State, because it would naturally raise the rate of taxation and fall upon the farmers—naturally, too. We found among our merchants and jobbers men—leading representatives of their class—that came in there, who were rated at \$1,000,000 and who were carrying insurance of \$750,000, making a statement that \$85,000 was all that they ought to pay taxes on. It is going on now in St. Paul and Minneapolis. They said, "If you tax us you will drive us out of this State and this city." Now, I have estimated that on the different franchises and public utilities that are not on the books at all—banking, stocks, and a thousand and one other invisible and valuable securities—something over \$200,000,000 escapes taxation in our State, and what we want to do is to make these values that those people have upon the stock boards of the country a basis for taxation, and to have our register of deeds, or whoever would be the proper authority, put a stamp on these certificates of stock, showing that the tax has been paid before they will be considered a legal asset, if you will call it so—before they will be transferable, the same as taxes on property or anything would be a lien on the estate, whatever it would be—before it is transferable from one party to another. And it seems to me that we finally must get to a point where we must have Federal legislation, because for each State to undertake to do that would practically ruin that State as against another, and there must be some Federal law.

Q. Why not a State law to raise definite taxation?—A. It would drive people out of that State to other States that didn't have it. What I am getting at is that it must be a general law; it must cover every State. If any State escaped that, that would be the State to which those people would flee to do their business and escape the tax.

Q. Isn't it a fact that all direct taxes have their origin in each and every State by State authority, and that no direct taxes are now levied by national authority?—A. I think so; but what I was getting at was that there should be some general

law, some uniform law, that all the States should adopt.

Q. That might necessitate an amendment to the Constitution of the United States if Congress is to be empowered to regulate taxation for State purposes?—A. Well, I did not go far enough into the details of it; but the point I make is

that you want to put everyone on the same plane of equality, and not have one community pay about 8 per cent on their valuations and the other sections or the farmers pay 100 per cent.

Q. Your idea is that in the taxation of franchises lies the source of great revenue that is not utilized for the raising of taxes and should be?—A. Should be.

Q. You said that you had estimated that there were \$200,000,000 worth of property in Minnesota that escapes taxation. Do you know the assessed valuation of taxable property in your State as equalized by the State board?—A. Well, I could not call it offhand now.

Q. Well, approximately; do you know whether it is one or five hundred millions?—A. Oh, yes; more than that.

Q. More than which, the greater figure?—A. Yes. We raise \$3,000,000 a year taxation for State purposes. That was a matter that was discussed by our board at that time, that it was in that neighborhood, taking off these valuations from the jobbers, who, for instance, as I said, there were men carrying \$750,000 insurance and only paying taxes on \$85,000, and that represented very nearly the same ratio of all the balance of the jobbing interest.

Q. What have you to say on the subject of the decline in prices of agricultural products?—A. That really becomes a matter of supply and demand. We also have a lot of other attendant conditions, such as gambling in these products, that cuts a material figure in establishing and fixing prices.

Q. Have you anything to say on the increase of acreage under cultivation? Has that anything to do with the decline in prices?—A. I don't think so, because the bigger the acreage is the bigger the price; the acreage does not cut any figure about the price.

Q. What do you know of bonanza farming?—A. Well, bonanza farming, I would prefer to leave to those people. Those fellows have been wiped out. A cyclone passed over the Grandy farm, and practically annihilated him.

Q. By Senator KYLE.) Is there a tendency of big farms to divide up into small farms?—A. No. I think they are a detriment to the community. I believe bonanza farming is only profitable in this way: There is a condition existing among the middlemen, which probably you have had under investigation here, and which Congress has had under investigation—the subject of elevators. That grain which can be preserved intact from that section of the country which is the home of No. 1 Northern—where that can be preserved intact, as I say—and moved in bulk to export points such as Buffalo and New York, there is a premium of from 3 to 4 cents above the natural grade, which it can be given outside points on account of the superiority of the article above the grade. In that way very often much of the loss sustained by other farmers is escaped by these men because they can ship the cars direct. They avoid the combinations of local elevators, pressing down the prices 2 or 3 cents a bushel and as much as 7; they have had it as much as 7.

Q. It has been said here that if wheat of the quality which you now mention could be gotten at Liverpool unmixed it would bring 15 cents a bushel more than at present?—A. I don't know what it would be there. I know that these men get a premium of 5 cents a bushel at Buffalo. I don't know how much it would be beyond that point.

Q. Is it possible for the farmers in your organization to ship their wheat together?—A. Not yet. We are arriving at that point now. We are building a line of farmers' elevators all over the Northwest now, so that within a year or so we will be able to do that. This year I have promoted about 92 farmers' elevators, and last year we had building and in operation about 143.

Q. Is this a new movement?—A. Yes; it is the result of this agitation. It is the only way to take care of matters at the local point; it is the only way to establish competition.

Q. Is it a farmers' stock company?—A. Yes; they run their own elevators separately and distinctly for themselves, and then the organization or society stands back of them and supports them.

Q. (By Mr. A. L. HARRIS.) Do the railroads give you any facilities or any encouragement?—A. Yes. I must say they are giving us all the encouragement possible now, but it has been a hard and bitter fight to get them to that point. We have been fortunate in securing the services of Mr. Hill; he gives our houses the right of way all over his lines in the country.

Q. How about the terminus?—A. The terminus we can not handle yet. We shall have to wait until we can build our own terminals.

Q. (By Senator KYLE.) Will Mr. Hill give you terminal facilities?—A. I think he will. He has not exactly said so, but he has practically intimated a price of half a cent, which is very reasonable. It is cheaper to pay that rate than to engage in the building of elevators. He has large facilities for any amount.

Q. Half a cent what?—A. Half a cent a bushel storage charges in terminals.

Q. (By Mr. CONGER.) Which would mean keeping it separate?—A. Yes.

Q. (By Mr. A. L. HARRIS.) This is a very important subject; we would like to have you go into it as far as you can.—A. I don't know how you can get around

the question of mixing grain. Grain is sold on the markets of the world, as I understand it, upon grade; that is, for export. I am not fully posted on that subject, but my impression is that the grade which the farmer goes on, No. 1 and No. 2, is a far different grade from what is sold in Liverpool and the markets. There is a wide range between the two, and everything lies in the successful and prosperous condition of the elevator and grain-handling business. There is more money made on the grain after it leaves the farmers' hands, by the several different men through whose hands it will pass, with possibly the exception of what we will call the commission of 1 cent for disposing of it; that is the last of all, whether it is a cent or half a cent—the last of all the fixed charges and unfixed charges. The manipulation by which the grain can be converted is the source of the greatest profit of those who are engaged in the business; and if we could establish in some way a national grade, and then have our grain bought and sold at a premium or a discount according to that grade, I believe that the farmer would have some show of getting some of the profit which the value of the grain should bring him which now goes to the other fellow. I am not satisfied but what we could get a still better reduction upon freight rates. I believe that freight rates are too high, although we were fortunate enough in the Northwest to secure about a 14 per cent reduction last year voluntarily from the railroads as the result of our organization's cooperation and work with the railroad companies; or, in other words, we secured from Mr. Hill, of the Great Northern, a reduction which had to be followed by the others to meet competition. That is how we got it of the other fellows. That reduction amounted in round numbers to \$1,100,000 on the Great Northern, and with the other roads amounted in round numbers to \$3,400,000. We also secured through the cooperation of Mr. Hill, as I said before, a reduction of a cent and a half or a cent and a quarter, which all the Buffalo elevators were charging at one time. Mr. Hill started his prices at a half a cent, and set the price upon 208,000,000 bushels of grain that went through those elevators, which represented a reduction of \$1,560,000.

Q. (By Mr. CONGER.) Onelevator charges?—A. For elevator charges, which was a saving to the farmer on top of the \$3,400,000 last year. We also secured the cooperation of Mr. Hill in establishing those elevators, which has been the means of promoting such a tremendous amount of them this year and reversing the policy of the past; and with the starting of this line the other lines were obliged to get into line and do the same thing. Some of the companies there are very reluctant to allow those elevators to be built, especially where they come in competition with established conditions or land companies along the roads, and where it is not at a competitive point we sometimes have considerable difficulty in getting sites.

Q. (By Senator KYLE.) Do the farmers stand by you in the conflict?—A. Oh, yes.

Q. Between the land companies?—A. Oh, yes; we find no difficulty in that.

Q. I have heard that sometimes they will not; that when it comes to a cooperative society, they will patronize the cheapest. What have you to say on that?—A. Our policy is that the local elevator shall pay the highest price less 2 cents for operating charges. Where it goes below that price the land companies will offer say a cent above that; they will give 1 cent for hauling the grain to the land company, or keep their house closed or open whenever the conditions are equal.

Q. You said that this reduction secured in the freight and elevator charges went to the benefit of the farm. In your opinion did the consumer receive any of that benefit?—A. I think so, to the extent that it is not governed by the monopoly of the business.

Q. What I am getting at is whether the reduction in those charges brought a higher price to the producer of the grain or a lower price to the consumer of it?—A. The producer got a higher price; he got the price less the freight to market. To-day upon the stock exchange here, the board of trade, it is about 70 cents a bushel. Take it up there in our section of the country where the great bulk of our property is wheat—we have the wheat crop of the country, of the world for that matter—the average price that the farmer gets for his grain is in the neighborhood of 50 cents, notwithstanding the price generally quoted is 70 cents. That 50 cents includes all the fixed and intermediate charges, freights and handling, and everything else, which the farmer does not get. I find that grain about 150 miles from market brings about 60 cents; more than 250 miles, about 55 cents. At about 400 miles—when that grain comes over 400 miles—the price is down in the neighborhood of about 45 cents. So take the value that is at the farther end of the wheat belt and the value at the near point and average it all up and it runs in the neighborhood of 55 cents. So that it is very misleading when people talk about 0-cent wheat. The farmer does not get 70 cents for it. He practically, on an average, gets 55 cents for it at that price; and it costs to take it to New York about 25 cents,

figuring by the New York quotations, which shows that it practically costs about one-half what it costs to raise a bushel of wheat to market it, to get it to New York, to the seaboard.

The main purpose of our organization is to look after the interests of agriculture in a nonpartisan way, just like the manufacturers look after their interests. In other words, I am frank to say we are organizing a combination that is bigger than any other combination. We are organizing one trust to fight another trust. That is about as short a way as I can get it. The only way to resist them is to make a bigger one to control them.

Q. (By Mr. CONGER.) Is there much diversity of agricultural products in your section?—A. Yes; considerable. It has been found that diversified farming is absolutely necessary in a good portion of the Northwest to make up for the loss by raising a crop as a crop; that is to say, it is found more profitable to convert the crop after it is raised into stock, to dairying, dairy products, butter, things of that kind, than to market the crop as a crop.

Q. Speaking of transportation charges, have they increased or decreased during recent years?—A. They have decreased.

Q. Do you think they are lower or higher than they ought to be at the present time?—A. I think they are too high yet. Still I have no reason to complain about agricultural products, when I come to consider other articles of transportation, such as coal and lumber and things of that kind.

Q. Then the tendency is downward?—A. It has not been. I think those particular things are extremely high.

Q. Is the tendency to increase those charges?—A. No; not to increase them, but the condition is permanent—that is, it has continued to be at a point that was early established, when the country was thinly settled and business was scarce; the same rates prevail at this time that prevailed then, and I think it is an injustice. The volume of business now is probably four times as much as it was then, but the rates are just as great.

Q. You speak of having some reductions in freight charges and elevator charges by Mr. Hill and the Great Northern. Isn't the tendency in general about the country for transportation rates to be reduced?—A. No; I don't think so. This was not voluntary. The association had a bill to reduce freight rates in general 20 per cent.

Q. This is a counter movement on the part of the railways?—A. Yes; this was given in exchange for carrying that proposition out upon the whole. We were going to make a campaign matter of it and send farmers to the legislature to enact that law.

Q. Did you make that campaign?—A. No; on account of getting the reduction upon our own particular product. The others have to give that reduction, and that went into operation ahead of the legislature's meeting.

Q. Have you any good-road movement in your State?—A. Well, there is a lot of talk about making roads; it has got about so far with us.

Q. You have not had any results coming from this talk?—A. No; I don't think so. We have a lot of talk going on just now. We are going to have a big time at our State fair; that is about all it amounts to. That is most important, to make farming a pleasant occupation, to say the least.

Q. You think it is more important that way than as a financial proposition?—A. Yes.

Upon the subject of trusts—I feel a little reluctant about going into that—

Q. (By Senator KYLE.) (Interrupting.) You are organizing a great big one yourself.—A. Yes—on account of its partaking more or less of a political, partisan character.

Q. It is an economic question. It is contended by many economists that trusts should be a benefit to the American people and will be. What do you think of it?—A. I just had a discussion here the other day with a friend of mine. I see the kid-glove people are thinking of going into the manufacture of gloves, and will probably invade the European countries, and that they intend to do away with the jobber and the traveling man and the advertising department and the retailer, and put their gloves on sale in one store in any particular city or town that they choose to use as a distributing point. These men claim that they are only getting 10 per cent upon the value of their product in the roundabout way that it goes now to the consumer. They made up their mind they could dispense with the jobber and the retailer and the traveling men and all that sort of thing and get about 40 per cent for their product.

Q. Without additional cost to the consumer?—A. Without additional cost to them. They now go to work and say, We will reduce that to the consumer; we will sell it to them at 20 per cent, and we will get 20 per cent, and in that case the consumer is actually the beneficiary. All trusts are not as philanthropic as these

people are, and the point I wanted to make was that if this was State socialism the State would get the benefit of that condition, the reduction of the cost of manufacturing the article, while it now goes to build up the trust. I believe that if State socialism should control those trusts and those combines it would be a benefit to the whole.

Q. And then you would get every product of industry into the hands of the State before you got through?—A. Where there is a combination to strangle competition let them pay as a penalty the portion of the dividends which are paid on watered stock. The trusts are bringing on a state of socialism that the most ardent socialists never dreamed of. It is hastening rapidly in that direction. We have people up in our State—one of those men will appear before you, and he will tell you that there are 350,000 traveling men, and that 10 per cent, 35,000, have been out of a job, and the wage list of those people have been \$17,500,000 a year; and of those who are left the reduction which has taken place since the organization of these trusts has amounted to \$17,500,000 more, making \$35,000,000 reduction in the wages of traveling men alone as a result of these trusts.

Q. (By Mr. CONGER.) That is, in the United States?—A. Yes.

Q. Who compiled these figures?—A. The president of the National Traveling Men's Association. He will be one of your witnesses up in Minneapolis.

Q. Anything further on trusts?—A. As I said—I want to be frank about it—the only way we are going to fight trusts is with a cooperative trust. We will prevent those fellows from forming a trust by which we will be tributary to their demands. In other words, we will resist their attempt to throttle us by getting our goods away from us for less than we are entitled to.

Q. Are you interested in existing pure-food laws?—A. Yes; all farmers are interested in pure-food laws.

Q. Should they be State or Federal, in your judgment?—A. I think there should be a Federal law, from the very fact that our main products, all our American products, must stand the test of reliability in the markets of the world; and any agency that will establish thoroughly the reliability of our goods will give them a market value greater than if any suspicion attached to them.

Q. (By Senator KYLE.) National inspection and brand?—A. Everything should be branded as it goes out, because those things will eventually come back on the farmer. To illustrate that point, if our grain in Minnesota was removed from the control of the many hands through which it would pass, the grain of Minnesota would have in the markets of the world a premium of 3 or 4 cents a bushel. But it is so degraded by the time it reaches the selling point that its value is gone; it is degraded; it has passed out; so that the grade which the farmer must part with is a very different grade from what is sold by the middleman in transit. Our association has absolutely passed on that.

Q. In favor of a national pure-food law and inspection law and brand?—A. Yes; and branding absolutely.

Q. What can you say of the operation of existing Federal and State laws to prevent the spread of diseases among domestic animals, etc.?—A. All that sort of thing is very important; and under that head I wish to suggest that while I have not in general very much regard for theoretical farming as given by our professors and that class of fellows in our agricultural colleges, at the same time the line of experiment which those institutions are bringing forth and presenting to the minds of practical farmers—the farm must be the final workshop that it is to be worked out of—are of immense advantage to agriculture as a whole, especially the pests, such as grasshoppers and chinch bugs and those sort of things, which the average farmer can not handle. The experience of professional men along those lines are absolutely necessary to check the ravages which would some time probably obliterate a crop, and it is absolutely necessary to sustain them, while I have, as I said before, certain opinions about these men as practical farmers.

I here introduce an article in this week's issue of our paper that will give you some idea as to how we build our elevators; also some extracts from a pamphlet covering the subject.

(The matter referred to follows.)

[F. A. and I. U. Dept. Edited by J. C. Hanley.]

ARTICLES OF INCORPORATION FOR COOPERATIVE FARMERS' ELEVATORS—IMPORTANT POINTS TO BE CONSIDERED.

In order that a uniform and important feature of organizing cooperative farmers' elevators may be put into general use, I have been repeatedly asked to furnish the main points for publication, which are here given:

1. *Name*.—Give name and location of the enterprise, viz, Farmers' Cooperative Association of New Richmond, Wis. (or any other station).

2. *Object.*—The object of this association is to conduct a general elevator business, such as buying, storing, selling, shipping, and handling grain, and buying and selling merchandise (if you choose).

3. *Capital stock.*—The capital stock of this association will consist of 500 shares at \$20 each, or \$10,000.

4. *Grain growers' and alliance societies.*—In order to secure the support and services of the business agency of the Grain Growers' and Farmers' Alliance associations, we will make all shipments through the business agency of the above-named societies.

5. *Stockholders.*—Each stockholder must hold at least one share to be entitled to a vote. Shareholders shall be limited to five shares, and each stockholder shall have but one vote, regardless of the number of shares of stock held by him.

6. *Speculating.*—There shall be no speculating in holding grain for a rise in the market. Sales of receipts to be made daily. This will prevent gambling and loss.

7. *Selling.*—When a carload of grain is in the house of a certain grade, load it and attach draft to bill of lading. Take same to your local banker and draw three-fourths of value of grain in car (which will practically be all the cash you will have invested, as the one-fourth will be left to pay freight, switching, weighing, inspection, and commission charges, balance to be returned to you when commission man has finally disposed of car and made returns).

8. *Borrowing money.*—When you borrow money, do it from your local bank if possible. Give your notes for the amount of money you need. Pay for your accommodation and let the transaction end there. Don't let the banker undertake to run your business for you. Keep him on the other side of your counter, as he keeps you on the outside of his counter. Never borrow money from a commission firm. It is the rock upon which all farmers and independent elevators split. They will offer you unlimited money to buy. This means that you will fill up your house with 20,000 to 30,000 bushels, and have \$10,000 to \$15,000 invested in grain. If the market goes up they always wait for it to go higher, and won't sell. When it goes lower they wait for it to rise, and finally sell at a loss. This creates distrust and discouragement for the stockholders and they soon are willing to part with their stock for any price, and the commission firm "scoops in" the elevator as their reward for liberality in lending "all the money the elevator wanted." By selling daily there will be no losses, and \$1,500 to \$2,000 will buy all the grain you can handle, by shipping daily and drawing on each car soon as loaded. This gives you your money to buy next day again, and so on.

9. *Commission men.*—Never take chances on sending your grain to any commission firm without drawing on them as soon as car is loaded. This will insure you against loss from careless and irresponsible firms (there are some).

10. *Elevator manager.*—Never permit your manager to speculate or gamble. Give him his instructions; then see that he carries them out.

11. *Sinking fund.*—Provide 1 per cent of the value of the business your elevator does for a sinking fund. This fund will be used for buying grain and to loan to your stockholders on grain deposited in elevator of, say, 60 per cent of value. This fund will also provide for increasing capacity of house, making repairs, and all unusual contingencies.

12. *Storing grain.*—Stockholders should have the option of storing their grain at one-half the rates charged to outsiders.

13. *Patronage.*—In order to attract the patronage of all farmers, a society of Farmers' Alliance or Grain Growers' Association should be formed out of each elevator association to back up and patronize each elevator association. This can be done by wiping out the fees and dues from these societies, and let the business which the members of these farmers' societies will bring to the farmers' elevator create the fund which the business agency can secure from the firms with whom contracts are made, to pay in a portion of their commission to the business agency. This will not cost either the elevator or the patrons of the elevator a cent, but will create a fund that can be used to build up the elevator association and extend the membership of the Grain Growers' Association, so that it will enroll every farmer in the locality who will pledge himself to haul his grain to the farmers' elevator. This will build up the elevator, the grain growers' society, and the business agency, without costing any of these interests a cent, while it will secure all the benefits of the business agency, of a personal representative at terminal points to look after their interests free of charge, and secure them elevator sites from railroad grading, docking, weighing, and looking after commission men whom we receive complaint against, and all reasonable service that can be obtained as such representatives, without cost. All stockholders are expected to haul their own grain to their elevator. The only exception to this rule is when the line elevators pay higher than their own. Give your grain to the other fellow while he buys at a loss. Haul to your own house when prices are even.

14. Margins.—Farmers' elevators are expected to pay the highest market price for the farmers' grain at their station. It is generally paid up to within 1 to 2½ cents per bushel of terminal market prices, less freight. This margin is to cover cost of operation and the dividends to stockholders. Don't make this margin too great, or you will lose your patronage.

The above features are what nearly all of our new farmers' elevators are adopting, and which are giving best satisfaction where they are in operation.

BUILDING AN ELEVATOR—POINTS TO CONSIDER IN BUILDING A FARMERS' ELEVATOR.

A few items to consider by farmers in connection with the building of a farmers' elevator:

1. Ascertain if you are getting full market prices for your grain at your local station. This is important.
2. Compare prices at your station with prices at other stations where there is a farmers' elevator.
3. After finding out what advanced price you can get by establishing an elevator controlled by yourselves, multiply this advance to the number of bushels of grain marketed at such station each year, and the amount will demonstrate what the locality has lost by the absence of a farmers' elevator. This item will determine at once whether it is profitable to build or not.
4. If you decide that it would be profitable to build, the first thing to do is to call a meeting of the farmers of the locality. (We will furnish any community literature, posters, etc., for getting up meetings free. We will appoint a chairman to call the first meeting of any one desiring to act in this capacity.)
5. Form a temporary organization, then get up a big meeting. Have it thoroughly advertised and secure all the farmers tributary to your local station to come into your organization and subscribe stock to build your elevator.
6. See that farmers own and control the stock. If any farmer desires to give up his stock for any reason, let him surrender it to the association.
7. Allow each stockholder one vote, regardless of the amount of stock owned. This puts the small stockholder on the same footing as the large stockholder, and gives much better satisfaction.
8. After subscribing be sure you pay it.
9. Decide the size of the elevator to be built. In estimating the cost of same you will be safe in estimating at 15 to 17 cents per bushel capacity on houses from 20,000 to 30,000 bushels. The larger the capacity, the less cost per bushel. The selection of the best up-to-date machinery will also figure in the first cost, but will be more satisfactory and cheapest in the end.
10. In order to secure the best results let your contract to some reliable firm who makes a specialty of building elevators. This precaution saves lots of trouble and dissatisfaction, which generally results when local builders, without large experience in this line of work, attempt to experiment in building such houses, requiring absolute accuracy and substantial foundations to prevent settling and derangement of machinery.
11. After building your elevator be sure you patronize it. Some farmers' elevator companies make it so severe that any member found hauling grain to a competitor will forfeit his stock.

RAILROAD COOPERATION IN PROVIDING SITES AND RIGHT OF WAY.

After considerable correspondence and personal conference with the general officers of the railroads operating lines in the Northwest, the general business agent of the alliance has been successful in securing the consent of every line to cooperate with this office in establishing farmers' elevators along their lines where they had sites on their right of way and where such houses would be built in accordance with the rules and requirements of the railway company, such as size, quality of structure, safety from fire, and other requirements of general interest, both to the elevator and railroad companies.

We are pleased to announce that we have been successful in changing the set policy of hostility of certain railway lines towards this character of elevators, and while there is some opposition to the erection of farmers' elevators at local points, it may be well to inform the business agent at once wherever there is a farmers' elevator contemplated throughout the Northwest, so that notice of such can be

filed with the general office, and instructions to the local agent can be given to facilitate the selection of satisfactory sites on the right of way.

The proper way to proceed is to file your application for site with your local railway agent, who forwards same to division superintendent, and so on to the proper official in charge of these matters.

In forwarding information in reference to building elevators be sure that you mention whether it is a farmers' independent or line elevator. Some roads will permit only farmers' elevators on their right of way. Give the following information:

1. Name of station and State.
2. Name of railway you desire to locate on.
3. Name of other railways at such point.
4. How many elevators in operation at station.
5. How many bushels grain marketed at station.
6. Size of elevator (capacity in bushels).
7. State whether gasoline or steam engine will be used.
8. Will you run a grinding machine or wood saw in connection?
9. Will you use grain-cleaning machinery?
10. Is the cash subscribed to build same, and what amount?

Much valuable time will be saved if these suggestions are carried out.

Address all communications to the general business agent, who will furnish general information on these subjects free to any locality desiring same.

Yours respectfully,

J. C. HANLEY,

General Business Agent, 400-401 Baltimore Block, St. Paul, Minn.

(The following is the written statement submitted by Mr. Hanley, mentioned in the first part of his testimony.)

THE CHAIRMAN AND MEMBERS OF THE INDUSTRIAL COMMISSION.

GENTLEMEN: On behalf of the great society of which I have the honor of being a member and officer I desire to express profound appreciation of and confidence in the ability and integrity of the men composing the Industrial Commission, and their full conception of the arduous labors that surround them in seeking out a remedy that will reconcile the many clashing interests and give some reasonable solution or recommendation that can be enacted into law that will bring the greatest good for the greatest number, without causing an injustice to any special interest.

I desire to offer to this commission the earnest and active support of the National Farmers' Alliance and Industrial Union of America, representing a membership of something over 3,500,000 real and practical farmers and planters within the United States.

This great society is composed of all shades of political, religious, and race opinions and prejudices of the most irreconcilable character, yet all of one mind when it concerns the interest of agriculture.

I wish to convey to your minds a couple of points which we claim will be the happy solution of prosperous farming in the United States.

I received from your honorable body some little leaflets entitled *Topical Plan of Inquiry on the Conditions of Labor and Capital Employed in Agriculture*, which contain many interesting topics which should have careful and intelligent consideration, but many being subjects upon which I have not the required data to offer, I will not attempt to touch on any except in cases where I have some definite knowledge.

I will therefore treat of such points in your leaflet as may be of general character in establishing the condition that exists among the farmers to-day in the United States, as learned from personal observation and contact with the farmers in my travels through the country in my capacity as general business agent and national organizer of the National Farmers' Alliance and Industrial Union of America.

As to Part I, section number 8, entitled "Tendency of agricultural labor to seek other employment; causes and remedies," I must say that there is a decided inclination among the younger generation to leave the farm and seek employment in the already overcrowded cities of the country. Of course there are numerous reasons given for this desire on the part of the young man raised on the farm. Chief among these is the natural ambition and impulse to rise in the world and achieve greatness and prosperity, which is deemed impossible on the farm. Another is the monotony and irksomeness which the occupant of the farm must naturally

endure, and the longing for the attractions which populous communities can furnish in the shape of sights, amusements, excitement, etc., and which are not found on the farm.

Another feature that is advanced is the drudgery and small pay on the farm in contrast with the wages paid in cities, where the employee can wear better clothes, have shorter hours of work, and all the pleasures of a large city and a better salary.

Another great factor is the lack of home comforts and pleasant surroundings, which has much to do with establishing discontent with the conditions of farm life.

We find that the discontented young man or woman coming abruptly in contact with city ways and associations, and freed from the restraint of parental watchfulness, is often the victim of low social conditions and vice, which are the beginning of depraved lives.

This lonely condition and the mental anxiety which the farmers' wives and daughters endure, make them unable to bear up under this awful strain, and without anything to relieve this awful monotony they break down and contribute a large percentage of the inmates of the insane asylums of the country.

These social conditions are considered the results of unprofitable farming, and will not be removed or reduced so long as farming remains unprofitable.

I will now consider a few of the items that contribute to making farming unprofitable, and attempt to show what unjust burdens agriculture must bear as compared with nearly every other interest, financial, social, and industrial.

Agriculture has little or meager legislation to encourage or advance its interest. It pays the highest rates of taxation, and it has no means of intelligence from the General Government but that which is often used against the farmers' interests by speculators. He has no one to whom he can turn to ask for advice and counsel when he meets with depressed markets on the staple crops that his land or locality is capable of producing. He is told to diversify his farming; he is told to raise horses, and he goes into this line of industry, and when in four or five years he has raised horses ready for the market he finds that they are not worth as much as it cost him to raise them, and this advice he finds as unprofitable as on his staple crop. He is then asked by some of those fine agriculturists, whose farming is mostly done on paper, Why don't you raise hogs? and he goes into this industry, and when he has raised hogs about ready for market he finds that hog cholera gets into his herd, or the prices on hogs drops and the profits again disappear. Then he is asked why he don't raise potatoes, and he puts in a large crop, and he finds that he can get only 10 cents a bushel for them, and this is a failure. He would like to go into dairying, and he finds that the cost is too great and the work too much for him with the facilities at his command; at the cost of providing shelter and doing the work, he is unable to bear the expense and perform the work. So the farmer turns from one crop to another without regard to the natural conditions of his locality as to climate, soil, market, and facilities for which he is adapted, and must depend on luck or the distress of other nations or localities by crop failures, or some other dire distress, that will bring him some returns for the productiveness of his land. And if he finds that his land is good, and Providence has been bountiful, and a generous harvest is on the land, then the very volume of this harvest assists in breaking down the price and robbing it of its value, and again he is obliged to see the products of his toil pass from his hand without profitable returns.

We find that as the very necessities of the farmer oblige him to market his crop at a time of year when the great volume of this grain is thrown on the market, he assists in breaking down the price of his own products and playing into the hands of the gamblers and speculators who juggle the prices so that they are generally at the lowest point when the farmers are parting with their grain, and highest in the later months of the year when the farmer has no grain for sale.

He finds himself at the mercy of greedy and unscrupulous grain buyers who rob him on grades and dockage; and in nearly every direction that he turns he finds that he is the victim, though he is of the class who are the bulwark of the nation, who are responsible for its glory and greatness, who produce nearly all the wealth, who work hardest and longest. He denies himself the luxuries and many of the necessities of life that others may revel in luxury; he finds himself the hapless victim of an industry that has not provided him with any of the advantages that nearly every other industry enjoys at his expense.

I believe that you will find practical farmers that will give you details of the unproductiveness of farming as an industry, based on actual experience for a number of years, and covering every condition of farm life, as to climate, prairie, woodland, dairying, stock, wheat, corn, cotton, sugar, and wool-producing sections.

I think that we can show you that grain and cotton, the great natural crops of the United States, are raised by the American farmer at a loss as national crops, as compared with other industrial occupations.

I will therefore direct my remarks to the subject of crops of wheat and cotton, and attempt to prove to you that these crops are raised at a loss as crops because of a lack of proper legislation, and the lack of organization and cohesive and intelligent action on the part of the farmers and workmen of this great nation.

The natural law would indicate that land should be devoted to raising that to which it is best adapted and produces in the greatest abundance.

In accordance with this line of reasoning, land suitable for raising wheat should be devoted to raising wheat, and should not be taken up with crops that are less productive. Lands suitable for raising cotton should be confined to the raising of cotton. Lands suitable for raising corn and stock foods should be devoted to stock and dairy interests, and so on down the list.

The real practical farmer who tills the soil complains that he is raising crops each year that do not bring him any profit, and that he has the figures to prove that our great national crops are raised at a loss, and that he is growing poorer each year, and to make up the loss is obliged to practice the most rigid economy, and deny himself and his family the comforts and many of the necessities of life that his tastes as an intelligent and prosperous American citizen should demand.

We believe that we can prove to you by practical farmers and planters that wheat costs 50 cents a bushel to raise, or in that neighborhood, and that cotton costs 6.4 cents a pound, and whatever the farmer or planter gets above or below these points is the measure of his profit or loss.

The prices that are usually quoted and which the public are familiar with are misleading, and seldom indicate the actual prices that the farmer or planter gets for his crop. For instance, on July 13, 1899, the market quotations were as follows on wheat, No. 1 grade:

September wheat:	Cents per bushel.
Minneapolis, Minn.	69½
Chicago 73	
Duluth 72½	
New York 78½	
Viborg, S. Dak.	53

Viborg, S. Dak., is in the wheat district, and about 275 miles from Minneapolis, and at stations farther west, say 400 miles, the price was about 45 cents; in Minnesota, 150 miles from Minneapolis, it was about 60 cents, so that an average price that the actual farmer received for his wheat was about 55 cents on that day in the wheat belt of the Northwest.

The difference between this price and the quoted prices is taken up by the fixed charges of marketing the crop after it leaves the farmers' hands.

Thus it will be seen that it costs about one-half of the cost of producing a bushel of wheat to carry it to our Atlantic seaboard after it has left the farmers' hands. This cost embraces freight charges, storage, commission, insurance, loading and unloading, etc.

It will be seen that the wheat belt is situated about midway between the Atlantic and Pacific oceans, and is naturally so situated as to enjoy the competition that European or Asiatic trade would establish, and secure the advantages which could be obtained by transportation lines east and west establishing competitive rates in order to attract the movement of the crop in their respective directions.

I believe that wheat could be moved from the wheat belt west to the Pacific coast for the same price that it costs to transport it to the Atlantic seaboard, and thus furnish a chance to cut down these rates which in round numbers are now about 25 cents per bushel, as it is well known in railroad circles that often high rates are maintained in order to provide for the cost of hauling empty cars back to bring forward the crop, and thus rates often seem high when as a matter of fact they must cover the double haul or the cost of hauling the empty cars out and the load in.

This new movement or route would become the great equalizer of rates, and would build up new industries and commerce, and help to solve much of the inequality in rates now so apparent.

There is but one thing that will regulate and make farming profitable, and make it profitable for every crop raised and for every section of the country. I can sum the whole thing up in two words—oriental markets. Give us oriental markets or more and better markets for the products of the American farm, and the natural conditions of supply and demand will regulate and control every agency of producing and marketing such products, and pay a reasonable profit to everyone connected with the crop in its passage from producer to consumer.

It is well known that we can raise more wheat, meat, and textile fabrics than we can possibly use, and what we can not consume we must find a market for somewhere. And the price which we can get for this surplus in the markets of the world is generally the price by which we estimate or name the price on the entire crop that we raise. Thus it will be seen that we raise on an average an annual crop of about 500,000,000 bushels of wheat, of which we consume about 400,000,000 at home. This leaves us with an average crop of about 100,000,000 for export each year. To be more accurate about this item and to show its variation, I quote the figures from the office of the Secretary of Agriculture, which show our exports for the year of 1897 to have been 79,563,920 bushels; and in 1898 our exports reached 148,231,361 bushels. The value of this export crop in 1897 was only \$39,920,178, while that of 1898 amounted to just \$145,648,659, or an average price of about 75 cents a bushel in 1897 and about 99 cents in 1898.

It will be seen that the export crop sets the price by which the whole crop is valued. If we have but one customer who will buy our surplus crops, he most naturally is anxious to pay no more for it than he can possibly get it for, and will use every agency to make the price as low as possible; and this is the price that is set on the entire crop of the world, and is the measure that will establish the value of farm crops of the American farmer.

Now the very necessities of the farmers compel them to market their grain in the early months of the crop year, and by the very volume of grain thus thrown on the market they assist the gamblers and "bears," who are utilizing every means to "bear" the market at that time of year when the bulk of the grain is passing out of the farmers' hands. The farmer is the helpless victim to conditions that he helps to create, without any relief of a general character to save him from the conditions that compel him to part with his grain and farm products.

We find that of the 100,000,000 bushels of grain for export, about 40,000,000 bushels are on the Western slope, and as a natural consequence must be loaded into ships and sent to foreign markets.

The very instant that a vessel clears port it is registered on the boards of trade of the world: Such a ship has cleared port, loaded with grain, containing ——— bushels, destined for Liverpool or other market.

The moment that these vessels are placed on the blackboards and marked "to arrive," they know they will arrive sometime unless they encounter storms and go to the bottom of the ocean. But, barring accidents, it will arrive, and the purchaser knows that he must take it at some figure, and he will drive as sharp a bargain as possible and bear the market to its lowest possible point.

These ships, laden with about one-half of our entire export crop of wheat, have a long and dangerous journey, being from four to five months at sea, making the trip around Cape Horn, and crossing the equator twice on the journey.

This immense volume of grain being "afloat" and marked "to arrive" at a time when the bulk of the farmers are parting with their grain, contributes in no small degree to the establishment of the "low prices" at which he is forced to part with his grain.

England is our chief and practically our only customer on whom we must depend to take our crops off our hands. As a natural consequence, any agency that will create competition and give us another market for our surplus products will stimulate prices which competitors will establish in order to secure the products that they must have. Any advance on the prices of such products gained by this agency will go to the producer, and he at once becomes the direct beneficiary, because all the fixed charges, such as freight rates and handling charges, are always in effect and operation, whether the crop is light or heavy, whether prices are high or low. Thus it will be seen how important it is that we have a market and trade relations with the countries of the Orient, where we would dispose of that vast volume of grain on our western slope, which can be done in 4 to 6 weeks, and get this vast volume of grain out of the way, and not let it hang like a millstone around the neck of prices on our farm products at a time of year that farmers are marketing the bulk of their products. Why not then bend every energy of this great nation to establish new and friendly relations with Asiatic countries, whom we could induce to take a large share of our surplus products, and take it at a time of year that would help to stimulate prices and compel England, who is practically our only customer, to come to our Atlantic seaboard and compete for what is left of our surplus crop, which they must do if they wish to get it.

It has been computed that the increase in price to the American farmers by the establishment of this market would be 15 to 20 cents per bushel on the export crop of wheat, and as the export sets the price of the entire crop the gain to the American farmer would be between \$75,000,000 to \$100,000,000 annually on the item of wheat alone.

How can this be done How can we get the Chinese to take our wheat flour

when they are accustomed to rice and rice-made flour? In answering these questions it must be borne in mind that we are dealing with a big proposition. Only when we contemplate the figures can we get any intelligent idea of the immensity or significance of this matter. We should first consider the fact that the great bulk of the inhabitants of this earth lays within that country of whom we have such vague and erroneous ideas and impressions. The inhabitants with whom we would have a direct and easy contact from the sea would represent a population of about 400,000,000 people. If we could get them to take the 40,000,000 bushels of wheat on our western slope it would mean that all each inhabitant would receive would be less than half a peck, or not as much as would furnish pie crust for the wealthy inhabitants of that country. This will be better illustrated by the fact that our 70,000,000 people in the United States consume annually 400,000,000 bushels of wheat, or an average of 5½ bushels per inhabitant.

In further answering this question it must be remembered that the Chinese are not all poor and ignorant, as is the popular notion with most people when speaking of the Chinese and Japanese and the people of the Orient. A large percentage of these people are wealthy or in moderate circumstances. The official, commercial, religious, and educational classes, comprise a large percentage of the people, besides the military. It would not be an insurmountable task to cater to the tastes of this large, intelligent, and wealthy middle class, and induce such people to accept a staple article of food that would be at once palatable, nutritious, and moderately cheap as compared with rice-made flour edibles. History has shown that wherever wheat flour came into competition with rice flour the wheat flour displaced the rice flour permanently.

Commerce and trade, like water, flow along the route offering the least resistance, and it now becomes the mission of our lawmakers to clear away every obstacle or impediment without regard to past policies or precedents, but with a determination to grasp the significance and importance of this question and leave no sentiment stand in the way of an early and successful solution of it.

I will now consider briefly the subject of the cotton crop and show the melancholy outlook for this vast and main crop of the South. Here we have a great crop, in round numbers 10,897,857 bales of cotton for the year 1898, of which we consumed only 3,443,581 bales. We exported the enormous amount of 7,648,690 bales. The average price for this immense crop, as given by the Agricultural Department, was 6.23 cents per pound; 5,142,866,947 pounds would be worth \$321,419,160. This price represents the price that the planters got for their cotton, plus the fixed charges of marketing it, which amount to about 2 cents a pound. The Agricultural Bureau gives further statistics on the cost of producing a pound of cotton, and places it at about 6.4 cents per pound, which would mean a net loss to the Southern planter of \$102,857,338.94, the measure of which loss he must reckon either in the shape of newly accumulated debt or the necessities of life that he must deny his family.

This latter proposition is forcibly illustrated by a letter that I received from Col. J. P. Sossaman, national lecturer of the National Farmers' Alliance and Industrial Union, living at Charlotte, N. C., who, in speaking of the cotton question in that State, remarked that cotton was so cheap and plenty that the planters' houses were full of it; so much so that the people were going naked for the want of something to wear. As cotton was so cheap that the planters measured their loss by the amount of cotton they had on hand, the more they had the greater their loss. Cotton, said he, was begging for sale at 4½ cents a pound, which must be taken out in store trade. Commenting on the shoe industry, he said that there were so many shoes in the factories that the people were going barefoot, while the shoemakers were nearly all looking for a job.

This dismal but accurate picture of the conditions of the cotton planters in the South is one that should arrest the attention of our lawmakers and secure their earnest and united efforts to relieve these conditions by the passage of such laws as will aid in restoring prosperity to the industry of cotton raising. The cotton industry is even more subject to a long continued disastrous condition than the wheat crop, on account of the fact that we consume only about one-third of our annual crop of cotton, and must rely on our export trade to take the enormous amount of 7,648,690 bales out of a total of 10,897,857 bales, of an average net weight of 482 pounds to the bale. This condition of the cotton crop was the cause of the low prices which the planters received, and it at once calls attention to the absolute necessity of extending and establishing our foreign markets and securing new customers for this staple article of agriculture before the present condition ruins the cotton industry of this nation. The condition to-day reveals the fact that the more cotton that a planter raises the greater his loss.

For the purpose of giving some adequate idea of the enormous wealth produced

from the soil by the industry of agriculture, and to give some idea of the nature and extent of the interest that is speaking, I will give an estimate of different crops and their valuations as taken from the latest statistics of the Agricultural Department. I give them in the order of their value.

Kind of crop.	Quantity.	Value of same.
Corn.....bushels.....	1,924,184,660	\$552,023,428
Wheat.....do.....	675,148,705	362,770,820
Cotton.....pounds.....	5,142,866,947	321,419,160
Oats.....bushels.....	730,906,643	186,405,364
Hay.....tons.....	66,376,929	398,000,847
Potatoes.....bushels.....	102,306,338	79,574,772
Barley.....do.....	65,732,257	23,064,359
Rye.....do.....	25,657,622	11,875,350
Tobacco.....pounds.....		125,000,000
Farm animals.....		21,987,010,407
Total value.....		3,987,203,907

¹ Estimated.² Total value.

This stupendous wealth is produced by a majority of the inhabitants of this nation, representing about 34,000,000 people. This vast multitude represents the farming industry only. Why our lawmakers turn a deaf ear to this vast multitude and these valuable interests is a wonder that I can not fathom. I have asked, Is it because they were not as good and patriotic citizens as the balance of our population? And I can find answer to this question in the following statistics of each 1,000 men of the Union Army in the civil war:

	Men.		Men.
Agriculture.....	487	Printers.....	
Mechanics.....	254	Lumbermen, miners, and railroad men.....	42
Laborers.....	141	Bankers, lawyers, doctors, and ministers.....	16
Merchants.....	35		
Editors.....	19	Total.....	1,000

The above table reveals the fact that agriculture contributes the bulk of patriotism to defend the nation in the hour of its peril, but in strange contrast is the representation it is given. We can gain a valuable lesson from the disregard in which the vocation of agriculture is held when it comes to giving it representation in our national legislature.

I can not do better than to quote from the address of Col. B. F. Clayton, president of the Farmers' Congress, at a recent convention held in this city. He said: "A biographical sketch of a recent Congress, as furnished by its members, discloses the fact that out of a membership of 444 in the Senate and House of Representatives the farming element, representing a majority of all the people, have only 83 members in the House and 1 in the Senate. The chairman of the Senate Agricultural Committee records himself as a lawyer. The only farmer on the committee is at the tail end. Ten of the 13 members of the House Agricultural Committee, including the chairman, are lawyers. The only chairmanship held by a farmer is on the Committee on Ventilation and Acoustics."

This gives an eloquent but humiliating picture of the manner in which the cause of agriculture is represented in the halls of our national legislature.

This glaring and monstrous neglect of the interests of agriculture has caused deep and permanent convictions in the minds of farmers all over the nation. They have at last awakened to the fact that if their industry is to receive any prompt or permanent measure of relief from the General Government they must be represented by men of their own calling, farmers, or those in whom they have the greatest confidence on account of previous efforts to secure legislation in the interest of agriculture. And here let me remark that the action and attitude of every member on matters in our national legislature are subject to the closest scrutiny of this fraternity, and such action will determine the future attitude of the farmers through their respective societies, whether it will be opposition or support. It is the policy of this society henceforth to use all its efforts to secure the nomination of farmers from agricultural communities on all political party tickets, and then allow its members to vote the ticket of their political choice, being thus assured that a representative of the interests of agriculture will be elected, no matter which party wins. Only cases where representatives of other interests or vocations, being identified with our interests, will be considered,

and where any national Representatives have shown hostility or neglect to or dodge measures considered of interest to agriculture, their action and attitude will be taken up through the agency of the National Farmers' Alliance and Industrial Union in every district in the nation, and the voters of such district will be given an opportunity to reward or rebuke the action of their representatives, with which they will become acquainted, through the medium of intelligence that this society will furnish its members by the distribution of literature covering the acts of such representatives in Congress or State legislatures, presenting the facts in a nonpartisan manner. Our society has become firmly convinced that these matters are more of a national than a partisan political character. Thus, we can reasonably expect the active and earnest support of each national or State legislator when a measure is presented for his consideration as a great national movement, bereft of any partisan advantage.

In justice to many of our Senators and Congressmen, irrespective of political party, whom I have interviewed on this subject, I have yet to find one who has objected to the mission or policy of the National Farmers' Alliance and Industrial Union when it became known that it was a nonpartisan society, devoted entirely to the advancement of agricultural interests. Farmers all over this nation will watch with a jealous eye the attitude of their representatives on matters pertaining to the cause of agriculture, and those who antagonize these measures will be most sure to invite and secure the united hostility and opposition of the farmers and workmen of their districts, while those who will show a friendly interest in these matters will receive the hearty approbation and support of our association, irrespective of what political party such Congressman or Senator belongs to.

The same line of reasoning and argument given to the two great staple American crops—wheat and cotton—would apply with equal force to the numerous other crops. The following table will show the articles exported in 1898 from the American farm, in their order of quantity and valuation:

	Quantity.	Value.
Cotton.....	pounds.. 3,850,284,295	\$290,442,215
Wheat.....	bushels.. 148,231,261	145,648,659
Corn.....	do..... 208,744,989	74,196,850
Wheat flour.....	barrels.. 15,349,943	69,263,718
Bacon.....	pounds.. 650,108,933	46,390,018
Lard.....	do..... 709,344,045	89,710,672
Cattle.....	head..... 439,225	37,827,509
Fresh beef.....	pounds.. 274,768,974	22,968,556
Tobacco leaf.....	do..... 252,258,902	21,924,337
Oats.....	bushels.. 69,130,288	20,622,914
Hams.....	pounds.. 200,185,861	18,937,635
Oil cake and meal.....	do..... 1,368,186,702	12,601,820
Cotton-seed oil.....	gallons.. 40,230,784	10,137,619
Fruit.....		8,851,878
Rye.....	bushels.. 15,541,575	8,535,799
Oleo, tho oil.....	pounds.. 132,579,277	7,904,413
Horses.....	head..... 51,150	6,178,589
Barley.....	bushels.. 11,235,077	5,542,040
Pork, pickled.....	pounds.. 88,183,078	4,906,961
Cheese.....	do..... 53,167,290	4,599,324
Butter.....	do..... 25,690,025	3,964,765
Beef, canned.....	do..... 37,709,570	3,279,057
Tallow.....	do..... 81,744,809	3,141,653
Glucose.....	do..... 193,864,605	2,871,839
Hops.....	do..... 17,161,699	2,642,779
Beef, salted.....	do..... 44,314,749	2,368,467
Grease, soap.....		1,964,565
Clover seed.....	pounds.. 31,155,881	1,892,806
Sausage skins.....		1,621,519
Corn meal.....	barrels.. 827,651	1,706,078
Oat meal.....	pounds.. 85,500,350	1,757,978
Distilled spirits.....	gallons.. 2,592,713	1,651,123
Starch.....	pounds.. 72,806,313	1,371,549
Bran and mill feed.....	tons..... 91,189	1,339,896
Sheep.....	head..... 199,690	1,313,866
Hay.....	tons..... 81,827	1,151,273
Lard substitutes.....	pounds.. 21,343,028	1,118,699
Beans and peas.....	bushels.. 854,284	1,094,094
Molasses and sirup.....	gallons.. 11,391,870	1,061,989
Hides and skins.....	pounds.. 11,596,073	1,016,073

By proper and intelligent business enterprise we could expand our markets and for each article find a most extensive and highly profitable market in this vast Oriental country. For the farm products which we could dispose of in the Orient

we would take in exchange large amounts of coffee, sugar, hides and skins, silk, vegetable fibers, wool, fruits, tea, tobacco, wines, rice, cocoa, indigo, spices, etc.

By systematic and intelligent display of the exchanges which we can make with those countries, and the proper showing to such countries that it would be to their advantage to reciprocate with us in the exchange of their products, we would before long break down the barriers of national prejudice and ignorance for which the inhabitants of the East are noted. With this object in view it should be one of the first duties of this nation, after treaties favorable to this nation have been secured, to establish and maintain permanent exhibits of all the natural and manufactured products of this nation in every large city in the countries from whom we can obtain concessions, and make such displays with the view of catering to the notions and prejudices of the citizens of such countries.

We should maintain permanent and conspicuous space in the native newspapers and magazines of these countries, and present with all the skill of Yankee enterprise the merits of our goods in their native language; have our representatives in charge of these national exhibits learn the language of the country, and keep these exhibitions open daily, and have them in such prominent places and so attractively conducted that they will invite general inspection from the inhabitants, and use every means to educate the people in the nature and character of our goods, with their uses and prices, and popularize our goods and products with the natives.

We should learn to cater to their ways of doing business, their customs, their mode of giving credit, the manner that they desire to have goods shipped to them, the sort of packages they are used to shipping goods in, and in fact in every way seek to please the notions and tastes of our customers.

Congress should make liberal appropriations to establish and maintain these national exhibits, and publish frequent articles in the native press and magazines, giving the nature and characteristics of our goods, with full and complete information covering every range of inquiry. We will find that we are far behind in the procession on these matters. Already England, Germany, France, Russia, and Italy have these matters well under way, and are most liberal in the expenditure of money in this sort of advertising, and have, as a result of this enterprise, secured a strong foothold in China and adjoining countries.

Never was a nation situated so favorably as the United States to-day before the nations of the world. We are at peace with every nation on earth, except a few unfortunate people who mistake our intentions and have brought on a cruel war.

This is the opportunity of the United States; the conditions are so favorable that all it requires is a bold and determined stand on our part, and the battle is ours. Let us say to the nations of the world that, pursuing the policy of our nation since its foundation, we are the friend of the weak and struggling nation, and we will not permit might to rule against right. The 4 great powers to-day in China are seeking to carve that unhappy country up into provinces and spheres controlled by marauding nations, who are glaring and snarling at each other with jealous fears that one rival may secure an advantage over the other. The very condition of these great nations makes us strong and fortifies our policy and position on the Eastern question. We have but to say "Hands off," and these nations, with whom we have the most friendly relations, are willing to obey, rejoicing in the satisfaction that their hated rival must also retire from its sphere of influence. What would this mean for the United States? It would mean that we would earn the lasting gratitude of the Chinese nation and secure all the advantages of a favored nation in the shape of commerce and trade. This is what we want; that is what we must have if we expect to grow and expand as we have been. This is the question which will challenge the attention of our best statesmen, and provide the opportunity to take a tremendous stride in advance, and secure for this nation the good will of China and its vast population, and remove many of the obstacles that now lie in the way of securing this great multitude as customers for our vastly increasing products, which must find a market or we will become a pauper nation. The downfall of our country will date from the hour that we fail to make the occupation of the farmer and laborer profitable in this nation. We have everything to gain and nothing to lose by following this well-established policy of this nation, and by applying sagacity and enterprise to the successful operation of this great, profitable business.

We now come to the next great proposition, which is second only to the interest of agriculture, and in a measure its twin sister, as on it must we rely for the carrying out of the details in the successful operation of our foreign markets after they have been secured.

This phase of the question deals with the interests of labor as well as agriculture, and affects both ends of our organization, represented in agriculture by the National Farmers' Alliance, and in labor by the Industrial Union end of our or-

ganization. This organization represents labor, both organized and unorganized. We will consider briefly the subject of "American ships a necessary factor to establish and maintain our foreign markets."

It is a sad and humiliating spectacle for a great nation like the United States to be compelled to permit foreign ships to come to its doors, load up its products for export, and bear them away to foreign markets. Many nations boast of their greatness because of their commerce on the seas. Why can not the United States also be rated as a maritime power? Is it because we are too weak to engage in this line of trade? Is it because we have not the capital necessary to build a fleet of ships? Is it because we have no products to carry when they are built? Is it because we lack enterprise and patriotism? Is it because we have no idle workmen to employ in such enterprises? Is it because the American sailor is afraid of the sea? To all of these questions I can answer emphatically, no.

But like with all great nations, often the most important matters are lost sight of in the mad scramble for development and wealth, and because of a lack of such organization as would give dignity and influence to any demand coming from sources of recognized character and standing. "What is everyone's business is no one's business" is a true saying, and here it is exemplified with full force.

This nation has recently shown that it has some claim for recognition as a power on the seas. Its splendid victories in the recent war have been a source of pride and exultant joy to ourselves and a revelation to jealous nations who never considered the Yankee of any consequence on sea.

One of the first requirements of this nation is the establishment of the merchant marine to such size and character as befits the dignity of this nation as one of the leading powers of the world. As it is now we have nothing worthy of the name of American ships. It is our first duty as citizens, from the standpoint of patriotism, to see that American ships be built. Whatever obstacles are in the way of achieving this object should command our earnest and practical efforts to remove, and to apply such remedies as will insure the speedy and permanent establishment of our merchant marine.

It is the duty of every patriotic citizen of this nation to speak out and demand that our shipping should be restored to the sea, and restored as quickly as possible. It will be seen what advantages this will give this nation and its citizens. It will at once place at the disposal of the nation in time of war a fleet of vessels second only in importance to our Navy in the successful operations of a great war. It may not be always our good fortune to engage with a weak and disabled nation like in the war just closed. The building of our merchant ships, while being a great resource for the nation in time of war, offers at once the most profitable and important industry in this nation left undeveloped. New markets can be found and extended that will absorb the products of the farm and the manufactured products of labor. It will create a new industry in the United States—shipbuilding—and a new occupation—that of the American sailor. The establishment of this new industry will create new demands for labor, and will multiply the industries of the forest, mine, and workshop to make and fashion the materials necessary to build a modern ship, and then to man the same with American sailors, mechanics, and officers in steady and profitable employment. Then we can earn a portion of the \$200,000,000 which we pay annually to the owners of foreign vessels to carry our people and products to and fro. With this enterprise thoroughly established and equipped it would take, by a conservative estimate, 500,000 men from the ranks of idle labor, who would each earn on an average \$60 per month, giving us a grand total of increased wages of \$360,000,000 annual y. It will furnish a permanent investment to capitalists of about \$100,000,000 that will be turning out new vessels annually, and repairing old ones to cover the seas, and eventually carry all our own products, and enter the field of foreign commerce, and earn dividends for their owners, and bring vast incomes to this nation that now go to build up foreign nations through their commerce.

Owing to the generous treatment that foreign nations give their shipping and commerce, we are at an immense disadvantage if we do not receive Government aid in starting this enterprise for the first 10 or 20 years, in the shape of bounties, or at least as long as we would have to compete with other nations who would continue the present policy of subsidizing their commerce.

Let us consider for a moment what we could accomplish with an apparent small outlay in this matter. We could clip from the river and harbors appropriation and from the public buildings appropriations for many and useless and often reckless expenditures of money, and save say \$25,000,000, which we could use annually for the purpose of establishing and maintaining our American ships and its commerce, and never miss it. Say that we would pay \$3 per ton for all agricultural and mineral products; let us say that this fund would encourage enough

new ships to give us a fleet of vessels, two of which we could have leaving our western ports daily with 10,000 tons capacity each, which would be 20,000 tons of freight daily. We would have shipped abroad in 800 days 6,000,000 tons. At \$2 per ton that would only be \$12,000,000, and leave \$13,000,000 to establish and maintain a great national exhibit in the oriental countries, which would contribute in no small measure to the increased orders that our new-found customers would give for our products.

When we contemplate for a moment that our national legislative appropriations reach the enormous figure of \$1,000,000,000 in one year, this sum must appear very insignificant. It would give the proper encouragement to timid capitalists, who would be obliged to invest immense sums in plants that would be capable of engaging in this gigantic enterprise. And it is but fair, when we consider the generous protection that nearly every kind of manufacturing industry has received from our Government in the shape of tariffs and protection for many years. We find those enterprises now gigantic affairs, having grown to their present stature through the liberality of our Government in aiding those enterprises.

Subsidizing our merchant marine would be practically granting an export bounty on the agricultural and mineral products of the nation. It will be found that the most hostile competition will be inaugurated by the ships of other nations, to hold the trade that they have already secured and extend their interest. Rates that have been practically prohibitory will be readjusted as a consequence of the fierceness of this competition. Thus we will find that this new policy will be the great adjuster of rates on the Pacific Ocean. And it will permit the enterprise to successfully compete with those nations through these subsidies, which under any other condition would drive our ships from the seas.

It will thus be seen that the producers of the products enjoying this bounty will in the end be the beneficiaries, as it will assist to remove the obstacles that now practically keep his goods out of the very market that he desires most to enter. As every cent reduction which these goods can secure in getting to the markets of the world is just so much in their favor, it will give them an advantage over the same goods of other nations to the extent of this reduction of cost to carry to market.

Now let us glance for a moment at what a fleet of vessels we would require, and see the vast outlay that must be made before there would be any income from this investment. Let us suppose that it would take these 2 ships 8 weeks or 56 days to make a round trip. It would require a fleet of 112 ships to keep up this regular time sailing schedule of 2 ships a day, including time of loading and unloading. A vessel of 10,000 tons capacity, built on the latest and most improved style, would cost at least \$1,000,000, and for the 112 vessels the cost would be the enormous amount of \$112,000,000, without saying anything of the investment in the plant, and all the preliminary expense that would be necessary to establish and maintain a vast enterprise like this.

With this small outlay we can establish this gigantic enterprise and establish speedy communication with daily regularity and on an immense scale. It would be a most potent factor in attracting the trade of the Orient, because of its definite and speedy character, as it is well known in commercial enterprises that time is money.

With this condition we would be able to dispense with the services of foreign ships in carrying our produce, who are often hostile to the introduction of our goods in foreign markets, as they may come in competition with the products of their countries. This it will be seen is most necessary, from a glance at the advance of freight rates. It was only a few years ago that we first commenced to trade with Japan, and only recently with China, and the first shipments of flour made were taken at \$2.50 per ton. As time went on and the demand became greater the freight was raised from \$2.50 to \$3 and \$4, and lately it raised as high as \$6 a ton, which would be considered practically prohibitory rates. But I understand that at even these enormously high rates one-half of the flour offered for shipment has to be refused on account of no vessels being built to take care of this quickly increasing trade in the Orient. I understand that 100,000 bales of cotton were refused for the same reason, that there were no shipping facilities; also 50,000 tons of steel rails were refused for the same reason. I also understand that all the available shipping capacity was contracted for in the early spring months up to the middle of August.

It will be readily seen that the establishment of those vessels would soon establish competition on the Pacific trade that would reduce those enormous freight rates and remove what is now practically a prohibitory tariff on our staple articles of production and manufacture.

In considering this proposition it must be borne in mind that we do not contemplate invading the Atlantic commerce, as it would be useless to try in that

already well-equipped commercial field. We have only a small market in that direction, and have practically all that we can get, so there is no use in wasting any energy in trying to secure that which we have already. Let us continue on good terms with all our customers in Europe, but let us bend every energy in securing the trade of the Pacific, which is anyone's yet; let our Yankee enterprise assert itself and secure our share of that vast trade now opening up to the world.

CHICAGO, ILL., August 12, 1899.

TESTIMONY OF MR. JOHN HILL, JR.,

Commission Merchant, Chicago, Ill.

At a meeting of the subcommission on agriculture in Chicago, Ill., August 12, 1899, Mr. A. L. Harris presiding, Mr. John Hill, jr., was sworn as a witness and testified as follows:

Q. (By Mr. A. L. HARRIS.) You may state your name.—A. John Hill, jr.

Q. And your place of residence?—A. 1750 West one hundred and seventh street, Chicago.

Q. Occupation?—A. Commission merchant.

Q. How long have you been engaged in the business of commission merchant?—A. I have been engaged in the grain business since 1876. I was out of the grain business from 1897—about two years—during 1897 and 1898. I was connected, however, with the board of trade during all that time and interested, but I was not directly in the grain business until the spring of this year.

Q. Are you in the general commission business?—A. Yes.

Q. Now, you may make your statement in your own way without interrogatories, so far as possible, and introduce such exhibits at the proper places as you desire.—A. I wish to call the attention of the committee in the first place to the fact that Chicago is the greatest grain market of the world. For last year the receipts of grain were 320,000,000 bushels. Wheat represents about 9½ per cent of the total crop of grain in this country. One of the most important features of the handling of grain in Chicago is its storage; and it being at the end of the railway lines and the beginning of water navigation, it has become necessary to establish large and numerous elevators here. These elevators were first built in the 50's; possibly as early as 1848 there was an elevator in Chicago. As the Western roads brought grain to Chicago and as the grain business increased they all, or nearly all, built railway elevators, or built elevators as terminal depots for their grain. In 1870 the State of Illinois found it necessary to control the handling of the elevators, owing to the fact that there had been some proceedings that were detrimental to the grain interests of the State, and at the constitutional convention of that year an article of the constitution, which was adopted in either 1870 or 1871, was devoted entirely to instructions to the legislature in regard to making laws concerning the inspection and storage of grain, which laws, it was stated in the article, should be construed liberally in the interest of producers and shippers. During the period from 1871 until 1887 there was very little if any difficulty in the manner in which the grain was handled in these elevators. The public used them entirely. They were recognized as the terminal freight depots for grain received from the various roads in Chicago, and were so treated. They were handled by disinterested parties engaged solely in the warehouse business, and the independent shippers and receivers of grain in Chicago and at outside points owned and controlled the grain that was stored in these houses. The rate of storage was fixed at the beginning of each year as provided by law. It was a published rate and the same to all persons. Following the enactment of the interstate-commerce law, the elevators during the next 3 or 4 years passed out of the hands of the people who had devoted their entire time to the warehouse business and passed into the hands of people who immediately embarked in the grain business in addition to doing a warehouse business. As this state of affairs progressed it gradually drove the public out of the public warehouses, so that they could not handle the grain in the houses in competition with the people who operated the houses for the railroads, as the storage charge which the public had to pay made it impossible for them to compete with the operator of the public warehouse, who, if he paid any storage at all, paid it to himself. The entire method of handling grain in the elevators changed between the years 1887 and 1892. It became necessary during the investigation of these matters for us to examine the recorder's books of Cook County as to the stockholders, etc., in the various elevator concerns. I wish to introduce here as part of the record, and to show

that the railroads were to a greater or less extent, either directly or through their officers, interested in the elevators, a copy of the records of Cook County relating to the incorporation of these companies.

The following is a copy of the list of the stockholders of the Central Elevator Company, the terminal elevators of the Illinois Central Railroad. This list of stockholders contains the name of almost every officer of that road, including one party who was president and one who has since been president:

[Central Elevator Company, Records No. 21, p. 323. Incorporated in Illinois, December 13, 1886, for 99 years. Capital stock, \$100,000—1,000 shares, \$100 each.]

Original stockholders.	Shares.	Value.
J. C. Clarke.....	150	\$15,000
John Dunn.....	100	10,000
A. G. Hackstaff.....	100	10,000
S. Fish.....	150	15,000
E. T. Jeffrey.....	150	15,000
J. C. Welling.....	150	15,000
Henry De Wolf.....	100	10,000
C. A. Beck.....	100	10,000
Total.....	1,000	\$100,000

Object of company, to carry on the business of a grain warehouse and the storage and handling of grain, seeds, and other like products.

THE WITNESS. The next is the Chicago Elevator Company. It operated 2 elevators here, and that company is still in existence with Russell Sage as president, and one of the prominent stockholders on the list is Jay Gould. The elevators operated by this company were the Wabash Company, the terminal elevator of the Wabash road, and the terminal elevator of the Chicago and Eastern Illinois road, the Indiana elevator.

(The following is a copy of the records as to the Chicago Elevator Company:)

[Chicago Elevator Company, Records No. 26, p. 300. Incorporated in Illinois May 20, 1888, for 99 years. Capital stock \$500,000—5,000 shares, \$100 each.]

Original subscribers.	Shares.	Value.
Estate of Perry H. Smith, P. H. Smith, jr., executor.....	500	\$50,000
John Hurd.....	500	50,000
C. B. Cummings.....	250	25,000
S. C. Reynolds.....	250	25,000
Russell Sage.....	250	25,000
Sage & Hurd (trustees).....	1,875	187,500
A. L. Hopkins.....	875	87,500
Edgar T. Welles.....	250	25,000
Jay Gould.....	250	25,000
Total.....	5,000	500,000

Object of company, to receive and handle grain in warehouses and elevators constructed or acquired for that purpose, and the transaction of a general storage and warehousing business.

The WITNESS. The next is the record of the corporation known as the Armour Elevator Company, of which P. D. Armour is the most prominent stockholder; and he is also one of the directors of the St. Paul road. This elevator concern, at present capitalized for \$100,000, now controls all the public storage on the St. Paul and Chicago, Burlington and Quincy railroads. The elevators on the St. Paul road were built by the Armour Elevator Company; but the elevators on the Chicago, Burlington and Quincy road, having a capacity of between six and seven million bushels, were leased by the Armour Elevator Company from the Chicago, Burlington and Quincy Railroad. Of the Chicago, Burlington and Quincy elevators, all have been reduced from public to private warehouses and are used entirely, with the exception of one house of 800,000 bushels, for the private use of Armour & Co. In other words, the public have now 800,000 bushels of room on the Chicago, Burlington and Quincy road where formerly they had between six and seven million bushels room.

(The following is the record:)

[Armour Elevator Company, Records No. 25, p. 269. Incorporated in Illinois March 14, 1888, for 99 years. Capital stock \$100,000—1,000 shares, \$100 each.]

Original subscribers.	Shares.	Value.
Philip D. Armour	490	\$49,000
Jonathan O. Armour	500	50,000
D. L. Seymour	10	1,000
Total	1,000	100,000

Object of company, to carry on the business of warehousing and handling grain, seeds, and like products in the city of Chicago, Ill., and elsewhere, and to deal in such grain, seeds, and like products in connection with such warehouse business.

The WITNESS. The next is the record of the incorporation of the Santa Fe Elevator and Dock Company, of which Charles Counsellman apparently was the moving spirit, and which was the first of the great elevator systems to be passed over into the hands of the grain dealers. I wish to state that the Illinois Central Railroad owns its terminal elevators and leases them at present to Carrington, Hannah & Co., who are the owners of stock in the Central Elevator Company. Carrington, Hannah & Co. are a grain-shipping firm, and control all of the grain that comes in and out of these public houses. Recently they have taken one of the Illinois Central elevators and made it a private warehouse; so that they do their private business through it, and the public are barred out. The Santa Fe elevator is at present under lease to a corporation known as the Richardson Company in Chicago. It is no longer a public house, being used for the private business of the Richardson Company.

(The following is the record:)

[Santa Fe Elevator and Dock Company, Records No. 22, p. 518. Incorporated in Illinois July 7, 1887, for 99 years. Capital stock \$2,000,000—20,000 shares, \$100 each. Capital stock reduced to \$400,000 April 27 1888.]

Original stockholders.	Shares.	Value.
John B. Cohrs	1	\$100
Charles Counsellman	1	100
S. A. Kent	1	100
C. R. Cummings	1	100
J. J. P. Odell	1	100
P. A. McEwan	9,998	999,800
Amicetto Hoyos	9,997	999,700
Total	20,000	\$2,000,000

Object of company, to erect, build, and purchase, operate, lease, and demise elevators and warehouses, and to construct, build, purchase, maintain, operate, lease, and demise docks.

The WITNESS. The Rock Island elevators, being the terminal elevators of the Chicago, Rock Island and Pacific road, passed into the hands of Charles Counsellman, and at present one of them is being used as a private house, while the other is a public house. The proprietors of these public warehouses are the most extensive dealers in grain on the roads of which these houses are the terminal depots, and own to a great extent all the grain that is stored in these houses. The public can not successfully handle grain against them, as the charge for storage which the public has to pay bars them as competitors of the elevator people, who pay storage to themselves. The effect has been that grain coming to Chicago on any line of road where these conditions exist, grain that inspected of a grade that would of necessity go to elevators, found but one buyer, the elevator proprietor, as he alone would buy the grain that went into that house. It was in evidence in 1896, when the matter was tried before Judge Tuley, that the elevator proprietors at that time owned 75 per cent of all the grain in the elevators in Chicago; and I wish to introduce part of the decision of Judge Tuley, and also part of the decision of the supreme court affirming Judge Tuley, as they contain many valuable statements in regard to the conditions under that system here at the time, and in regard to the practical monopoly of it.

(The parts of the decisions referred to follow:)

In the circuit court of Cook County.

People ex rel. attorney-general v. Central Elevator Company.

INFORMATION FOR INJUNCTION.

TULEY, C. J.:

It is unnecessary to review the voluminous pleadings in this case. It is sufficient to state that this is an information filed by the attorney-general against the defendant corporation, licensed under the State law of 1871 to carry on the business of a grain warehouse of Class A under said statute, seeking to enjoin the defendant from buying, storing, and mixing its own grain with that of others stored in its public warehouses, or, in other words, from dealing in grain and mixing the same with that of its customers.

The defendant company substantially admits that it has for a considerable time dealt in grain and stored and mixed grain bought by it in its public warehouses, and alleges that it is advised by counsel that it could lawfully do so. This is one of nine suits brought by the attorney-general against certain corporations, firms, and individuals, owning or operating the 29 public warehouses in the city of Chicago. The defendants in these suits are all licensed as public warehousemen, and although some of the licenses include the privilege of dealing in grain, the issue in all the cases is practically the same, as the license could confer no right to deal in grain unless the law under which it issued would justify such dealing.

This litigation involves the construction of the statute of 1871 concerning warehouses and the rights of public warehousemen under said act to deal in grain and mix the same with that of their customers, stored in such public warehouses.

The evidence as to the warehousemen of Chicago so dealing in grain prior to 1872 is confined to the dealings of a very few of such warehousemen, and much of the evidence is conflicting.

While the evidence, as stated, fails to show any long-continued, well-known and uniform custom for warehousemen to deal in grain, such as would incorporate such custom into the constitution of 1870 and the law of 1871 and make it practically a part thereof, it must be admitted that the constitutional debates show that it was alleged in convention that the warehousemen in the country did deal in and mix their own grain with that of their customers, and that the warehousemen in the city of Chicago in some manner, in combination with the railroad, "to a large extent controlled the grain market of Chicago."

The great weight of the evidence is to the effect that the warehousemen of Chicago did not commence to so deal in grain to any general extent until about the year 1885; that the practice has grown so rapidly that now and for 2 or 3 years last past they are the principal buyers and sellers on the Chicago market and upon the Chicago Board of Trade; that by reason of the advantages they possess, and by reason of certain changes in the grain trade, they have practically driven out of business the class of men who were before then engaged in buying and shipping grain on the Chicago market. And it is admitted that they have dealt in grain to the extent that they now own at least three-quarters of all the grain stored in the public warehouses of the city of Chicago, and it also appears by the evidence that they are fast monopolizing the business of dealing in grain in the Chicago market.

It appears that the present condition of the grain trade and the relation of the public warehouseman to the same has been brought about by reason of the following, among other causes:

About or shortly before the time the warehousemen commenced to be generally known as dealers in grain, the railroads made regulations by which grain could be easily sold upon track. Before that time the railroad regulations were such that nearly all the grain received was forced to go to a public warehouse, which issued its receipt, stating the quantity and grade of the grain received, and this receipt was bought and sold on the board of trade and in the Chicago market, but by reason of the facilities offered by the railroads for selling on track, there soon arose at Chicago and other grain-buying centers of the country, the practice of buying grain upon the railroad track. A certain time was given, by the railroad, now 24 hours, for inspection, and 72 hours for its removal, without charge as was made theretofore for demurrage by reason of detention.

About the same time, and partly by reason of the practice of selling upon track, a practice grew up of selling by sample, and became quite general in Chicago and upon its board of trade, and there arose during the eighties among the railroads a system of what was known as "through billing" of grain from the point of production to any designated point east of Chicago, generally New York, which operated to discriminate against Chicago.

For example, if a producer or shipper west of the Missouri River desired to ship to Chicago he could obtain a freight receipt showing the grain was shipped to A B, consignee, New York; this was indorsed, "Notify A B, Chicago," and when the grain arrived in Chicago A B had the right to sell on track, and also the right to change once the name of the ultimate consignee and the designation of the place to which the grain was to go; or he could stop the grain in Chicago by paying the local rate to Chicago. The difference between the through rate and the sum of the two locals—that is, to Chicago and from Chicago to the point of destination—made a difference of about 2 cents per 100 pounds.

It also appears that the railroads made a discrimination in freights against Chicago, by which grain which would otherwise have come to Chicago was diverted to St. Louis and other points. The consequence of these changed methods of doing business was that much of the grain failed to go into an elevator or warehouse in Chicago and was shipped direct from the tracks to the East and other parts of the country, and as there was necessarily a difference in the quality of the same classified grade of grain, often arising from the grain being received from different sections of the country, the best grain was sold by sample, and only what is known as "line-grade" grain went into the warehouses. The difference in the price between what was known as "line-grade" and grain of the same grade sold by sample varied from 2 to 15 cents a bushel.

The effect of the inauguration of this practice of selling grain upon track and selling by sample and "through billing" was to greatly diminish the amount of grain that went into store in Chicago, and to lower the quality of that which did.

Notwithstanding the amount of grain going into the warehouses in Chicago in proportion to the total amount received in the Chicago market was continually growing less, the storage capacity of Chicago warehouses was continually increasing. This capacity in 1885 was in round numbers 26,000,000; in 1895 it was over 41,000,000 bushels.

The warehousemen of the city of Chicago soon perceived that if they did not buy grain in Chicago and at competing points with Chicago their warehouses would soon cease to be profitable, when used solely for the purpose of storing grain for their customers, and that the quality of the grain stored would be lowered.

There also arose in the eighties houses known as "cleaning houses," where grain was taken in at one grade, say No. 3, and came out No. 2 after being cleaned, and, if necessary, mixing therewith some better grain. This appears to have been a very profitable business, and came into competition with the storage of public warehouses. The number of cleaning houses into which grain can go under the law, and from which, if desired, it can be shipped out without inspection, rapidly increased, and now the owners of public warehouses in Chicago, many, but not all of them, are operating cleaning houses, some of which cleaning houses are adjacent to their public warehouses.

Private warehouses also arose in competition with the public warehouses and these in connection with the cleaning houses diverted much grain from the public warehouses.

Did or do these changed conditions and methods of doing business authorize or justify the warehousemen in Chicago (Class A) in going into the business of dealing in grain and mixing their grain with that of their customers?

It would seem to be clear that if the right to deal in and mix grain did not exist at the time of the passage of the act of 1871, no subsequent change in the grain trade or method of transacting the grain trade could confer the power or justify such dealing in grain.

* * * * *

It appears to the court that the question resolves itself into this, whether the said acts of the defendant corporation in dealing in grain and mixing it with the grain of its customers is an ultra-vires act, i. e., did it, in so doing, go beyond the purposes for which it was created or licensed?

What relation do these public warehouses occupy as to the State and public under the act of 1871?

These public warehouses (Class A), licensed under the act of 1871, may be said to be creations of the State, as they can not exist without such license. They are licensed for the carrying on of the business of public warehouse for the storing of grain in bulk, and in which the grain of different owners is mixed together.

Whether the warehouse or business is carried on by a corporation or an individual makes no difference as to the rights of such corporation or such individual so carrying on a warehouse business, as the rights of such corporations and such individuals so carrying on the warehouse business are the same under the law.

Being public institutions in the nature of public agencies, whether carried on by an incorporated company or an individual, they can not exceed the legitimate scope of the authority conferred by their license and the act of 1871, nor go beyond the purposes for which they were created.

It would hardly be contended that a railroad could go into a warehouse business or into the grain trade. In the Munn Case the Supreme Court says that "public policy would forbid the transaction of a warehouse business by a common carrier." The decision places warehousemen and railroads upon the same footing as being engaged in a public employment and exercising a sort of public office.

The defendant is created and licensed to carry on the specific business of a public warehouse and to use its property for that purpose, no limit being placed upon the amount of capital that may be employed. Although the license contains no express prohibition against the dealing in grain, yet the license, like the charter of a corporation, may be regarded as a contract between the licensee and the public, in which there is an implied contract that the warehouseman will engage in no other business than that for which he is licensed. Being a public warehouseman with the privileges belonging thereto, it would also appear to be against public policy that he should use his capital, his public warehouse, for the purpose of trading in grain.

Being licensed for one purpose, created by the constitution and the law for one specific business, is it not opposed to public policy that this defendant should carry on in competition with the general public another and different business, and a business in which its interests must necessarily be brought into conflict with its duties in exercising this "sort of public office?"

To restrain corporations and public institutions of this nature within the scope of the purposes of their creation is well-defined public policy.

It is in evidence that they not only own this large proportion of the grain stored in their public warehouses, and also are the principal buyers of grain in the Chicago market, but that nearly all of them deal in "futures."

It is easy to perceive the temptation they would be under as to mixing the grain of their customers, and also to control the market by the ownership of such a vast proportion of the warehouse grain. It is also easy to perceive in selling grain the temptations they would be under to abate or remit storage charges in order to effect sales.

In the case at bar it is shown that the public warehousemen of Chicago, being licensed to carry on a warehouse, have used their capital—to wit, their warehouses and their business as warehousemen—to aid them in trading in grain in competition with the public, and having a great advantage over such public in such trading, by reason of their control of such licensed public warehouses, they have become the principal buyers and sellers of grain in the Chicago market, and, upon some lines or systems of railroads centering in Chicago, almost the only buyers.

This raises the further question whether or not, while engaged in the public employment or business of warehousing, they should be allowed to use their warehouse in carrying on another business, such as dealing in grain, and thereby obtain practically a monopoly of the immense grain trade of this great grain center, where there was received by rail in 1895 over 200,000,000 bushels of grain.

A monopoly is abhorrent to the common law and the public policy of the State as manifested by its legislation, which has always been to prevent and restrain monopolies, combinations, and trusts.

See also Rump v. Chicago (45 Ill., 90).

It will be seen from the debates of the constitutional convention that one evil sought to be remedied by the peculiar legislation as to warehouses inserted in the constitution was to prevent a monopoly or combination claimed to exist between the railroads and the warehousemen in the great grain center of Chicago.

This tendency to a monopoly has not decreased, as the evidence shows that in 1895 29 public warehouses, with a capacity of 41,000,000 bushels, were controlled by less than 20 corporations or firms.

The evidence in this case shows that buying and selling of grain is fast becoming monopolized by the owners of these public warehouses, each warehouse or set of warehouses on a particular railroad or system of railroads being the principal and in some cases almost the only buyers on such railroad or system, the location of such warehouses on the Chicago termini of such railroad or system, giving them an advantage not possessed by other buyers who have no public warehouses.

The evidence shows that the warehouse proprietor often overbids private bidders for grain on "track," offering as much as a quarter of a cent a bushel more, and then immediately reselling the same grain to such private bidders at a quarter of a cent less than he, the warehouseman, paid, requiring, however, the buyer to take the grain from the warehouse within a limited number of days.

In this way the warehouseman makes storage which more than compensates him for the loss of the quarter of a cent a bushel on the sale. It is evidently to the advantage of the warehouseman to have as much grain as possible pass through his warehouse, and there is not only the temptation to rebate storage to effect sales, but his warehouse receipts being given credit because of being issued by a public warehouseman, he is able to turn his capital engaged in the grain trade into money quicker than he could otherwise do, and thus use his business as warehouseman to overcome opposition to him as a grain dealer.

It would seem as if this was using his warehouse business certainly in a manner not contemplated by the law of 1871 or the constitution of 1870.

* * * * *

It is, however, contended that the warehouseman gets the grain because he pays more for it than other bidders: that the constitution of the State requires the law passed in pursuance thereof to be construed "in the interests of the producer;" therefore it is to the interest of the producer that the warehouse be allowed to enter into the grain business. No monopoly in grain dealing can operate in the long run to the interest of the producer. There is no truer maxim in economics than that "competition is the life of trade." The warehouseman may be able to pay more than outside shippers or buyers until he has driven them out of the market. When he has succeeded in so doing (and the evidence shows that that time has nearly arrived) and he has practically no competition, then the producer must suffer. The law should not be so construed as to give the warehouseman the right to use his privilege, his public business as a warehouseman, to crush out competition against himself as a dealer in grain.

To so construe the law, it appears to the court, would be to construe it in the interests of the warehouseman, and not as intended by the constitution, in the interests of the "producer and shipper."

It is also contended that every man has a right to trade in grain. This may be true as to every private individual, but if he is exercising a kind of public employment, and is licensed to carry on a business impressed with a public use, with certain duties and privileges by reason of such license, the question is, "Is it or not against public policy that he be permitted to use such public employment, such public business, and such privileges to aid him in carrying on in competition with the public another and different business, and in such a way as to create in himself a 'virtual monopoly' of such latter business?" It appears to the court that there can be but one answer to the question, and that in the affirmative.

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SUPREME COURT DECISION, JUNE 18, 1898., AFFIRMING JUDGE TULEY IN ELEVATOR CASES.

People ex rel. v. Armour Elevator Co., Central Elevator Co., Geo. A. Seaverns, Chicago Ry. Terminal Elevator Co., Nebraska City Packing Co., Alex C. Davis & Co., South Chicago Elevator Co., Charles Counselman, Chicago Elevator Co.

Mr. Justice CARTWRIGHT delivered the opinion of the court: Appellants in these nine cases were defendants in the circuit court of Cook County to informations in equity filed by the attorney-general against them as licensed proprietors of warehouses of Class A in Chicago, or stockholders of corporations so licensed. The informations made the same general allegations in each case: That defendants had stored grain owned by themselves in the particular warehouse of which they were proprietors; that not less than three-fourths of all the grain received in the public warehouses in Chicago was owned by the warehousemen; that the grades for inspection of grain were such that the grain of each grade was not of the same quality, but that separate carloads of different quality

and value were graded in the same grade; that by reason of advantages of the defendants, as owners of warehouses, in mixing and manipulating grain and rebating storage charges and otherwise, they had been enabled to drive out competition and hold and enjoy the privilege of buying grain free from competition, and that such storing of grain was unlawful and injurious to the public. *All the informations prayed for the same relief—a perpetual injunction to restrain defendants, as warehousemen, from storing grain in their own warehouses.* The answers admitted in each case that defendants were operating public warehouses of Class A, in which grain was stored in Chicago, and that they had stored grain owned by them in their own warehouses, and claimed the right to do so. The answers also set up a general custom of thirty years' standing, under which the proprietors of public warehouses were accustomed to store their own grain and mix it with the grain of their customers, and also that the warehouse commissioners had construed the act of 1871 as permitting that custom, and that such purchases of grain and such custom had a beneficial effect upon producers, shippers of grain, and dealers in grain throughout Illinois and the Northwest.

* * * * *

If the duty of the defendants, as public warehousemen, stands in opposition to personal interest as buyers and dealers in grain, storing the same in their own warehouses, then the law interposes a preventive check against any temptation to act from personal interest by prohibiting them from occupying any such position.

The public warehouses established under the law are public agencies, and the defendants, as licensees, pursue a public employment. It is clothed with a duty toward the public. The evidence shows that defendants, as public warehousemen storing grain in their own warehouses, are enabled to and do overbid legitimate grain dealers by exacting from them the established rate for storage, while they give up a part of the storage charges when they buy or sell for themselves. By this practice of buying and selling through their own elevators the position of equality between them and the public, whom they are bound to serve, is destroyed, and by the advantage of their position they are enabled to crush out, and have nearly crushed out, competition in the largest grain market in the world. The result is that the warehousemen own three-fourths of all the grain stored in the public warehouses of Chicago, and upon some of the railroads the only buyers of grain are the warehousemen on that line. The grades established for different qualities of grain are such that the grain is not exactly of the same quality in each grade, and the difference in market price in different qualities of the same grade varies from 2 cents per bushel in the better grades to 15 cents in the lower grades. The great bulk of grain is brought by rail and in carloads, and is inspected on the tracks, and the duty of the warehousemen is to mix the carloads of grain as they come. Such indiscriminate mixing gives an average quality of grain to all holders of warehouse receipts. Where the warehouseman is a buyer the manipulation of the grain may result in personal advantage to him. Not only is this so, but the warehouse proprietors often overbid other dealers as much as a quarter of a cent a bushel and immediately resell the same to a private buyer at a quarter of a cent less than they paid, exacting storage, which more than balances their loss. In this way they use their business as warehousemen to drive out competition with them as buyers. It would be idle to expect a warehouseman to perform his duty to the public as an impartial holder of the grain of the different proprietors if he is permitted to occupy a position where his self-interest is at variance with his duty. In exercising the public employment for which he is licensed he can not be permitted to use the advantage of his position to crush out competition and to combine in establishing a monopoly by which a great accumulation of grain is in the hands of the warehousemen, liable to be suddenly thrown upon the market whenever they, as speculators, see profit in such course. The defendants are large dealers in futures on the Chicago Board of Trade, and together hold an enormous supply of grain ready to aid their opportunities as speculators. The warehouseman issues his own warehouse receipt to himself. As public warehouseman he gives a receipt to himself as individual, and is enabled to use his own receipts for the purpose of trade and to build up a monopoly and destroy competition. That this course of dealing is inconsistent with the full and impartial performance of his duty to the public seems clear. The defendants answer that the practice had a beneficial effect upon producers and shippers, and naturally were able to prove that when, by reason of their advantages, they were overbidding other dealers there was benefit to sellers, but there was an entire failure to show that in the general average there was any public good to producers or shippers.

* * * * *

The WITNESS. So far as my statement concerns the elevators being the terminal grain depots of these railroads, I wish to introduce the following tariffs and notices of the various railroads, in which they name these elevators as their terminal depots or as the elevators of the company.

The first is a special joint notice, taking effect June 10, 1891. It reads as follows:

[Special joint notice, taking effect June 10, 1891, canceling circular of November 10, 1890.]

NOTICE TO GRAIN DEALERS AND SHIPPERS.

On and after June 10, 1891, the following rules will govern regarding charges on grain received at Chicago:

SECTION 1. A. Grain in bulk consigned to Chicago locally will, after arrival and inspection, be delivered to and unloaded in elevators of this company, without switching charge, unless such grain is billed track delivery or held out by consignees.

B. If billed track delivery, such delivery will be made free of switching charge.

C. If held out for the purpose of inspection by committee of appeals, no car-service charge will be made, provided disposition is made within 48 hours after being placed on appeals switching track.

SEC. 2. Grain consigned to Chicago locally billed track delivery, then ordered to elevator before track delivery is made, will be sent to elevator without switching charge, provided order is given within 36 hours after inspection when inspection is made before 10 a. m. of the day of arrival. If inspection is made after 10 a. m., the cars must be ordered before 6 p. m. the second day. Such grain, however, will be subject to car-service charges if delayed on track by consignee beyond the time specified, unless the same is held out for inspection by committee of appeals.

SEC. 3. Grain consigned to Chicago locally billed track delivery, or if held out and subsequently ordered to private tracks or to connecting lines, will be subject to a minimum switching charge of \$2 per car.

SEC. 4. Grain consigned to Chicago locally and reordered after delivery has been made to elevator or team track, will be subject to a minimum switching charge of \$2 per car.

SEC. 5. Grain ordered to private tracks, warehouses, elevators, or industries located on connecting lines, will be subject to an additional switching charge according to location.

SEC. 6. Reconsignment orders must be made within 36 hours after inspection, provided inspection is made before 10 a. m. of day of arrival. If inspection is made after 10 a. m., cars must be ordered before 6 p. m. of the second day, otherwise the grain will be subject to car-service charges.

SEC. 7. Grain delivered to team track must be unloaded within 36 hours after being placed in position to unload, provided orders are received for team-track delivery the day of arrival. If billed to team track without inspection, 48 hours will be allowed for unloading after car has been placed in position to unload.

SEC. 8. Grain consigned to points beyond Chicago, to the order of or notify a firm at Chicago, to be stopped at Chicago for inspection (which latter notation must be made on the way-bill), may be delivered to connecting lines free of switching charges, provided order is received within 24 hours after 1.30 p. m. of the day of arrival if inspection is made before 10 a. m. of the day of arrival. If inspection is not made before 10 a. m., the 24 hours will be counted from 1.30 p. m. of the following day. A minimum switching charge of \$2 per car will be made for deliveries, orders for which are received later than provided for in the foregoing rules.

SEC. 9. Delay beyond hours specified in the above rules will be subject to a car-service charge as provided for by the rules of the car-service bureau.

J. A. Hanley, freight traffic manager, A., T. & S. F. R. R.; S. B. Knight, general freight agent, Wabash R. R.; H. H. Courtright, general freight agent, C. & A. R. R.; Thomas Miller, general freight agent, C., B. & Q. R. R.; J. B. Cavanaugh, general freight, Wis. Cent. Line; J. M. Johnson, general freight agent, C., R. I. & P. Rwy.; J. H. Hiland, general freight agent, C., M. & St. P. Rwy.; H. R. McCullough, general freight agent, C. & N. W. Rwy.; Horace Tucker, general freight agent, I. C. R. R.; P. C. Stohr, general freight agent, C., St. P. & K. C. Rwy.

The WITNESS. Showing that the railroads themselves considered the elevators to be public warehouses for the storage of grain received from other roads.

The next is Illinois Central Railroad circular No. 1029, covering rules regarding grain consigned to Chicago, which reads as follows:

[I. C. R. R. circular No. 1029.]

ILLINOIS CENTRAL RAILROAD CO.
(NORTHERN AND WESTERN LINES),
GENERAL FREIGHT DEPARTMENT,
Chicago, Ill., May 3, 1895.

RULES REGARDING GRAIN CONSIGNED TO CHICAGO.

To agents, shippers, and receivers of grain:

This company, having ample storage facilities for grain in elevators on its own tracks at Chicago, will not, on and after this date, receive grain consigned to elevators off its lines in Chicago, nor switch wheat, corn, or oats grading No. 3 or higher, to connecting lines for delivery to any elevators, storehouses, or cleaning houses on the tracks of such other lines in Chicago or South Chicago.

Wheat, corn, or oats grading under No. 3 will be switched, when ordered for delivery to storehouses or cleaning houses on tracks of connecting lines, at a charge of \$3 per car for the Illinois Central Railroad Company's service, in addition to which will be added any cost for trackage that may be incurred in reaching the tracks of such other lines.

Agents will not issue receipts, bills of lading, or make waybills for grain for delivery on the tracks of other lines, or to any particular elevator, storehouse, or cleaning house, but will simply waybill to Chicago and show Chicago only as destination.

The above will not in any way change the instructions in effect as to grain destined East.

W. R. KEEPERS,
General Freight Agent.

The WITNESS. I have here 2 circulars or tariffs issued by the Chicago and Northwestern Railroad, under date of February 11, 1897, and April 14, 1898. On pages 24 and 26 of these tariffs will be found the following:

"Grain in bulk consigned to Chicago locally will, after arrival and inspection, be delivered to and unloaded in elevators of this company without switching charge, unless such grain is billed track delivery or held out by consignees."

Now, as to our efforts to get the railroads to change this system of handling our grain, I will introduce 3 requests by receivers and shippers which were made of the Illinois Central, the Chicago, Rock Island and Pacific, and the Chicago, Burlington and Quincy roads, respectively, that the elevators be handled by disinterested parties. Following these requests are the answers from the officers of the railroads; and in one case, that of the Chicago, Burlington and Quincy road, the general freight agent stated that his road would make delivery to any elevator the receivers selected, subject only to such extra charges as might be exacted from us by the lines on which the elevators are located. I have attached a tariff of the connecting line, showing that it would cost from \$3 to \$5 a car for the delivery of the grain to the connecting line.

(The requests and letters in the order mentioned by the witness follow.)

CHICAGO, July 31, 1894.

ILLINOIS CENTRAL R. R. Co.:

We, the undersigned, receivers and shippers of and dealers in grain and flaxseed at Chicago hereby demand that you furnish terminal facilities for the handling of grain or flaxseed at Chicago that will not subject our business to the scrutiny of one or more of our competitors. At present such grain or flaxseed as is unloaded for us in your terminal elevators passes into the possession of the Central Elevator Company (as warehousemen). This corporation is owned entirely by Carrington, Hannah & Co., who are competitors of ours. As you now handle the business it places them not only in possession of the goods, but enables them to exercise a complete espionage over our business, that gives them so marked an advantage that we consider it a great injustice.

A few of the advantages possessed by the lessees of your terminal elevators are as follows:

First. You place all freight bills for grain and flaxseed unloaded into your terminal elevators in their hands for collection; said freight bills contain the names of our shippers and the points of shipment.

Second. You place the grain and flaxseed in the terminal elevators owned by you but leased to the firms named above, and we have to accept their receipts for the goods. This gives them an undue advantage, as they know immediately the kind, grade, and quantity of our grain or flaxseed, as well as the shipper's name and point of shipment.

Third. If we are shipping grain East in competition with the lessees of your terminal elevators they not only have the advantage of knowing the kind, grade, and quantity of our shipments, but also have the opportunity of selecting the best grain of the various grades of grain in the elevators to fill their own orders and give us the poorest grain of their various grades when we wish to ship.

Fourth. By leasing your terminal elevators to firms who are grain dealers you immediately give them an advantage over all competitors by creating for them a margin which practically gives them a monopoly of the grain and flaxseed trade on your lines of railroad. The storage rates (three-fourths of a cent per bushel for the first 10 days or fraction of 10 days and one third cent per bushel for each succeeding 10 days or fraction of 10 days, amounting to over 12 cents per bushel per year) is in itself so great an advantage that the lessees of your terminal elevators frequently sacrifice a portion of the storage in order to force grain and flaxseed into the elevators they lease of you, so that it will be earning storage for them. They can buy grain at an apparent loss (or what would be a loss to us) and yet make money out of it through the superior advantages you provide for them.

JNO. HILL, Jr.,
JNO. C. ROSS,
R. S. LYON,
Committee.
A. C. BUELL & Co.
BALDWIN & STONE.
WANZER & Co.
HENRY HEMMELGARN & Co.
MILMINE, BODMAN & Co. (by SANBORN).
GERSTENBERG & KROESCHELL.
BOYDEN & Co.
H. J. COON & Co.
J. C. HOWELL.
L. EVERINGHAM & Co.
SNYDACKER, FYFFE & Co.

(Attached to the foregoing is the following:)

ILLINOIS CENTRAL RAILROAD COMPANY,
OFFICE OF THE SECOND VICE-PRESIDENT,
Chicago, September 12, 1894.

N. G. INGLEHART, Esq.,
Commissioner Chicago Freight Bureau, 51 Board of Trade Building, Chicago.

DEAR SIR: I beg to acknowledge receipt of your favor of the 24th ultimo, inclosing paper signed by receivers of grain in the city of Chicago concerning the terminal facilities for the handling of grain and flaxseed on our road. This is the first complaint received by this company on this matter of which I have any knowledge. I do not see that this company could handle its elevators and give satisfaction to its patrons in any other way than it is handling them now, and secure to the company the business to which it is entitled. I have taken this matter up with Mr. John S. Hannah, the manager of the Central Elevator Company, and inclose herewith a copy of his letter to our traffic manager in reference to the charges made, which it seems to me fully answers the complaints made.

Yours, truly,

J. T. HARAHAN, *Second Vice-President.*

(Attached to the foregoing letter is the following:)

CENTRAL ELEVATOR COMPANY,
Chicago, September 5, 1894.

T. J. HUDSON, Esq.,
Traffic Manager, Illinois Central Railway, City.

DEAR SIR: In the first place, you will note that the demands made upon you is that from a very small number of the grain receivers on the board of trade as individuals, who have imaginary grievances. I will state that in order that these firms may not take any extraordinary risk in handling the grain receipts issued

by the Central Elevator Company, the elevator company is required by the directors of the board of trade to furnish a bond of \$500,000 to protect its members who handle the Central Elevator Company's receipts. The insinuation or intimation that the Central Elevator Company, or Carrington, Hannah & Co., take advantage of the situation and spy out the customers of competitors is unworthy of the notice of honorable men, and we shall not burden you with a detailed denial of such a charge. When Central elevators were leased to the present company, in order to accommodate the grain trade, it was arranged between the Central Elevator Company and the Illinois Central Railroad that the Central Elevator Company would collect railroad expense bills, as has been the custom for a number of years, and in order to do this it was arranged that our messenger at the elevator office at the foot of South Water street should deliver the elevator receipts with the expense bills attached at the elevator office on Sherman street, which is with the office of Carrington, Hannah & Co.

These receipts are delivered to our cashier, who places them in a wallet belonging to the railroad company, and when checks for the amount of the expense bill is delivered him he delivers up the elevator receipts and expense bills to their owners. This, so far as we know, is the only change in the method of managing the elevators for the past 20 years. These parties making this demand well know that the identity of grain and flax going into the elevators is not preserved, and therefore we can not know the ownership of any particular lot. As to the last charge about the firm of Carrington, Hannah & Co. possessing advantage over its competitors, it is of such a puerile nature that it does not in our opinion deserve an answer. I will say, however, that should you desire any changes made in the handling of your expense bills I shall be pleased to confer with you. At present the only parties benefited by the existing arrangements are the receivers of the grain. The rates on storage now in effect are three-fourths of a cent per bushel for the first 10 days, and one-fourth of a cent per bushel for each additional 10 days or part thereof.

Yours, truly,

JOHN HANNAH,
Manager.

(The following is the request on the Chicago, Rock Island and Pacific Railroad Company:)

CHICAGO, ROCK ISLAND AND PACIFIC RAILWAY,
Chicago, July 31, 1894.

We, the undersigned, receivers and shippers of and dealers in grain and flaxseed at Chicago, hereby demand that you furnish terminal facilities for the handling of grain and flaxseed at Chicago that will not subject our business to the scrutiny of one or more of our competitors. At present such grain or flaxseed as is unloaded for us in your terminal elevators passes into the possession (as warehousemen) of Charles Counselman & Co., or A. C. Davis & Co., both of whom are active competitors of ours; as you now handle the business it places them not only in possession of the goods, but enables them to exercise a complete espionage of our business, that gives them so marked an advantage that we consider it a great injustice.

A few of the advantages possessed by the lessees of your terminal elevators are as follows:

First. You place all freight bills for grain and flaxseed unloaded into your terminal elevators in their hands for collection, said freight bills containing the names of our shippers and the points of shipment.

Second. You place the grain and flaxseed in the terminal elevators owned by you, but leased to the firms named above, and we have to accept their receipts for the goods. This gives them an undue advantage, as they know immediately the kind, grade, and quantity of our grain or flaxseed, as well as shipper's name and point of shipment.

Third. If we are shipping grain East in competition with the lessees of your terminal elevators, they not only have the advantage of knowing the kind, grade, and quantity of our shipments, but also have the opportunity of selecting the best grain of the various grades of grain in the elevators to fill their own orders and give us the poorest grain of their various grades when we wish to ship.

Fourth. By leasing your terminal elevators to firms who are grain dealers you immediately give them an advantage over all competitors by creating for them a margin which practically gives them a monopoly of the grain and flaxseed trade on your lines of railroad. The storage rates (three-fourths of a cent per bushel for the first 10 days, or fraction of 10 days, and one-third of a cent per bushel for each succeeding 10 days, or fraction of 10 days, amounting to over 12 cents per bushel per year) is in itself so great an advantage that the lessees of your terminal elevators frequently sacrifice a portion of the storage in order to force grain and

flaxseed into the elevators they lease of you so that it will be earning storage for them; they can buy grain at an apparent loss (or what would be a loss to us) and yet make money out of it through the superior advantages you provide for them.

JNO. HILL, Jr.,

JNO. C. ROSS,

R. S. LYON,

Committee.

A. C. BUELL & Co.

BALDWIN & STONE.

WANZER & Co.

HENRY HEMMELGARN & Co.

GERSTENBERG & KROESCHELL.

BOYDEN & Co.

J. C. HOWELL.

L. EVERINGHAM & Co.

SNYDACKER, FYFFE & Co.

(Attached thereto is the following:)

CHICAGO, ROCK ISLAND AND PACIFIC RAILWAY,
OFFICE OF THE THIRD VICE-PRESIDENT,
Chicago, Ill., October 13, 1894.

N. G. INGLEHART, Esq.,

Commissioner, Chicago Freight Bureau, City.

DEAR SIR: I duly received your letter of the 8th instant relative to a petition of certain grain dealers in this city, which was sent to our Mr. St. John in August, and calling attention to the further fact that no reply had been made by us to the same.

The receipt of your letter was the first knowledge I had of the channel through which this communication came to us, and I accordingly was at a loss to know to whom to address my reply to it.

After due consideration of the matters complained of in the petition and consultation with the people who handle our grain elevators in this city, as well as with our own people, who are familiar with the details of our grain business, we are satisfied that there are no substantial grounds for the complaints made in this petition.

As I am advised by our people, they have not to their knowledge ever had a single complaint of any kind or character where information obtained by the firms handling our elevators has been misused to the disadvantage of the receivers of the grain in this city in the manner charged in this petition.

Upon receipt of any such specific complaints, we shall at any time be very glad to take them up and investigate them fully, and if there is found to be any grounds for them will apply the proper remedies.

With regard to the claims that the grades of grain are being manipulated to the advantage of the parties handling the elevators, no specific case of this kind, as I am informed, has ever been brought to the attention of the officials of this company, nor, so far as we ever heard, has any such charge or complaint been made to the authorities in charge of the inspection of grain in and out of the elevators.

We shall be pleased at any time to investigate specific complaints of this character, and if upon such investigation there are any indications of their being well founded, we will do whatever we can to correct the irregularities complained of.

Trusting this may be satisfactory. I remain, very truly yours,

W. H. TRUESDALE,

Third Vice-President.

(The following is the communication to the Chicago, Burlington and Quincy Railroad Company:)

CHICAGO, BURLINGTON AND QUINCY RAILROAD COMPANY.

We, the undersigned, receivers and shippers of and dealers in grain and flaxseed at Chicago, hereby demand that you furnish terminal facilities for the handling of grain and flaxseed at Chicago that will not subject our business to the scrutiny of one or more of our competitors. At present such grain or flaxseed as is unloaded for us in your terminal elevators passes into the possession of the Armour Elevator Company as warehousemen. This corporation is virtually Armour & Co., who are active competitors of ours. As you now handle the business, it places them not only in possession of the goods, but enables them to exercise a complete espionage over our business that gives them so marked an advantage that we consider it a great injustice to us.

A few of the advantages possessed by the lessees of your terminal elevators are as follows:

First. You place all freight bills for grain and flaxseed unloaded into your terminal elevators in their hands for collection; said freight bills contain the names of our shippers and the points of shipment.

Second. You place the grain and flaxseed in the terminal elevators owned by you, but leased to the firms named above, and we have to accept their receipts for the goods; this gives them an undue advantage, as they know immediately the kind, grade, and quantity of our grain or flaxseed, as well as shipper's name and point of shipment.

Third. If we are shipping grain East in competition with the lessees of your terminal elevators, they not only have the advantage of knowing the kind, grade, and quantity of our shipments, but also have the opportunity of selecting the best grain of the various grades of grain in the elevators to fill their own orders, and give us the poorest grain of their various grades when we wish to ship.

Fourth. By leasing your terminal elevators to firms who are grain dealers you immediately give them an advantage over all competitors by creating for them a margin, which practically gives them a monopoly of the grain and flaxseed trade on your lines of railroad. The storage rates (three-fourths cent per bushel for the first 10 days or fraction of 10 days and one-third cent per bushel for each succeeding 10 days or fraction of 10 days, amounting to over 12 cents per bushel per year) is in itself so great an advantage that the lessees of your terminal elevators frequently sacrifice a portion of the storage in order to force grain and flaxseed into the elevators they lease of you so that it will be earning storage for them; they can buy grain at an apparent loss (or what would be a loss to us) and yet make money out of it through the superior advantages you provide for them.

JNO. HILL, Jr.,

JNO. C. ROSS,

R. S. LYON,

Committee.

A. C. BELL & Co.

BALDWIN & STONE.

WANZER & Co.

HENRY HEMMELGARN & Co.

MILMINE, BODMAN & Co. (per SANBORN).

GERSTENBERG & KROESCHELL.

BOYDEN & Co.

J. C. HOWELL.

L. EVERINGHAM & Co.

SNYDACKER, FYFFE & Co.

(Attached to the foregoing is the following:)

[Chicago, Burlington and Quincy Railroad Company, Thomas Miller, general freight agent; W. B. Hamblin, assistant general freight agent; Frederick Rogers, assistant general freight agent; E. R. Puffer, assistant general freight agent.]

CHICAGO, ILL., September 11, 1894.

N. G. INGLEHART, Esq.,

Commissioner, Chicago.

DEAR SIR: Referring to your favor of the 4th, addressed to Mr. Merrill, in which you inclosed a document signed by various Chicago grain receivers in reference to the facilities for storing and handling grain in this city.

As you are aware, our elevators are under lease to Armour Elevator Company, and I do not understand why the complaint as to the manner in which grain is handled here should be presented to us. The elevator charges are something that we know nothing about and have no control over in any manner. If the facts are as stated by the signer, why do they not handle their grain through other houses; you know we stand ready to make delivery to any elevators they may select in this city, subject only to such extra charge as may be exacted from us by the lines on which the elevators are located. I do not think a fairer proposition can be made by anyone.

Yours, truly,

THOS. MILLER.

(The schedule referred to by the witness is Circular G. F. D., No. 16850, of the Chicago and Northwestern Railway, entitled "Instructions in reference to handling grain and flour in Chicago, also a list of regular elevators, irregular elevators, warehouses, mills, malt houses, breweries, flour houses and distilleries," and

dated July 22, 1895, upon page 2 of which is the following, underscored by the witness:)

"Grain in bulk consigned to Chicago locally will, after arrival and inspection, be delivered to and unloaded in elevators of this company, without switching charge, unless such grain is billed track delivery or held out by consignees."

(The following is a pencil note on the page by the witness:)

"These are the elevators of the Chicago Railway Terminal Company."

(On page 4 of the same circular is the following, underscored by the witness:)

"Except when special permission is received from the general freight department, grain will not be received at point of shipment consigned to regular elevators in Chicago located on the tracks of other roads, and all shipments for locations on side tracks of other roads are subject to the switching charges established from time to time by our connections for handling the freight after delivery to them."

"Grain from connecting lines, when for Chicago and Northwestern regular elevators, will be moved only upon special arrangement with this office, and subject to the following charges:

"From all connecting lines to the Air Line, Galena, \$5 per car.

"From all connecting lines to Iowa City, \$3 per car.

"When from Belt Line roads an additional charge of \$2 per car will be added.

"Flour in carloads unloaded by us in our warehouses at Chicago stations and not removed at the expiration of 20 days will be sent to public warehouse for storage.

"When our warehouses are full, cars will be placed on track for unloading. If cars are not unloaded within five days after being placed on track, the flour will be sent to public warehouse."

The WITNESS. In regard to the question, which has come up a number of times, as to whether the elevator people of Chicago have a combination or a trust, we discovered in 1894 that they had an association composed of all of the elevator people in Chicago. That association had a president and a secretary. When the Board of Trade found it necessary to treat with the elevator people, they found that they treated with them all through this association, and I will introduce here three letters received in that connection, signed by the secretary of the association, and he states in one who the president of the association is.

(The letters referred to follow:)

OFFICE OF THE CHICAGO GRAIN ELEVATOR ASSOCIATION,
Chicago, May 11, 1894.

GEO. F. STONE, Esq., *Secretary.*

DEAR SIR: I beg to acknowledge the receipt of your letter of current date, with inclosure. I regret to advise you that owing to the absence from the city of the president of this association, and also of another member who is largely interested, it will be impossible to get the members together to-day to consult with your president, as desired.

Steps have been taken to reach the absent members, and a meeting will be called as soon as they are heard from, date of which I will advise you at earliest moment.

Yours, truly,

E. W. THOMPSON,
Secretary, 218 La Salle street, Room 212.

OFFICE OF THE CHICAGO GRAIN ELEVATOR ASSOCIATION.
Chicago, May 12, 1894.

GEO. F. STONE, Esq.,
Secretary Chicago Board of Trade, City.

DEAR SIR: I beg to advise you that a meeting of the members of this association has been called for Monday, May 14, 1894, at 2.30 p. m., in Room 215, No. 218 La Salle street, at which time and place they will be pleased to meet your president regarding the subject-matter of your letter 11th inst.

Yours, very truly,

E. W. THOMPSON,
Secretary, 218 La Salle street, Room 212.

OFFICE OF THE CHICAGO GRAIN ELEVATOR ASSOCIATION,
Chicago, May 16, 1894.

GEO. F. STONE, Esq.,
Secretary Board of Trade, City.

DEAR SIR: I have the pleasure to acknowledge the receipt of your letter of current date and to advise you that it has been referred to Mr. Geo. A. Seaverns, president of this association.

Yours, truly,

E. W. THOMPSON,
Secretary, 218 La Salle street, Room 212.

THE WITNESS. We also found that during the past 5 years their rates had been uniform to the public; that they were represented at all times in court by the same attorneys, and that at no time was it possible to treat with one of the elevator proprietors separately. They always held together. How strong their association is, or whether there is such an association in existence now, is impossible for us to tell, except that we find them always with the same rates of storage, always treating the public in the same manner, and always represented by the same attorneys.

I will introduce here a copy of a report made to the president and board of directors of the Board of Trade of the city of Chicago by a committee appointed under a resolution adopted February 12, 1894, to investigate the methods of warehousing grain, etc. That report is the result of several weeks of investigation and the evidence of probably 75 witnesses, and it treats of the abuses and the necessary changes that should be made in the handling of grain in Chicago through the warehouses.

(The report above described follows:)

CHICAGO, April 30, 1894.

THE PRESIDENT AND BOARD OF DIRECTORS OF THE
BOARD OF TRADE OF THE CITY OF CHICAGO.

GENTLEMEN: Your committee, appointed under the resolution adopted February 12, 1894, to investigate the methods of warehousing grain, etc., would respectfully report as follows:

SECTION 1. We find that the regular elevators of Chicago are owned and operated in a variety of ways. One system is owned by an individual, who does all the business, buying, selling, and storage, in his own name. Another is partly leased by an individual and partly owned by a corporation all of whose stock is owned by this same person. Here all the business is done in the firm name and the accounts are simply kept separate on the books. Another system is leased by a corporation whose stock is all owned by the firm who operates it, and which does its own grain business largely through them. Several systems are owned or leased by corporations which do all their business in their own name. A large system is owned by a foreign corporation, which employs commission houses to do its buying and selling. The largest system in the city is leased by a corporation of \$100,000 capital whose ownership is not given. The private elevator or cleaning house connected with this system is owned by another corporation. Here the grain business is all done in the name of the firm who are generally supposed to control both corporations.

Five systems, with about 19,000,000 bushels of storage capacity, have private elevators or cleaning houses connected with them, while six systems, with 13,000,000 bushels storage, have no cleaning houses connected. All of them buy grain directly or indirectly, both here on our own board and also in the country. Some of them sell their grain exclusively on the open market or to our own shippers, while several sell in the East or ship on their own account as well.

The necessity for grain buying by these elevator proprietors is hardly well established by their own testimony. All but one claim that they pay only the market price, giving no part of their storage to the seller, while the proprietor of one system claims that possibly 40 per cent of his grain would not come to Chicago unless he bought it. *It is but fair to say that this scale of prices claimed to be paid by the elevator system is contradicted by at least one firm who are large receivers and shippers. They testify that they find it at times to their advantage to sell their own grain to the elevators and buy their cargoes back from them. In addition, the receivers generally testify that they can get more for grain to go to store than they can get for the same grain if already in store.*

All of these elevator systems are doing a warehouse business under the laws of the State of Illinois and subject to the control of the railroad and warehouse commissioners, as therein provided. The fact that public custodians, licensed and controlled by the State, handling and storing the property of hundreds of

individuals and running together and mixing the same regardless of ownership, should themselves be regular and the principal dealers in this very property of which they are custodians is, to say the least, anomalous. We do not find, however, that the railroad and warehouse law prohibits it directly, but do think that the spirit of this law is fairly against the practice.

The combination of the two occupations of a dealer in grain and an applicant before the public for the position of custodian of its property for a consideration, together with the unfair advantages liable to accrue therefrom, we believe to be against public policy, because of the danger which thereby impends on those who maintain and support those who should only act as their agents and trustees. These opportunities are of the following nature: The temptation and opportunity of contaminating the inspection department, which should, in every sense of the word, be a fair and impartial agency, operating only in the interests of the public at large. This also extends to the improper influencing of the railroads in their interest. The opportunity is given to tamper with grain placed in their care, giving them the chance to set aside and select better qualities of the same grade for themselves, thus reducing the average quality of the public grain in their warehouse, and giving an unfair opportunity for offering and selling by sample in other markets. The danger of surreptitiously working off their own inferior grade on to the shipper is also present. The using of the public storage rate in their own interest when buying and selling grain is an unfair and illegal discrimination which can always be employed to the injury of the general trade. We are of the opinion that an amendment to the law strictly prohibiting the proprietors of warehouses of Class A from being either directly or indirectly engaged in the grain business would be in the direction of sound public policy and good business morals.

SEC. 2. We have grave doubts of the propriety of the Board of Trade making regular any elevators that have a private elevator or cleaning-house connected with them, or under the same ownership or management. The paramount interest and constant endeavor of the owner of a public elevator should be to hold up and maintain the integrity of our standard grades of grain. When he is running a cleaning house his paramount and constant endeavor is to pass his own grain on the lowest line of the grade. If the quality of the grain in his house is to be kept up to a high standard it must be because the grain of other people is graded higher than is his own. It hardly seems proper that the support of the general market should be given to an individual whose constant, paramount interest is opposed to the good of the market.

SEC. 3. We find that it is the practice of the inspection department, where grain after being loaded out from an elevator is objected to by the shipper, and the objection is sustained by the supervising inspector or the committee of appeals, to permit this grain so degraded to be taken back into the elevator from which it came at the same grade at which it was originally and wrongfully inspected out. We think this practice is all wrong, and would recommend that the proper committee call the attention of the railroad and warehouse commissioners to it and endeavor to have it stopped. Grain so reduced in grade by the highest authority in the inspection department must either be tendered to some other shipper for what it is not, or else mixed with other grain of the same grade and so affect injuriously the owners of the same, both by depreciating their property and by hurting the credit of the house.

SEC. 4. We find that it is the practice of the inspection department to allow elevator proprietors to run grain back into the bins of the same grade when the quality has been objected to in the house by the shipper while running to the weighing bin. We believe that this matter should be decided at once by competent authority, and the shipper be compelled to accept if the property is up to grade, or the elevator compelled to make proper disposition of the grain if it is not.

SEC. 5. We find that at present the practice of the inspection department is to exercise no supervision over the grain while in the elevators, but simply to inspect *in* grain offered for warehousing, and to inspect *out* grain offered for shipment. We find that while the inspection was under the supervision of the board of trade, and in the earlier days of the State grain inspection, there was in every elevator what was called a distributing inspector, whose place was in the upper part of the house, who kept track of all the bins and their contents, who directed into which bin every car of grain should be run, and who directed when grain was to be shipped from which bins it was to be drawn, and who saw that the oldest grain in the house was the first shipped out. We are of the opinion that the supervisions exercised by such a distributing inspector would be exceedingly wholesome, and would recommend that the proper committee call the attention of the board of railroad and warehouse commissioners to the matter and try to get such a man put in every house.

SEC. 6. We find that some of the elevator proprietors who have been in the habit of putting the more desirable qualities of their own grain in bins marked "special" have not been equally careful to mark the receipts for the same "special" bin as required by law. We do not find, however, that the grain registrar takes any special cognizance of, or keeps any special track of, this "special bin" grain, or the receipts issued for it, although he could very easily and without extra expense do so. We would recommend that the proper committee call the attention of the board of railroad and warehouse commissioners to the matter and try to have the registrar directed to attend to it.

SEC. 7. We are of the opinion that there should be a specific rule of the board, making receipts for grain in "special bins" irregular for delivery on contracts. We see no reason why elevator proprietors who keep their property in shape to sell by sample, and so exact a premium for it (the special and proper function of a proprietor of a private house), should at the same time have the protection of a public elevator and the open market to hold them harmless against an unprofitable hedging sale.

SEC. 8. The fact that large quantities of grain are held here for storage purposes by elevator proprietors and commission merchants acting for them, and the further fact that our speculative trading having now gotten practically into but 4 months of the year, and thus tying up the grain for three or four months at a time, had naturally reduced the deliveries largely and brought it about that shippers can only get hold of grain to fill their orders by paying a premium for it. The inevitable result of such a state of facts has been that grain is now being held here too long for its own good or the good of the general trade. We would suggest that the directors carefully consider the propriety of adopting a rule limiting the age at which receipts should be regular for delivery on contracts.

SEC. 9. We have now in store here nearly 20,000,000 bushels of wheat, a large proportion of which has been in our elevators more than 12 months. We recommend that a committee of three competent judges, unconnected with the active grain trade, be appointed, who shall examine every bin of wheat in every regular elevator as soon as possible now, and again before the July and September deliveries, reporting to the board of directors, or the proper committee, any bin which they may find out of condition or tending that way, and that the directors instruct the elevator proprietors to at once move such grain out, and see that they do it.

WM. H. BEEBE.
JAS. S. TEMPLETON.
H. J. COON.
H. F. DOUSMAN.

The WITNESS. I wish to introduce here, just in the form that it is in, rather than make any changes in it, a statement of the condition of the grain trade as presented to the members of the Fortieth general assembly of the State of Illinois in May, 1897. It is a review and a general statement of the conditions then surrounding the elevator business in Chicago, but it is too long to read you gentlemen in the short time I have.

(The statement referred to follows:)

MAY, 1897.

To the members of the Fortieth general assembly:

(Why we object to the passage of house bill 583, and senate bill 313.)

GENTLEMEN: The grain trade of Illinois and the farmer who produces our enormous crops are to-day fighting against the tyranny of the Chicago elevator monopoly, which from a fair and legitimate beginning has grown to such proportions and such influence as to threaten the very existence of all competition and to place a monopoly in a position to fix a price on the products of our farms.

And it is a broader question than the survival of the fittest among groups of business men or the interests of any one class. It concerns every merchant and every common carrier engaged in the great commerce of this State, and every farmer who contributes to make that commerce possible.

There is some misapprehension apparent outside of the grain trade as to the relations of elevators of Class "A" in Chicago to the general business of the country.

The warehousing of grain is only an incident in its transit from producers to consumer. Its natural and healthy function is in accepting for storage the overflow of the season of freest movement that the channels of commerce may not be clogged or obstructed and safely caring for the same while waiting demand.

Recognizing the importance and necessity of these warehouses, where the merchant and farmer could deposit their grain, the constitutional convention of

1870 in its wisdom created these public institutions by the adoption of article 13 of the constitution; following which, in response to the instructions of the constitution, the legislature of 1871 enacted our present railroad and warehouse law.

For almost 20 years this law was respected by the elevator owners; Chicago maintained her position as the "greatest grain market in the world;" thousands of buyers and sellers were brought together each day and a broad open market was the result; competition of buyers sustained prices, and that influence was felt the world over; for years Chicago presented the best market for the West to send her grain to, owing to the competition of buyers. But between 1887 and 1890 new forces began to be felt.

The interstate-commerce law had gone into effect, and before the close of 1890 nearly every railroad terminating in Chicago had some favored elevator system under its protection, the proprietors of which were given such profitable concessions as to enable them to control the grain business on that particular line of railroad.

The alliance between railroads and elevators has resulted in reaching out after millions of bushels of grain not naturally tributary to the Chicago market, and when gathered there, preventing it, by such tricks of trade as only the initiated are familiar with, from ever getting away again as long as storage can be collected on it. So that in Chicago the accumulation and storage of grain has come to be the chief end and aim of potential and dominating forces.

This policy has resulted in such congestion of grain there as to depress prices to the lowest point in history. For it is not the Chicago stock alone that that market has to carry. The very volume of the Chicago stocks invites dealers in every market in the world to make sales there against holdings elsewhere, which they would not dare to do but for abnormal accumulations brought and held there by unnatural means. Cargoes of wheat bought on European account in Australia, India, Russia, and Argentina, as well as stocks at all other points of accumulation, are sold against in Chicago, so that that market feels the weight of the entire world's surplus. This condition is only made possible by the enormous and unnatural hoard brought and retained there to satisfy the avarice of half a dozen corporations, the largest of which is owned in London.

By the rankest and most brazen manipulation they seek to control the price and movement of our commodities and force every buyer and every seller to their terms.

Two years ago they were selling spring wheat at 5 or 6 cents premium. Now they are selling winter wheat at a much greater premium (16 to 19 cents), while they have not been the owners of either. While they are nominally the custodians of the property they are able, in violation of the laws of the State, to set aside and sell at a premium millions of bushels every year, not owned by them but in their custody as warehousemen. Would any court permit a trustee of an estate to thus handle trust funds for his own advantage? This gain is not the legitimate profit of a public warehouseman. It belongs to the public who owns the grain. The lawful profit of the business of public warehousing has been attractive enough to create an enormous system of elevators in Chicago. If the business has been overdone it is due to the cupidity of those engaged in it. We cheerfully concede a fair return on capital employed in lawful operation of elevators, but will forever resist the use of its machinery for unjust or illegal practices.

They claim to be public benefactors, in that they bring grain in large amounts to Chicago that would otherwise go elsewhere. This is said to furnish employment to more banking capital and keep up the rate of interest and to give business to railroads and insurance companies. But we know that half a dozen firms and corporations have a monopoly of the business. They can not force grain there that is not naturally tributary, except on cut rates of freight denied the general public and forbidden by law. If our contention is sustained by the Supreme Court, each railroad will have a host of competing patrons instead of one; bankers will have a thousand active accounts instead of the small group of large borrowers who are now able to combine and dictate rates, while the short-rate card of insurance offices will again come into use. But the real question is not whether it may add to the traffic of railroads or increase the profits of banking or insurance capital, but whether it is right for public custodians of grain to be at the same time dealers in grain and enabled to select and set aside for their own purposes the best of what may come under their charge. No objection is made to all grain going to Chicago that can be legitimately brought there, but it is against public policy, and is not the legitimate function of a public warehouseman, operating under a license from the State, to be so engaged. It is the dual capacity that we object to and that is prohibited by law. In the spring of 1895 the quality of millions of bushels of grain stored in public warehouses was

aspersed by interested speculators. The board of trade, through its officers, sought to have such an investigation made as would refute the slander against grain stored in public warehouses and restore the confidence of buyers and holders of the property. But every elevator proprietor in Chicago joined in refusing permission to a committee of experts to make that necessary and wholesome examination. They knew the grain was above the average in quality and condition, but were willing to have it suspected in order to increase the carrying charges. The present monopoly is against everything and everybody but themselves.

A system that permits the proprietors of public elevators, directly or indirectly, to deal in the property of which they are custodians is essentially immoral. The temptation to reserve for themselves the best of the grade is one to which the law never contemplated that they should be subjected. Indeed the principal motive of the warehouse law was to prevent their ownership or control of grain in the public warehouses. Yet it is notorious that during the past few years the proprietors of elevators have had for sale and have sold millions of bushels of grain from public elevators by sample at a large premium, not one cent of which in equity belonged to them. The grain bought by elevator proprietors is promptly sold by them for some future delivery, so they become the custodians of other people's property, which, however, the public can only get on payment of such premium as the urgency of the demand may enable the elevators to exact. It is an unwelcome task to criticise the methods of any class of business men, but this is an occasion for plain speech and honest earnest effort to restore to the grain trade its vanishing glory and traditions. The elevator monopoly is a blight on legitimate business. The old-time open competition of thousands has been superseded by new conditions under which each railroad terminating in Chicago is practically controlled by a single buyer. Special rates are made to favored individuals, who have the further advantage of elevator control, so that rates charged to the public are rebated to themselves, thus enabling them to outbid or undersell all competitors. The charge of three-fourths of a cent per bushel for the first term of storage is retained only as a protection to elevator managers against the competition of legitimate dealers in grain. It is a charge that the public can not avoid, but which is ignored by them in their own transactions, thus forcing everyone to sell to or buy of them. The fact that this charge is not bona fide, but only a foil to competition, proves that it is unjust, and should be abolished. The charge of three-fourths of a cent per bushel for the transfer of grain from cars to vessels, a distance of perhaps 100 feet, is greater than the average rate of freight (by water), during the year 1895, from Chicago to Buffalo. The same grain is transferred on track by railroads from western to eastern cars for nothing.

The courts have decided that this system is contrary not only to law, but to "public policy." And now comes the elevator monopoly to the legislature at Springfield, asking to be protected by statute against the public and the courts.

They ask the passage of a bill the terms of which are entirely in keeping with their methods.

First. They ask the legislature to tell them that they must not discriminate in their own favor while transacting business, but they must be entirely unselfish.

Second. They ask that they be relieved of all responsibility as warehousemen, and that their elevators be put under the supervision of the State grain inspector department, at a cost to the farmers (whom they feel very friendly to at the present moment), of about \$90,000 per year.

The facts are that the bills (House bill 583 and Senate bill 313), if passed, would only lead to further litigation and give no relief or protection to producers or shippers, their sole and only object being to get into the statute something that could be construed so as to permit a continuance of these illegal practices.

Very truly yours,

JOHN HILL, Jr.,
President Grain Receivers and Shippers' Association of Chicago.

THE WITNESS. I desire to go on record as indorsing certain statements that have appeared in print but which I probably would better read so as to make them part of my testimony, rather than introduce the newspaper articles as they treat of other matters, and there are only certain portions of them that I want to take up.

(Reading from an article in the Chicago Chronicle of August 12, 1895:)

"Over 20 per cent of the whole storage capacity of the United States and Canada is located at Chicago. This includes all—public and private—as officially reported. Duluth has 27,200,000 bushel room; Minneapolis, 26,000,000; St. Louis, 13,350,000; Milwaukee, 5,430,000; Toledo, 7,200,000 bushels. These are the several competitors of Chicago for storage of the grain crops. These 6 points have a total capacity of 125,830,000 bushels, or about five-eighths of the whole. It is

assumed that the business of warehousing at all points is conducted under the laws of the respective States in which elevators are located. This is essential to a full understanding of this vast and important business. * * *

"It is assumed that it will not be denied that the elevator proprietors speculate in our markets. They are, in fact, large speculators nearly every day. They will not attempt to deny this. Proof is too readily obtainable. They own to-day fully 80 per cent of all the grain in store here, and this is not a new departure. They own quite regularly about the same per cent, day in and day out. Last year they sent buyers into the country and brought large amounts of grain here solely for the purpose of having the grain where they could place a tax upon it. Held at country points they could not impose this tax—make the grain earn them storage.

"The result of this move, while lucrative to themselves, cost the country very much more money than they themselves realized, for the reason it swelled the visible supplies to such an enormous extent—more especially wheat—that the world, being unacquainted with the real cause therefor, stood aghast and insisted on lower prices, arguing, quite naturally, that America had an enormous plethora, and therefore must, by virtue of the supposed fact, sell cheap, when the fact was, as fully borne out by subsequent events, this big visible was piled up wholly at the expense of the invisible. Old supplies of wheat were never smaller in America than they are to-day—wholly due to elevator men forcing to market the crops of 1893-94, so they might collect a tax thereon.

"It is but a fair assumption that wheat would not have sold at 50 cents per bushel in Chicago in 1894-95 had not this abnormal condition prevailed. Hence, it is quite fair to assert that the country lost a round lot of money by being compelled to accept for their wheat an abnormal low price, for the price they realized was certainly not based upon legitimate conditions. Granting that very low prices were possible by virtue of the bad times, it does not follow that the extremely low point reached, or anything very near it, would have prevailed had not the big visible stood in the way.

"But this was not the only unfavorable result of this move. It took from regular receivers at this point a large share of business which would have undoubtedly come to them under ordinary conditions. It practically threw the grain trade under the control of the elevator interests. They became not only the arbiters of prices, but by virtue of their wealth and ownership of grain they could and did widen out or contract the spreads between this and that month, just as they deemed it essential to their own pecuniary ends. This was done time and again, and will continue to be done so long as existing conditions prevail. Anyone at all conversant with the position will readily realize what a leverage this can be made by those who possess it.

"But this is not all. It is well known that there are certain months in which speculation centers. Beginning in the fall of 1894, for example, the seller May future was the favorite with the speculators. During March operators gradually changed to July; then it changed to September; now it is changing to December, and will probably go from there to May. Those who are long of these futures and are inclined to change over to a future month sell their September and buy, say (to-day), December. The difference in price is termed a 'spread.' The July-September spread was run up to 2½ early in July, not wholly of necessity by the elevator men, when real carrying charges were only 1½ cents. Then it will be remembered that on July 1 some 5,000,000 bushels of wheat were delivered on July contracts, mainly by the elevator proprietors. This was done for a purpose, or it is fair to assume it was. Large deliveries at any time do not tend to strengthen prices. If the market broke the wheat could be bought more cheaply. That is all there was to it.

"There was liquidation of the May future, of the July, and soon it will be September. The elevator men will buy back the September they sold against their July purchases and sell for December or May, whichever offers the better return. * * *

"The anomaly is also presented of a man depressing his own property and making money by the operation. Thus, if they so elected, the elevator men could sell a certain long option freely and break its price, and then buy a near one at a relative decline, replacing that sold at a profit. This has been done by somebody or other more times than one on the board of trade; and a person acquainted with the trade could easily reach a fair conclusion as to whom that somebody was. * * *

"Indeed, under present methods in vogue the opportunities of the elevator men for making money are simply enormous. And this is why the power should be curtailed. It is practically killing off business in Chicago. The outside world knows something of the strength of this great monopoly, and is not disposed to antagonize

it, preferring to go to some other market—some market not at the mercy of such a combination.”

(Reading from an article in the Chicago Chronicle of August 22, 1895:)

“One of the great weakening factors at present, and one which the trade has perhaps generally overlooked, is the attitude of the warehouse interest at Chicago in insisting on a premium on every bushel of wheat they sell. Yesterday they asked one half cent per bushel over the September option, which, counting the storage for the balance of August, is equivalent to a premium of three-quarter cents. These same tactics were carried out last year and undoubtedly not only had much to do with curtailing our exports, but also in depressing prices, for it practically kept the grain here and at accumulative centers. The argument, of course, is that in the presence of plenty buyers look upon these premium charges in the light of an extortion and very naturally refrain as far as possible from paying it.

“But this is not the worst phase. By this act exports were cut down and just so much money kept out of the country. It may be close to the truth now to suggest that gold exportation is due in a large measure to this cause. It is not human nature to submit to extortion, and we all know the foreign character is especially sensitive on this point. And this gold exportation does not only adversely affect wheat, but every commodity of our country; business in general, in fact. These are truths as developed by existing conditions, and are strong arguments why the elevator trust, which in reality is a blight on the trade, should be curtailed in its power.

“There is not the least question among those who are conversant with the facts that this octopus has already done the country great harm, has kept down the price of its productions, is to a certain extent responsible for the gold exports and their consequent deleterious effect on the commercial industries of America, and if permitted to continue in its present attitude must eventually do incalculable harm, if this has not already been accomplished. The law under which they were created admits of a fair recompense for labor and capital employed—all honest business men should ask.

“It may be claimed this premium is asked because the shipper wants grain in a specified elevator. Being a relatively small premium, this may be partially true of the present. Yet it will be remembered that within the last 12 months no less a premium than 2 to 3 cents for winter and 6 to 7 cents for spring was asked and received by elevator men. This they can not deny. It is on record, and can be clearly proven. And not only this, but at no time within a year has it been possible to buy a pound of wheat in the Chicago market except at a premium, either small or great, these elevator men owning as a rule all of 80 per cent of the stocks here.

“And there can result from this but one conclusion. So long as permitted to continue, so long must it be expected buyers will seek other markets. This means eventually another great accumulation of wheat in elevators at this point, another menace to prices, precisely the same as it was last year and the year before. It is a finger post standing in the road of prosperity or the enhancement of values. There is no doubt but if the market was allowed to assume a normal condition, if the price was permitted to remain on a par with futures, much more wheat could be sold to the foreigner. But he will not submit to be bled by a grinding monopoly. He wants a natural, not an unnatural market. Until he can have this America must be the loser.”

(Reading from an article in the Chicago Chronicle of September 6, 1895:)

“Profits in storage. The Chicago storage rate is one-fourth cent per bushel for each ten days. For all the empty bins this means \$145,000 for each ten days, or nearly \$450,000 per month. For one year the total would amount to the respectable sum of \$5,300,000. This explains the anxiety of the Chicago elevator trust, in combination with the Northwestern elevator interests, to depress wheat prices, to the end that they may earn money with their idle warehouse room and profit by buying wheat for future delivery.”

(Reading from an article in the Chicago Chronicle of September 7, 1895:)

“Unfortunately for the country the wheat trade is practically in the hands and under the control of a giant monopoly, from which it appears impossible to cut loose. The elevator interest is that monopoly. It is manipulating the market to its own aggrandizement, and this manipulation is seriously crippling the trade, if not killing it. By its actions the price is being held down and the producers, therefore, despoiled of money that justly belongs to them. They control the market to such an extent that shippers are absolutely prevented from filling legitimate orders. There is practically no wheat for sale in Chicago, though there is in store here some 14,000,000 bushels, and all owned by the elevator interest. A shipper yesterday was compelled to pay December prices for a small lot, or a

premium of over 1½ cents per bushel. This is driving away from Chicago this desirable trade. And not only this, the knowledge of the existence of this octopus is undoubtedly the reason why our speculative business has fallen from an immense one to an almost normal one."

The WITNESS. I want to introduce a letter to show that the grain dealers of Illinois are opposed to this state of affairs.

(Letter referred to follows:)

[Office of secretary Illinois Grain Dealers' Association. B. S. Tyler, secretary.]

DECATUR, ILL., April 24, 1897.

DEAR SIR: We again call your attention to House bill No. 583 and Senate bill No. 313 now before the legislature at Springfield. These bills were introduced and are being pushed by the grain elevator trust, the Armour Elevator Company being at the head of the list.

These public elevators, as you know, were cited to appear before Judge Tuley for buying grain, when the warehouse laws had always held that they could not act in the dual capacity of public warehousemen and grain dealers at the same time. Judge Tuley heard the evidence presented by both sides, and on December 22, 1896, decreed that they have no right to deal in grain. They have taken the case to the supreme court of Illinois. They know that the higher court will sustain Judge Tuley's just decision. They override all courts and all justice, and are attempting the passage of the bills referred to, which if passed will give them the right to deal in grain, thereby giving them a monopoly of the trade, and robbing grain producers and grain buyers and millers throughout the grain territory of the United States.

It behooves every grain dealer to see to it that this damnable bill is defeated. The elevators have a limitless amount of grease to use if need be to pass this measure. It means millions of gain to them, and an equal loss to grain men and producers.

The grain men must be up and doing. Our association has selected you with others in your senatorial district to see your representatives and senator, and enter a most emphatic protest against the passage of this nefarious bill.

You are urged to be at Springfield on Thursday, April 29. You can not spend your money and time more profitably and in a better cause than to be at Springfield on that day and remainder of the week. See others and urge them to go with you. Report at the Leland or St. Nicholas. If it is absolutely impossible for you to go be sure and send some other influential person in your place, and write me whom you have selected. Come if you can.

Yours, truly,

B. S. TYLER,
Secretary.

The WITNESS. In order to show the abuses that grow out of the present system here, I wish to introduce certain parts of a statement made by me in print on the 17th day of July, 1899.

(So much of statement as was introduced by witness follows:)

"On May 1, 1899, there was delivered to members of the board of trade by Armour & Co. fraudulent warehouse receipts to the extent of 1,200,000 bushels of No. 2 spring wheat.

"The magnitude of the swindle exposed it by attracting attention of members to the number of receipts that were just regular on delivery day.

"The directory promptly investigated the matter, and when the facts were placed before them they almost unanimously voted the entire Armour system of elevators irregular.

"As not only our rules had been violated, but also a crime punishable by imprisonment in the penitentiary for from 1 to 10 years committed, the directory having the good name and dignity of the association to protect, caused a committee to investigate the members of the board of trade responsible for this wholesale robbery.

"The committee, after due investigation, filed charges with the directory against Philip D. Armour, Philip D. Armour, jr., J. Ogden Armour, and A. I. Valentine.

"At the trial before the directory the facts were all admitted, but the three Armours denied knowledge of the issuing of the receipts, and Valentine, under oath, exonerated them and assumed all the responsibility.

"The directors acquitted the Armours and convicted Valentine, and fixed the penalty at 20 years' suspension from the privileges of the board.

"The developments during the trial and investigation only aggravated the case. It was shown that warehouse receipts to the enormous total of about 12,000,000 bushels had been manipulated in this way during 1893-1895, and 1896; beginning with the Cudahy wheat deal in 1893. The public and members of the board had been systematically plundered for 3 years; the market depressed by delivery of undesirable warehouse receipts, which expired the day they were delivered, and were dated months after the grain had been received in the elevator. Mr. Valentine stated under oath that he manipulated the dates, or 1,200,000 bushels wheat receipts, included in the charges, so that they would expire for shipping on May 6, thereby inducing shippers to take the grain out of store."

The WITNESS. I will also introduce a letter here of a Chicago house, showing another of the abuses growing out of the present system, and how it affects people.

(Said letter follows:)

[Nash-Wright Company, commission merchants; S. H. Greeley, 515-519 Rialto Building, Chicago.]

CHICAGO, June 2, 1897.

DEAR SIR: To illustrate the methods employed by public warehousemen here toward country elevator proprietors, we want to cite a case which recently occurred in our city.

A certain public warehouseman, operating both public warehouses and cleaning houses, received 50 cars of corn on one of the roads entering Chicago. The corn was duly inspected by the proper authorities, and passed the contract grades, either 2 or 3 yellow.

This public warehouseman, being himself a grain dealer, called reinspection on this corn, and asked that the chief inspector of grain change the shipments from 2 and 2 yellow to 3 and 4 corn, which, if accomplished, would lessen the market value of the corn from 2 to 5 cents per bushel.

The cars were reinspected as requested, and we overheard the conversation in which the supervising inspector of grain told the representatives of this public warehouseman that that corn was certainly of the best quality which comes to this market, and that he did not want to be sent out in the future to lessen the grades of any such fine quality of corn as that which he inspected.

It is quite proper to infer that this corn was bought from shippers in the country, and it was the aim and intention of this elevator proprietor to endeavor to injure the interests of the shipper, thus being able to secure the corn at heavy discounts in price.

It would be an easy matter, had this corn been changed to the poorer grades, to run it into the cleaning house, inspect it out for the grade to be made 2 corn at the out inspection, and thus secure the 2 corn market for the very same corn which he might have bought as 3 or 4 had his scheme for changing grade been successful.

This circumstance only goes to show how some people might attempt to thrive on the misfortunes of others with whom they trade.

NASH-WRIGHT COMPANY.

Q. (By Mr. A. L. HARRIS.) Have you anything further to offer?—A. Nothing that is not contained in that printed matter; but I will say that, in my opinion, the present system of handling grain in Chicago, consolidating the business of different roads or of one road into the hands of one buyer, is a great detriment, not only to the market, but also to the country through which the road runs.

Q. In what way does it hurt the country through which the line runs?—A. In this way: Formerly we would have 2 or 3 or 4 grain buyers, and the tendency now is to have one grain buyer, and he a cheap man on \$40 or \$50 a month, representing some big house here, while the other men were permanent, with families, and it would increase the business of the town, and it would be necessary to bring goods into the town for them, and they would buy their goods at home to a certain extent and make business for that town; while in the case of the system that is growing up now a cheap fellow like a telegraph operator will go in and do that business that formerly was done by one of the prominent business men in the town, or 3 or 4 of them.

Q. Do you mean to say that it destroys competition?—A. It destroys competition, undoubtedly. Mr. Hanley here stated that when certain conditions exist they shut down their elevators—do not run; competition is destroyed; that is what has happened. The competition is destroyed and one elevator shuts up. The town is affected to that extent that one man dictates the price of the grain.

Q. To what extent does this condition prevail outside of the city of Chicago?—A. It is a growing condition. The original intention of some lines of road was to

make the condition immediate, but it failed. The people who went into the grain business as the result of the change in policy of the railroads were not the grain men; they had not had this experience. For instance, Charles Counselman jumped into the grain business and tried to run two or three hundred stations. He was not a grain man, and the consequence was that he was glad to sell out a good many of those stations, and then he began to gradually establish the stations again, and that is the case on the St. Paul road now. The system has grown up gradually. A certain concern which to all appearances represents Armour & Company, but under a different name, is gradually taking up the elevators, buying out the grain dealers, and going into business under the name of the Neola Elevator Company, and in the Northwest you will find when you go up there that whole lines of roads—every town on the line of a road has a certain agent or buyer—the same system there; not, in fact, like ours, because our market is different from any of the other markets in the fact that we handle more of other products than wheat. In the Northwest they are confined more largely to wheat. Of course Duluth is getting so that it handles a good deal of grain now in that direction.

Q. (By Mr. J. C. HANLEY.) I would like to ask Mr. Hill, if, in his experience as a grain man, the question of mixing grain is an important matter in the grain business?—A. So important that no terminal elevator exists here to-day, with possibly one or two exceptions, that has not a mixing house connected with it. Armour's mixing houses are larger than his public houses to-day.

Q. (By Mr. A. L. HARRIS.) What do you mean by a "mixing house?"—A. Where they manipulate the grain—take the poor grades and mix them together to make them represent a higher grade than the poorest grade they have.

Q. (By Mr. J. C. HANLEY.) Now, in the reception of those grades, there is a wide range between what you would call the highest of a grade and the lowest—what we call the line grade—above and below that point?—A. Yes.

Q. How do they dispose of the premium on the high grades, keep within the line, and still dispose of it as No. 1?—A. The grain is sold, if it is a high grade, by sample, and brings a premium. It is then run through the cleaning house and the lower grade of grain, not the lower quality of the same grade, but a lower grade entirely—

Q. (Interrupting.) No. 2 or No. 3, for instance, would go in with No. 1?—A. Yes; is mixed in with it, and that high-grade grain is brought down to the lowest point, and it will go into the same grade that it went into before. Our market is on the lowest grade. That is one of the great detriments to the market. If a man buys No. 2 wheat in Chicago, or No. 1 Northern wheat in Chicago, he buys it with the expectation of getting the very poorest wheat that will grade No. 1 in Chicago.

Q. (By Mr. A. L. HARRIS.) Does that fix the price of wheat injuriously to the farmer?—A. Certainly. Speculation to a great extent fixes the price of the grain. It can not help it. It is such an enormous speculation; and if the speculator dealing in the lowest of that grade, the poorest quality of that grade, takes it and pays for it and goes to the elevator to get it he can not expect to get any better than the very poorest wheat that will come in that grade, because he knows it has passed through the cleaning house, through the hands of the elevator men who would not deliver him any better grade than they have to. They are "skinning" the grades down; they are constantly manipulating them. If they find a car that is a poorer grade that will bring, say, 10 cents a bushel less, they will mix the two grades.

Q. (By Mr. J. C. HANLEY.) Does not that affect the price at the terminal points?—A. It certainly does, because we do not trade on grades, but we trade by sample; and the sample grade which goes for export is sold at a premium over the grade that is held in store here and is the speculative grade.

Q. But no farmer gets the benefit of the premium on the grade?—A. No.

Q. And the only one who gets that is the man who mixes the grain and has it for sale?—A. Yes.

Q. To what extent does a premium exist upon those different grades?—A. Oh, it varies so much you can not estimate very closely. It is from 1 cent to 3 or 4 cents.

WASHINGTON, D. C., September 23, 1899.

TESTIMONY OF MR. ELLIOT B. NORRIS,*Fruit grower and dealer, Sodus, N. Y.*

The commission met at 10.45 a. m., Vice-Chairman Phillips presiding.

Mr. Elliott B. Norris, being duly sworn, testified as follows, being examined on the topical plan of inquiry on agriculture:

Q. (By Mr. A. L. HARRIS.) You may please state your name, residence, and occupation.—A. My name is Elliott B. Norris, Sodus, N. Y.; my occupation is that of a farmer and fruit grower and dealer.

Q. You may state whether you are connected in any way with a farmers' organization. And if so, in what way?—A. I am; I am now the master of the State grange of the State of New York.

Q. How long have you held that position?—A. About 18 months.

Q. As master of the State grange, have you traveled over the State?—A. I have, to quite a large extent. I have not been in all counties. I have probably been in some 20 or 25 counties.

Q. Have you local granges in almost all of the counties of the State?—A. We have now established granges in all counties of the State excepting about 6.

Q. Your travels through the State have given you a good knowledge of agricultural conditions there?—A. Somewhat.

Q. You may state, if you please, whether the laborers employed in agriculture have increased in the last 20 years. And if not, why not?—A. In my judgment, the agricultural laborers during the past 20 years have increased somewhat. There was a period, from 1890, when there was a tendency to decrease, on account of the large call in the cities for laborers, the prices paid at that time being quite attractive and resulting in drawing quite a goodly number from the farms; but they soon discovered that it was a bubble, and they have for the past 2 years been coming back gradually to the farms; so I should think that there was an increase, or a tendency toward increase at the present time, of farm laborers.

Q. What is the difference, social and moral, between the farm laborers now compared with former years?—A. Very much better. A farm laborer to-day has very many more privileges than 40 years ago, and a large majority of them are better informed in our section of the country than they were 25 or 30 years ago; and their condition financially is better. Any man that works on the farm now—if he is inclined to be industrious and sober—there is no reason why he is not making a nice living and doing fully as well as the man employing him.

Q. What effect, if any, has improved machinery to-day upon the demand for labor upon the farm?—A. I do not think that it has decreased that demand. In fact it has opened new avenues of industry on the farm that have given employment to the people that were formerly engaged in doing hand labor; it has opened up new industries to employ them, so that it has not injured, but has rather benefited, in my judgment, in our country, the condition of labor.

Q. Are they regularly employed?—A. They are regularly employed there 8 or 10 months of the year on farms as a rule, and the majority of them are employed the most of the 12 months—that care to be. There are occasionally some men, single men, that hire out and work 8 or 9 months that are quite inclined, after their time is up, to take things a little easy. They have homes, perhaps, where they congregate together, the boys and girls, and have a pretty good time for 2 or 3 months; but those who wish to be engaged can find labor pretty much the 12 months at fair prices.

Q. Have you any transient labor, especially in the busy seasons?—A. We have, but not as much as we used to have years ago. We have in certain lines, but we do not have as much transient labor to perform the general harvest work that we used to have in former years, because it is largely done by machinery; but we have in our State large new industries that are starting—fruit growing and the harvesting of berries and small fruits—and when it comes down to the fall we have our apple crops and all those. It takes a good deal of transient labor; we have to employ quite largely outside; so that I think that there perhaps has been an increase rather than a decrease in transient labor in our State, especially in our section of the country.

Q. What are the daily hours of agricultural labor in your section?—A. It is now about 10 hours; that is the established rule on most farms now.

Q. What is the average number of days they are employed in a year?—A. That is rather a difficult question to answer, but I should say, from my observation, from 190 to 200.

Q. Do you discover the tendency of the agricultural laborer to seek other employment?—A. Well, as I said at the beginning, from the years 1890 to 1895 there seemed to be a tendency of the best and brightest men we had in our community to go off into other pursuits, either into railroading or moving into the cities where they became clerks, etc.; but during the past 2 or 3 years, especially the past 2 years, there is a general returning to the farm; there seems to be quite a tendency to go back on the farms again; so that we are continually getting better men now than we did 4 or 5 years ago. For that reason we are getting a better class of people on the farms. There was one time there that it was a pretty difficult matter to get what we called good, first-class men that we could depend upon. We had to take up with, well, the "rag-tag" of all creation that would come to the farms. Some of the men were not good for anything else, and they would generally hire out to the farmers, and we were obliged to take up with that kind of help; but during the past 2 years there has been a better class of labor coming to the farms—people more intelligent.

Q. How frequently do you pay your farm help?—A. A great deal of our help is hired now by the day. They are paid so much per day, and they are paid at the end of every month. Some people continue with the old practice of hiring by the 8 or 9 months' system, and paying their laborers, settling up with them, at the end of 8 or 9 months, but the most progressive farmers with us now are hiring and paying help every month, and hire them largely by such a rate per day.

Q. About what is the average paid?—A. The average paid by the month, where they are hired by the month, is from \$18 to \$20.

Q. (By Mr. RATCHFORD.) Is that by the day?—A. That is by the month; and \$1 per day is the universal price, and the man boards himself.

Q. (Mr. A. L. HARRIS.) What is the pay where the farmer boards the man—where he lives in the family?—A. From about \$17 to \$18 a month—the very best men; some of them get as high as \$18 per month.

Q. What does that include?—A. For a single man that includes as a rule only their board and lodging. Their washing is done outside.

Q. Do you pay in cash?—A. Farm laborers, especially those single men, are all paid in cash. Men that have families, some of them, are paid off from the produce of the farm, such as flour and feed for their cow, if they keep one, or they keep a cow for them at so much per week. There are two or three systems of hiring. Where a man is hired that has a house, some farmers pay him so much and he pays for all privileges; pays for his house and his fuel, and if he keeps a cow or horse, he pays so much per week for them, and pays the market price for all produce that he takes from the farm that he wishes to buy from the farmer. Another plan is that the farmer furnishes the tenant with all privileges at such a rate per month; that is, for men who are tenants. Which plan is adopted the most extensively I am not prepared to say, but I judge the plan that they are getting largely into now, of paying a man so much and he pays for all privileges, is found to be most satisfactory. In our farm operations we have a system of time cards. We have a foreman for each farm, and at the end of the month every man is charged up with what work he does and for every horse on the farm, so that at the end of the month we can tell what every man has been doing and what we have paid him and what every horse on the farm has done, so we have a correct account of our expenses. At the end of each month we can tell just what is charged up to each crop. Whatever the crop be, whether apples or grapes, or wheat, oats or barley, or anything of that kind, it is all charged to that particular crop, the amount of work that is done, and at the end of the year if we find out that a certain crop has not been paying, we pretty near quit doing that kind of business. My idea is that the nearer the farmers come to a correct system of accounting, or knowing what they are doing, the better they will come out, and nearer they will know what they are doing every year. As a general rule, the farmer in our country knows he puts so much money into his business, and at the end of the year if he has a certain amount in his pocket he has made something, and if not he does not know where it has gone to.

Q. What privileges go with the tenant's house?—A. Not any, except the rent of the house; and occasionally farmers that have it furnish the firewood—give them the wood for their family and a team to draw it; and that is all; but as a rule they just simply furnish the house.

Q. (By Mr. PHILLIPS.) In your State, then, they burn wood chiefly? Do they burn coal?—A. Not so extensively. Most every farmer has wood; but that is fast being done away with; and, as I stated a little while ago, they are coming to the plan where a man is paying for everything he has, and he pays for every privilege. We find it gives better satisfaction. A tenant sometimes will think he is not getting something quite good enough, and there is a little difference in paying for it; it may cause a little friction, but if he buys his own stuff and pays his own money he knows what he is getting. We think that is the best plan, on the whole.

Q. (By Mr. A. L. HARRIS.) Is this custom generally practiced in different portions of the State, or is it only in your locality?—A. I think it is, as a rule, where a man has a tenant. Of course, I am speaking now about men that are hired out for steady work, understand, on farms during the season. I am not speaking particularly about day men. Day men all pay for their goods—their house rent and everything they get from the farmer; they pay him for it. It is only practiced where men are hired by the month.

Q. Is the system of renting land to a tenant practiced in your State?—A. It is somewhat. I think perhaps at one time it was practiced rather more than it is to-day, although there is quite a good deal of that done now. A man rents a farm for so much, and he has the entire control of it under a contract, agreeing to do certain things; but I think they are more extensively working farms on shares now, and that is a notable fact; that shows there is a tendency to come back on the farm. I noticed particularly that during the past year a great many people who have been living in towns and cities have come out and rented farms, or worked farms on shares—people who had abandoned that and gone into something else 4 or 5 years ago. Whether they are going to make any more money or not is a question I can not answer, but there seems to be at least a tendency to try it again to see.

Q. Have you a system of crop sharing among your tenants?—A. No further than the working of farms on shares. A man furnishes one-half of the seed and does all the work, and divides the product. We have no other plan of sharing.

Q. Is the division equal?—A. The divisions, as a rule, are equal. In some cases, where a farm is worked and the owner furnishes the teams and all seeds, the tenant has one-third. When a man does the work and furnishes his own team, with the exception perhaps of certain things, like paying the taxes, or furnishing some of the small seeds, perhaps the farmer agrees to pay a little more than one-half of it, under certain conditions, as if they run an evaporator. We have a large evaporator industry in our section of the country in the fruit business, and if a man does evaporating of the fruit, furnishes help, etc., a farmer generally pays him a little bonus for doing that extra work.

Q. Does that apply to different agricultural industries as well as fruit raising?—A. It applies just about the same.

Q. No particular difference?—A. No.

Q. (By Mr. FARQUHAR.) How extensively is evaporating carried on in New York in the fruit business?—A. It is carried on very extensively, indeed. It probably brings into Wayne County more dollars than any other industry.

Q. Where do you find your market for evaporated fruit?—A. All over the world.

Q. In what kind of packages is it sent usually?—A. The packages, as a rule, are put up in 50 pound pine cases, and some are put up in halves, 25 pounds, and others are put up in 2 and 5 pound paper packages. That is not very extensively done. The manufacturer puts them up in 50-pound cases.

Q. (By Mr. PHILLIPS.) What kind of fruit is this?—A. It takes all classes. Some farmers sell their orchards right out; the whole crop is evaporated, taking firsts, seconds, and everything.

Q. Do you raise apples and peaches both, or chiefly apples?—A. Chiefly apples. Peaches are not evaporated much in our business.

Q. (By Mr. FARQUHAR.) Does this evaporated fruit take the place of fresh fruits in the principal cities?—A. Yes.

Q. Commonly used in hotels, restaurants, etc.?—A. Yes; and in a great many private families they use evaporated apples.

Q. How long and how far will they stand transportation?—A. It will hold, if it is kept from the air and kept under proper conditions—it should be put in cold storage where it is kept over—we have had it keep as long as 4 years and come out perfectly good.

Q. Does it pay better to evaporate a fruit crop than to sell it?—A. Some farmers like to get rid of doing the work, and so they sell their apples right out and out. They do not have any trouble with them. They simply agree to deliver their product to the evaporator, or to give the man the privilege of barreling a portion of that fruit, as they see fit; and they do not care to do anything further than pick the apples off the trees and put them on the ground for the parties, and the other people barrel them. It is becoming very customary in our section of the country for the buyers to do their own packing. They have a more uniform way of packing.

Q. (By Mr. PHILLIPS.) Do you take any liens on growing crops? Is there any lien system in your State?—A. Well, not to any great extent. It is generally found that this taking a lien on a man's crop rather discourages him, does not

give him any show; and even if the grower is what the world terms "hard up," they do not adopt that system very much with him, because it discourages the man on the go in.

Q. (By Mr. A. L. HARRIS.) Have you any people from foreign countries in your part of the State?—A. We have.

Q. What nationalities predominate?—A. Germans and Hollanders.

Q. You may state, if you will, what is the character of your foreign immigrants.—A. The character of the foreign immigrants that have come to our country has been very good, indeed, and the Germans, as a rule, are quite intelligent, have had educational advantages, more so than the Hollanders; and I am frank to say to you gentlemen that that foreign element controls to-day, I think, the majority of the lands of Wayne County. They own them. They seem to be born agriculturalists; they get right into that from the time they get there, and if they go to some farmer and stay with him for about 10 years they generally buy the farm, and the farmer moves off and goes to town and takes things easy. That is about the way the thing is going with us. And they make first-class citizens, too; they make good citizens.

Q. Please state why this change takes place, if you know.—A. Well, it takes place in this way; that the Yankees, as a rule—we call them Yankees—Americans—have an idea that speculation is more congenial to their minds than the work of a farm, so they go into speculation and leave the Germans and Hollanders to do the work, and the first thing they know they have speculated out and the German owns the farm, and the fellow moves to town and lives from hand to mouth, and the Dutchman survives. That is about the way it goes; simply because the American has, perhaps, a family of children who think that they are too nice to work with their hands. They must do something else—must either teach school or jump behind a counter, or do something of that kind. They skin out and leave the farming to the farmer. The old man is left to do it himself. Of course, the German stays there. He is a mighty good fellow and does the thing all right, and by and by the farmer sells the farm to the German. The Germans all work—the boys, the girls, and everybody—and the consequence is that by and by he buys the farm.

Q. Is there any tendency on the part of this foreign element to colonize or get together and preserve their language and habits?—A. Well, I will say that they are quite clannish, especially the Hollanders; I think they are a little more so than the Germans. They are quite clannish in some things and they are very tenacious about some things; and generally, where a leading Hollander or German, especially a Hollander, buys a farm, or if he has anything to be bought or sold, there is another Dutchman ready to buy that, if possible, of this Dutchman, if he is a sort of leader among them. So there is quite a tendency to get them in little neighborhoods. Our county seat, Lyons, is controlled by the Germans; both in the town and in the village the Germans have the controlling power, politically and every other way.

Q. (By Mr. PHILLIPS.) The county as well as the town?—A. No; just the town. Yes, I would venture to say that if you had the Hollanders and the Germans all voting one way they would hold the balance of power in the county to-day.

Q. (By Mr. A. L. HARRIS.) What effect, if any, does this have upon the agricultural industry?—A. It does not affect it any way detrimentally. They are a good class of farmers. They till their soil well, and, in fact, they are better farmers, as a rule, than the Americans. They are more thorough; they have been brought up in a country where tillage was the first step that was instilled into them, and they will take up these new lands. They are great fellows, especially the Hollanders, to come into our country and pick up what we call our muck lands, our low ground, ditch them out, and put them in shape. They are great onion raisers; they produce a large amount of onions and celery, and all those things; and they are reclaiming those lands; so that, I think, upon the whole, they are a better class of farmers than the Americans. They are really bringing as much wealth into the State as the Americans are because they are thorough in what they do; but, of course, I do not say this applies to all of them. They have black sheep as well as others.

Q. Would you encourage or discourage foreign immigration?—A. As far as it affects agriculture in our State, I would rather encourage than discourage the class of people that we have had. We do not take very much to the Italians and that class of people. We are not troubled with the Italians as farm laborers in our county at all. They follow the railroads, and we do not see very much of them unless there is some job that they tarry on a few weeks; but as farm laborers there are hardly any Italians in our section of the country. I am told that in some sections of the country where they are growing sugar beets quite largely,

down near Rome, they hire some of these Italians that live along the canal, that calculate to make their livelihood on the canal and railroads. They do employ some of them, and their children and women, to weed out their sugar beet. That is all I know of.

Q. Have you any suggestions to make as to the regulation of foreign immigration?—A. Well, speaking for my own State, I do not know as I have anything to offer. I think we are pretty well satisfied. Of course, there are other sections of the country that I can not speak for.

Q. Have you any colored labor?—A. Very little. We only had one settlement. Very few colored people have come into our locality; and, in fact, in the State there are but very few colored people. Right near my town there was the old Fitzhugh estate. When they freed their slaves they gave them a certain amount of land; I think there must be a section there of about 1,000 acres which was left to those people in trust. When they become extinct, if they do, it goes back to the heirs or this estate, in the future, sometime. Well, those people have not progressed at all; they have had all the opportunities of the foreigners; they have had this land given to them, and still they live there right in those little hovels that they have lived in ever since I was a boy, and there is no progress whatever, and they are decreasing rather than increasing, and they are an element that amounts to but very little.

Q. What have you to say in regard to the sufficiency of your public-school facilities?—A. I think that our public-school facilities are very good, and they are growing better. The requirements of our common-school teachers—that is, the qualifications—are becoming more exacting every year. The teachers that taught school several years ago—taught a common school—to-day can not get a certificate; they have not the proper qualifications to get a certificate. They are fast putting into our common schools people who have better qualifications. Regarding the system of our common-school teaching, comparing the old with the new, as far as my observation goes, I am not dead in love with the system of teaching, or the way some of them are teaching nowadays. I believe that the best way is to do as we used to—begin with the fundamental part and teach reading, writing, and spelling, and teach people the rules, and to know how it is done. It seems to me they retained them better. Perhaps I am a little old-fashioned, but I am sure that our old plans of teaching, as far as reading, writing, and spelling are concerned, were more proficient in those days than they are now. I judge that somewhat by my own children and by others that I see. They seem to be more deficient in spelling. It does not seem to me as though we have as good spellers now as we used to have.

Q. You consider, then, the public-school curriculum, as now established in your State, sufficient for agricultural purposes?—A. Yes; I do.

Q. Have you any technical education in agriculture?—A. We have some courses at Cornell every year, agricultural courses, short courses, that are of very much benefit. Many of our young men are getting the benefit of those agricultural courses, and they have been a great benefit to them. Particularly the dairy branch, or fruit growing, or practical agriculture, short courses of 10 weeks or 20 weeks, which some of our young men are taking up, and which have been a very good thing, I think.

Q. After getting that education are they content to go back to the farm?—A. Some of them are and some of them are not. As a rule, I think they are. It makes a good deal of difference the way a young man is made up about that. I think if you attempt to make farmers of some young men they would be complete failures, because they never were born that way. I think every man should be allowed his natural inclination. If he has an eye for mechanics he ought to be instructed and take a particular course in that line; and if he likes farming, why let him be a farmer. A man will not be a success in anything that he does not like; he must be in love with his business, I do not care what it is; that is my experience.

Q. (By Mr. PHILLIPS.) I would like to recur to the question of this colored labor. About when were those colored people freed in your State?—A. I guess it was nearly 50 years ago. It was the time the slaves were freed in New York State. I do not remember the year.

Q. How many families were there in this colony?—A. There must have been at the time they were freed in the neighborhood of 150 or 200 of them.

Q. Was the land divided up and parceled out among them?—A. Yes. This Fitzhugh owned in there probably 3,000 or 4,000 acres of land; took it up at an early day. The heirs of the family still live on the old estate, and they are scattered, of course, all over. The old ones, of course, are all dead.

Q. How many are there in this colony now?—A. Well, I should have to guess at that. I should think 50 or 75 of them, maybe more.

Q. Decreased nearly one-half?—A. They have decreased fully one-half, and of course as fast as they go out the property is tenanted by white people.

Q. Have they had any educational facilities?—A. Just as good as any of the other people there.

Q. Go to school with the white people?—A. Had the chance to go to school if they so desired.

Q. Do they have a colored school?—A. No; they could go right along with the white people if they wanted to. There is no objection to it.

Q. Have quite a considerable portion of them gone away?—A. Well, some of them have gone away; quite a good many have gone out, but they have simply run out. That is about the way of it. Of course there are but very few of them.

Q. Then this colony of colored people has not been a success, though they have had a good opportunity?—A. There is not a single good farmer in the whole lot.

Q. The land was equally as good as other lands?—A. They have had good land parceled out to them, and their chances were equally as good as any other American or foreigner that might come in there, but they simply have been an indolent class of people and have not tried to do anything.

Q. This is in your own county?—A. It is right in my own town. I know about this. They do not seem to have any inclination for any education whatever.

Q. (By Mr. A. L. HARRIS.) Please state, if you will, the comparative earnings of capital now, as compared with former years, employed in agriculture.—A. I do not think that there is as much money made upon the capital employed in agricultural pursuits as there was 30 or 40 years ago, for the reason that agricultural lands have depreciated in value and the prices of agricultural products have likewise decreased. And, furthermore, when the soil was in its virgin state it produced from 30 to 40 bushels of wheat per acre in our section of the State without any great amount of fitting, without any fertilizer; but to-day, with a high state of cultivation and the use of fertilizer, the average number of bushels per acre has decreased to about 25. Even this year, when we had a good wheat year, our average would not exceed 25 bushels per acre; and about the same thing might be said of barley and oats. Our section of the State especially was peculiarly adapted to the growing of barley. We used years ago to consider that our barley and our apples were the crops that we got our money out of. But now barley has just simply been wiped right out. In those days it was considered a pretty low price if you did not get 70 to 75 cents for barley, and oftentimes we got a dollar or better; and the price got reduced down to about 30 or 35 cents, and people practically stopped raising it, so that the best barley section of our State to-day is practically out of the growth of the crop entirely. I think it would be fair to say, in my town where I live, that there is not 1,000 bushels of barley grown this season, where they used to produce 25,000 to 40,000 bushels in the town.

Q. What is the cause of that decrease?—A. The low price. It did not pay to raise the barley. And, more than that, we used to have a very large malting industry. In our county particularly there were several very large malt houses; and when this trust system began to take hold they just closed up all but one pretty much and began to buy Western barley, and our people stopped raising it. I suppose I may say that the system of adulterating malt, using other products in the place of barley malt to make beer of, has had another large effect in decreasing the raising of barley.

Q. What effect, if any, has the barley imported from Canada had upon the prices?—A. Not any. We never felt any visible effect from that, because the duty that we have to pay on Canada barley practically wipes that out. The claim of the malsters has been that Canada barley made a little lighter malt and a little bit more of it, as their barley has a little finer shell than ours. Of course that was the plea the malsters always made in order that they might buy some of our best barley at a little less than the Canada price. That was used as an argument for several years. But the Canada barley has never affected us in any manner whatever. It has never been in it. It has been the adulteration of the malt products in beer that has destroyed the barley growing business in our country, I think.

Q. What is the earning of capital invested in agriculture compared with capital invested in other industries?—A. Oh, it is not to be compared at the present time. It is not a quarter—the earning of agriculture as compared with banks or mercantile pursuits—at the present time. I am not going to say that this condition has prevailed for the last ten years, because there has been a large depreciation, as you know, in all mercantile and manufacturing interests; but at the

present time there is a big boom in those things, and there is not a very material boom in agriculture.

Q. Well, speaking of the average; speaking of the state of investments also, taking into consideration the risk.—A. Well, from the amount of money employed in agriculture as compared with other business, say for the last 20 years, perhaps as many have managed to live as there are in any other business. But we have not seen any particular advance in prices in agriculture, unless there be a shortage. Of course whenever there is a shortage of a crop people can get prices; when they have too much they must find a market to get rid of it.

Q. What have you to say about the taxation of agricultural property?—A. I think that landed property is paying an unfair rate or taxation as compared with other property to-day. I mean to say by that that all landed property, real estate, is visible; the assessors get it; but if a man has money he covers it up in bonds and other things, and it slips away, and they do not get it. I think real estate is paying an unjust proportion of the taxation in this particular State as compared with personal property, and the fault is largely because the system does not reach personal property.

Q. Is it exempt by law?—A. No, not exempt.

Q. How do they get clear on the listing of their property?—A. When the assessor comes around to a man who owns Government bonds or something else he slips that around; manages to get out of paying on that line usually.

Q. Do you tax notes, stocks, and securities outside of Government bonds?—A. We do if we can find them. If a man has any notes he generally does not have them about the time the assessor comes around.

Q. Then the fault is in the execution of the law?—A. It is in the execution of the law largely, or enforcement of the law. The system seems to be deficient in being enforced for some reason. The fact of the business is, if a man has a farm it lays out there; there is no getting away from it; there is no covering it up.

Q. The same way with chattel property?—A. Exactly.

Q. Now, have you any suggestions to make as to amendments to your law that would secure a more equitable distribution of the burden of taxation?—A. Well, I do not know as I have any plan that I would be prepared to present intelligently to this board at this time.

Q. Have you tried anything different from your present plan?—A. We have resolved and resolved everything, every year, before the legislature, but something always comes up that we get beaten out of reaching this personal property problem. Perhaps the most vexed question we have in our State to-day is an equitable system of taxation of all kinds of property; and it is one that is being studied a good deal, and I think perhaps we may, in the near future, reach some plan that may be beneficial. But for me to express my mind about that just at this time, I should not care to do it, because I am not prepared to put anything in tangible shape; only I can say this much: That I think all classes of property should bear an equitable proportion, just as nearly as possible, and should be reached by a system of law that would enforce it, to reach all classes of property, whether it be a listing system or some other system.

Q. What, if any, has been the decline in the price of agricultural products in, say, the last 20 years?—A. Prices have declined in 20 years on wheat and barley and meats of all kinds fully 15 per cent, until just at the present time, or perhaps during the past year, there has been a tendency in the price of meats to increase, for the reason that there is a shortage in both cattle and sheep, not, perhaps, in hogs. The cause of it is perhaps overproduction; we are producing perhaps more, as a country, than we are consuming.

Q. (By Mr. RATCHFORD.) You say that the prices of farm products in the last 20 years have decreased 15 per cent?—A. I think they have.

Q. Has the cost of producing those products decreased in proportion?—A. No; it has not; it has rather increased. That is the trouble with the farmer.

Q. That would leave the farmer in a comparatively worse condition to-day than he was 20 years ago, would it?—A. I think, on the average, the farmers in the older sections of the country are in a worse condition than they were 30 years ago financially.

Q. In view of the improved methods of farming, is it not generally accepted that the cost of production is reduced?—A. Well, that has been attempted to be shown; that with the use of machinery, etc., the cost of production has been reduced, and I do not doubt but what that is true in the West; but, as I said before, the cost of growing a crop in the older countries has increased, and the price of the product has decreased, and the labor system has not changed; it is twice as high now, almost, as it was after the war.

Q. I understand you to say that the productivity of the soil has depreciated?—A. Yes.

Q. Probably nearly one-third?—A. Yes; and in many cases more than one-half. The cost of fertilizing has increased.

Q. Will you state that, approximately, per acre under cultivation?—A. No man that is putting in a crop of wheat or a crop of barley, where they raise it, thinks of using less than one ton of fertilizer per acre, and that would cost \$25 an acre. I do not know whether they are giving us as good goods now as formerly or not; but the price has not been far from \$25 for the last 10 years.

Q. Well, those two items of expense in a large measure explains the failure of production in the older farming sections?—A. Yes. As I said before, the soil in its virgin state was producing large crops without any fertilizers whatever. Large wheat crops were raised. I can remember when I was a boy we used to raise 30 or 40 bushels, and our fathers used an old-fashioned drag and tipped the sod over a little bit and threw down the wheat and raised a big crop. That is all. To-day you must fit your land almost like a summer fallow, using all the improved methods and machinery, put in fertilizers at the rate of a ton and a half an acre; and when we come to raise wheat for 60 cents a bushel, you can see where the farmer is.

Q. The farmer who has 160 acres usually has how many acres under cultivation in your country?—A. If the farmer has good tillable land he will have probably 100 acres of that land under tillage.

Q. And will the same fertilizer be required for raising other crops?—A. Not so largely; although it used to require about the same to grow a barley crop; but we did not consider with oats that we needed over half.

Q. Then, the item is not a very large one?—A. Yes.

Q. (By Mr. A. L. HARRIS.) You spoke about the decline in value of your agricultural lands. Is that owing to the smaller production and lower prices?—A. Yes. The real cause of the matter is, at the ratio that we were continuing on, the way we were going and driving there, the agriculture in the older part of this country—the Eastern States—was fast becoming a thing, as you might say, non est. Everybody was trying to get rid of a farm simply because there was no pay in it. They could not get any money out of it. That is, where they depended entirely upon growing cereals; depended upon the growing of wheat, barley, and oats in the old-fashioned way of farming. Every man was traveling just as fast to the poorhouse as he could get there because he was coming out every year a little worse than he was the year before. That is simply the main trouble with the farmers to-day in the Eastern States, that they have run behind, and have had to mortgage their farms, and the interest and the depreciation in prices have used them up. That is all there is to it.

Q. (By Mr. FARQUHAR.) What class of products has succeeded the cereals?—A. In our country diversified farming is fast becoming the ruling thing. Fruit growing is probably taking the place of any other business in our section of the country.

Q. What is your knowledge with respect to the extent of dairying now?—A. Dairying is paying better just at this present time in some certain sections of our State than it has for the last 10 years; and why? Simply because they have been all dried up, and there has been a less production of the flow of milk, and, of course, it has increased the value of the product. It has not been because those things have brought any better prices particularly, but simply an advance in price because they have not had the production. It makes a big difference whether you have a big crop of anything or whether you have a shortage. The supply and demand have controlled the prices largely in farm products, as in potatoes, and anything we grow, excepting, perhaps, the cereals.

Q. Is dairying any more costly in the State of New York than it is in the State of Illinois?—A. Yes; I think perhaps it is, for the reason that their land, in the first place, has not been worth as much per acre as it is here, and I think in certain portions of the West their grasses are as well adapted to it, with a few exceptions, as those in the Eastern States. There are only a few of the Eastern States that are especially adapted—their grasses—to make butter and cheese. You take Herkimer, St. Lawrence, Jefferson, and Lewis, their grasses are peculiarly adapted for the making of butter and cheese. But this year the reason the price has advanced so largely in that locality is simply because they have all been dried up; they have a short production. It never was so dry. Our State, as a whole, never has been so dry in the history of our oldest people; we never had such a drouth.

Q. Do the Western dairy products come into sharp competition with the New York products in dairying?—A. They do. I am frank to say that I think the

West has the better of the East in dairying to-day. That is, their products are sold in large quantities in the Eastern markets for more money than our people are getting.

Q. What is your success in the root crops in comparison with the West—potatoes, turnips, and rutabagas, and so on?—A. I think there are certain sections of our State that can grow potatoes and root crops, except perhaps the sugar beets. They can grow sugar beets to better perfection in California than we can, but there are certain sections of our State that grow as good potatoes as are grown anywhere. But we are not in it this year because we have been so dry, and there is going to be a shortage. The climatic conditions make a big difference, especially on farm products.

Q. Are the facilities for dairying any better in the State of New York than they are in the West?—A. I think not; I do not think they are as good. I think that there are portions of the West that excel the East in the manufacture of fine butter to-day.

Q. Butter and cheese?—A. I would not say they do in cheese, but I would say they do in butter.

Q. Is there any advantage to the New York farmer in the fact that he has a shorter haul to the New York market than the Western man?—A. Not a bit. He is worse off. A man living near Chicago or accessible to the Chicago market, is better off than the man living up in western New York.

Q. The farmer selling in the Chicago market, of course, sells at a margin below the New Yorker?—A. I suppose they do, as a rule. What I mean to get at is that a man to-day that has to depend upon local transportation between noncompetitive points is "in the soup." He can not get the fair equality of rates that exists between competitive points. In other words, the railroads calculate to make up on the poor fellow that lives in between. He is in between two fires, and they are going to make up the long haul on these short-haul fellows.

Q. (By Mr. RATCHFORD.) Do you mean that the man who is selling his grain to the elevators is in the soup also?—A. I believe he has been.

Q. Do you think he is there yet?—A. Perhaps he is a little better off than he was. I do not think he is much.

Q. (By Mr. FARQUHAR.) Do you think there is much discrimination in railroad rates in your section of New York State?—A. Well, I think there has been a very large discount made in the way of rebates to large shippers. But, of course, the argument used for that is—and I do not know but what it is a fair one, too, in some respects—if I am shipping over a line of road three or four cars of stuff a week, I certainly ought to be entitled to a little bit of consideration over the man that is only shipping one a month.

Q. Is that the view that the railroad manager usually takes in making a traffic bill?—A. Well, I rather judge that is true. If you were running a large business and a man should come to you and tell you, "I want \$1,000 worth of stuff; there is the cash;" and a man should come to you and say "I want a hundred," you would be quite apt to give that fellow a little inside, would you not? That is a thing that exists and perhaps exists on business principles, and it is a pretty hard thing to regulate, and I am inclined to believe that the fellow is entitled to it.

Q. (By Mr. A. L. HARRIS.) Is there an increase or decrease in the acreage under cultivation in your portion of the State of New York?—A. There is a decrease, especially on cereals. The growing of wheat is becoming very much decreased.

Q. I have reference to the number of acres under cultivation—of crops.—A. No, I do not think there is. I think there are other crops that are taking the place largely, perhaps, of wheat and barley. For instance, they will now go into small fruit growing. They keep that land under thorough cultivation and they grow some other kind of crops. A great many people are raising a good many beans in our country now that did not raise beans a few years ago; and so the thing is being changed around somewhat. I do not think there has been any decrease in the cultivation of the farms, as a rule: there may be exceptional cases.

Q. Have you any knowledge with regard to the West and Northwest on that subject?—A. Well, only as far as my own personal knowledge is concerned in regard to some land we own there. There seems to be an inclination to get into producing wheat just as fast as possible, and I think that generally prevails. Anybody owning any land out there wants to be getting something out of it and getting it into condition to sell. If a person wants to dispose of his land out there he must have it under cultivation. It must be put in shape so that a man can produce something out of it. I think there is an increase of the agricultural lands under cultivation in the West.

Q. Has that developed more rapidly than the wants of the country demand?—A. In some years.

Q. What effect, if any, has that had on prices?—A. It has had the effect, undoubtedly, to make, perhaps, some lower prices, although I think the production of wheat is growing visibly less all the time in the East, and there must certainly be an increase in the West to keep up the ratio that we have had, and I know from personal experience that you can grow wheat in the Dakotas—and in those wheat lands out there they can grow wheat for 50 cents a bushel, and even less, and make more clear money out of it than the farmer could grow it in the East at 75 cents.

Q. What have you to say in regard to the organization of agriculturists, its benefit, and the objects sought?—A. My idea in regard to that matter might differ from some other people. My idea is that the great need of the agriculturist is organization and a more intelligent knowledge of the affairs of the country and especially of his own business. I believe that, from my own personal observation in all the counties; and I am told—I do not say this for myself, but I am told this by one of the institute force—that wherever the grange—I am speaking now particularly of the grange or the farmers' clubs—wherever they have a good, firm hold in the county, they are the most progressive farmers, and that they are nearer up to date on all the leading questions of the day than in the counties where they have not any; and from my personal observation, I am sure that with the organization of the farmers there is not only a better feeling among them, but it is also beneficial to them. I do not look at it perhaps as some do. I do not argue the organization of the grange especially on the ground of its financial benefits as much as I do upon its educational and social benefits.

The great social benefit of the organization is that it brings within the circle the farmer's wife and his son and his daughter; brings them all in as one family inside of an order where their rights are all equal. And, of course, with the touch of shoulder to shoulder in discussing subjects which pertain to the farm and household and other business, it can not help but be a benefit; and socially it is a great benefit, because it takes the hard-worked housewife—as many of them are on the farm, brought up to hard work—it takes them out away from that, uniting their minds at least once a week or once in two weeks, and makes a new life to them—opens up a new avenue of thought and life to them; and, as far as I can see, it has advanced the farmer very much in our State since the organization of the grange. I consider it one of the greatest organizations for the farmer that has ever been effected, and it is destined to do a great deal of good for the farmer. As they become more intelligent and understand better what their needs are, they will be better prepared to meet all these great questions that are affecting the country to-day. Of course, all I can point you to to show you what the order has done is to say we got quite a finger in the pie in getting our Department of Agriculture and getting the commissioner appointed. We got an assistant in there that used to be the head of our National Grange—a grand, noble man; and it has done a great deal to build up the farmer and is destined to do a great deal more. We are organized now from the East to the West and from the North to the South, with connecting links.

Our organization is not a political one. We do not advocate politics in the least, and political discussions are never held any further than discussing questions of political economy or things of that kind. Partisan politics are never discussed in the order, and its ultimate objects are sociability, fraternity, intelligence; and, also, we aim at the beneficial part of it.

We have organized fire-relief associations throughout our State, especially, that have saved to the farmer thousands and thousands of dollars during the past 10 years in the way of insurance on a good, safe plan; carrying in our county, now, over \$4,000,000 of insurance just as good as the mortgage on any first-class farm in the county, and there is no squabbling. If anyone has a fire he gets his pay; no big office rents to pay; no big salaries. Our business is done on an economical, but not any niggardly, plan.

Q. (By Mr. FARQUHAR.) You say you discuss in the grange the economical and social questions. Have you ever discussed taxation?—A. There has perhaps been as much discussion of that as any one subject. There is a difference of opinion. Some persons are in favor of exempting personal property, and there are others who favor taxing it, and, of course, we get up against the stump where we are divided.

Q. You can not get the farmers all of one mind?—A. It is pretty hard to do that, the same as other people. They are of one mind that land is paying an unfair proportion of the tax of the country.

Q. They have settled on that proposition?—A. That is settled.

Q. Why do they not take the next step through organization to remedy it?—A. They probably will if you give them time.

Q. You are in hopes they will?—A. We are in hopes of doing it. It is a non-partisan question and one that should have the best thought of the best men we have in the country to-day. It is one of the leading questions.

Q. (By Mr. RATCHFORD.) You spoke of personal-property taxation. Can you state to the commission what percentage of the personal property of your State taxes are paid upon? Have you any reliable information on that?—A. I have; and I speak from memory—I do not think that the personal property of our State is paying over one-quarter; I do not know as it is that.

Q. However, the contention of the farmer is that if personal property was taxed according to its value, as his possessions are taxed, the burdens would be lightened on him?—A. Yes. We are not finding any fault with our State taxation; it is merely nominal, only fair. The trouble is the local taxation. Lots of our own people are as much to blame for that as anybody else. We go on and do things locally. I live in a rural town where there are several little villages. I remember when we only paid \$1,000, equalized at \$1,000 on tax. That was a big thing locally. To-day we are paying over \$6,000. And what is the reason? It is largely on account of bills that are made that are unwarranted, a great many of them. In other words, we have a lot of fellows in office, and one says, "You tickle me and I will tickle you: you vote for my bill and I will vote for yours;" and they pass it through.

Q. You are speaking of your board of supervisors?—A. Board of supervisors and town boards. It is a wheel within a wheel, and in order to destroy the business you have to begin at the bottom and follow it right up. It will require courage to do it, no doubt of that.

Q. (By Mr. A. L. HARRIS.) That would be done at the ballot box?—A. It could be if it came to that point.

Q. Who fixes the rate of taxation for your county?—A. Our State assessors. We call them State tax commissioners.

Q. Who elects your State assessors?—A. They are appointed by the governor.

Q. Who fixes your rate of taxation for the township?—A. The supervisors of the different towns. We call them supervisors. They are under some other name in certain States.

Q. How are they appointed?—A. Elected by the people every 2 years now; it used to be less.

Q. (By Mr. RATCHFORD.) They fix the value?—A. They fix the value with these State assessors, who are appointed by the governor.

Q. (By Mr. A. L. HARRIS.) Who fixes the rate of taxation on the property after it is valued?—A. The supervisors.

Q. Who elects your supervisors or appoints them?—A. The people.

Q. That is, they fix the value on the people who elect them?—A. What we call the county board, composed of one supervisor from each town in the county, meets with the State assessors and they fix upon the ratio or equalization for each town in the county.

Q. That is for real estate?—A. That is for real estate.

Q. As to your personal property?—A. Our personal property—get it, if you can—by the assessor.

Q. Are not the wants of the present generation much greater than the wants of the past generation, so far as men go?—A. There is no doubt of that; but you would not want our people to go back to the recollections of their forefathers—going to church barefooted.

Q. If you enjoy the luxuries, do you not have to pay for them?—A. That is true; but if other people can afford these luxuries, why should the farmers be deprived of them if they work hard and share the burdens of the Government? Why should not they have an equal share with the rest of them?

Q. The tax raised in the county—where does that go to?—A. To the county fund and to support the poor.

Q. Does any of it go to the construction of bridges?—A. Yes; there is so much of it used for bridges and for the construction of public buildings, like our county buildings. Of course, when we build a new building, that is raised by a special appropriation; but there is so much set aside for repairs every year; but, as I said before, the large excess of taxes throughout the State of New York is largely local.

Q. Do you not hold your local officers who execute the law responsible?—A. We do try to, but what falls so heavily on us is the unequal opportunity of getting at the personal property, so much of it escaping taxation, and it is shouldered on the real estate.

Q. That is in the execution of the law?—A. It is, largely.

Q. And it is avoided how—by perjury?—A. We do not have the oath. The assessor says, "I will have to put you down about \$5,000 personal." "I have not got it; you are wrong." He will go into the house and bring out some bonds. "My money is in United States bonds." He will get these bonds. They will pass these bonds around, and by and by they will get back. They have an understanding. That is done time and time again. A man who has money works every way to get rid of paying taxes.

Q. (By Mr. PHILLIPS.) That is, some men do?—A. Lots of them do.

Q. (By Mr. A. L. HARRIS.) Now, I do not know but what I had better ask you what is the relative cost of production—what is the cost of production, including interest on capital, cost of labor, and other charges, of agricultural products?—A. You want me to tell you whether it has been increased?

Q. Yes; increased or decreased?—A. The cost of production has been increased from the fact that the virgin soil has departed, and we have to keep up a better state of cultivation, have to use artificial manures in order to keep up the fertility, and, of course, the cost of production has been increased. Interest has been lowered.

Q. What have you to say in regard to combinations to control prices of farm products; combinations of men and money, I will say?—A. Do you mean to call in with this the undue speculation?

Q. I have reference more to combinations of railroads and elevator men?—A. We do not see as much of that in our State as they do in some other States. It does not affect us so materially. Only as regards local business, as between non-competitive points. We are not affected by that so much as they are in the West, because we have such a competition; so many different lines of road, with the old Erie Canal as a balance wheel, that they can not pinch us so hard as they do out West; only as between noncompetitive points. If they catch us anywhere where there is no competition, in between lines, we have to take it. That is all there is of that. They will put on to us just all we will stand.

Q. You have an interest in the Northwest; what observation have you made there?—A. I think that they have taken advantage of us. The railroads and elevator men have undoubtedly taken advantage of the producer to quite a large extent; but I think that some laws that have been passed have been tending to get hold of them pretty sharp out there, so they are doing better than they used to. They now ask only about half, where they used to take two-thirds of it. On the whole, I think these combinations are not to be countenanced; in other words, they are detrimental to the best interests of agriculture.

Q. What effect, if any, does dealing in futures, puts and calls, have on the prices of the farmer's product?—A. I think it has a very bad influence indeed, and it is a thing that ought to be regulated by stringent laws. If a man wants to deal in that commodity let him deal in what he actually owns. For instance, if a man buys 10,000 bushels of wheat, let him buy or own 10,000 of wheat, but do not let him buy 10,000 bushels of wheat and control 50,000, as it has a tendency to make fictitious values, and has a tendency to keep up an unrest in the prices of things that do actually exist, and affects the producer more or less injuriously.

Q. If you have an opinion as to the extent and variation of the markets, I would like to have you develop that?—A. I could, perhaps, say a few words on that subject. I believe in the future of this country. We are a country that produces more than we consume, and it should be a part of the plan and purpose of our nation to attempt, which we can readily do, to put our products in the Old World, and we can do it at prices that they can not compete with, and can give them a better article than they ever raised. The opening of our grain cereals in China is going to be a great benefit to this country in time—it will take time to do all these things. I will state the advantage to be drawn on one line, and you can apply that to other things as well as the one I tell about, and that is fruit. Now, our trade is being sought to-day in Germany, in France, and in England. In fact, Canada and this country are the fruit-producing countries of the world, and they are depending upon our fruit to-day more than ever before. You can just watch the exports every year and see what we are exporting, and how our exports are increasing from year to year; and the only question to solve is how to give these people an honest product, to give them quality that is as good as they can produce for less money than they could put it in for, and there will be no trouble about the control of the market. If the people want our stuff, they will buy it if you will give the quality and the price, and with the opening of our trade in foreign countries we are bound to be the people of the whole world to furnish these people with their products, and it will furnish us the means of making up all this supply and demand we are talking about. We will have the demand if we will give them the

product and give them the price, and it is opening up more and more every year, so I have no fears whatever in regard to agriculture if we do not undertake to put on some protective restrictions in some shape that we can not get into that country. If they will give us the chance to get in that country, we are not afraid of the whole world; we can do it in price and quality; there is no doubt about it.

Q. Have you any remedial legislation that you would care to suggest to the commission? Look at Part III, and if there is anything there that you care to make any suggestions on, we would be glad to hear it.—A. Regarding these trusts and combinations, anything that makes a monopoly of a product should be discountenanced by the American people. That is my judgment, and that is the position of the farmers in the State of New York. There is quite a difference between what is called monopoly and cooperation. They are two distinct things. Any business that is done with the prospective view of creating a monopoly against the producer or consumer of products should be discountenanced by the American people. I will say that much, and on that line you will find the Grange will work with you, or any line you may develop.

Regarding the oleomargarine laws, we have already a good law in our State, and it is being very well carried out, and should be extended throughout the whole country.

In regard to the operation of the pure-food laws, the National Grange at its last session passed a resolution recommending legislation securing pure-food laws. I believe we are the only nation on the face of the globe that has no law protecting its food products. It is a very important thing. A man starts out and produces a certain article of food; he starts out with it pure; he puts it out as a pure food; some smart Aleck comes out and gives an article which looks like it and puts enough adulterant into it to ruin everything, and in this way this fellow undersells the other; and that is what the whole country is doing; they are adulterating products so it is crowding out the manufacture of good goods.

Q. You want Federal legislation on that?—A. Federal legislation.

Q. And uniform State legislation?—A. We want uniform laws to protect food products—everything that goes into man or beast.

Now, regarding this last question here: "Existing Federal and State laws to prevent the spread of disease among domestic animals"—there is a limit to that. I believe that there are very many men in our own State to-day who have been treated unfairly under the existing State law regarding tuberculosis. There was a member of the institute force, Dr. Sinead, who told me only the other day that this commission appointed by the State, that was traveling about the State, was creating a great deal of disturbance, and, in many cases, doing a great injustice to the dairymen. He said there was not a single case—hardly a single Jersey in the State—but what would respond to the tuberculosis test if it was applied just at the right time, if the animal was just in the right state. He said, giving an example, one man had a herd of 100 Jerseys, and he was sending his milk to New York, and these fellows went up there and quarantined his herd—claimed he had a showing of tuberculosis. He said, "I went up and examined them myself, and I said his cattle were all right." But that herd was quarantined, and there he was with 100 head of cows, and he had to keep them or subject himself to the whole of them being killed at the expense of the State. On the other hand, there are cattle that are diseased, and the fellows are mighty anxious to have the State kill them and pay for them. It is something that works both ways, and wants to have some careful looking into; and some Federal law should be passed regarding that. Of course, I am not prepared to say what ought to be done, but it ought to be looked up.

(Testimony closed.)

WASHINGTON, D. C., January 5, 1900.

TESTIMONY OF MR. JOHN FRANKLIN CROWELL,

Writer on economics and sociology.

The commission met at 11 a. m., Vice-Chairman Phillips presiding.

Mr. John Franklin Crowell was introduced as a witness, and being duly sworn, testified as follows concerning agricultural topics:

Q.—(By Mr. A. L. HARRIS.) You may state your name, place of residence, and occupation.—A. John Franklin Crowell; 75 Wilson street, Brooklyn, N. Y.; by occupation I am a teacher and a writer on economics and sociology.

Q. You may state, if you will, what has been your interest in the industry of agriculture in this country.—A. My interest has been wholly with the scientific side of the subject; rather from the standpoint of the economist and sociologist. I have been interested in the general conditions of the rural population, the movement of the population from the cities to the country, and vice versa, and the migration of agricultural peoples in modern times, particularly. These are the questions with which I have interested myself and on which I should be glad to speak before the commission.

Q. You may state, if you will, to what extent you are conversant with the industry of agriculture, personally.—A. Well, I lived on a farm most of my life, until I was 21, and at times managed the farm for my father, so that practically I know how to farm—that is, I did at one time—and have ever since been interested in the subject from a scientific standpoint. My interest in the subject has not been financial in any sense, but wholly that of a scientific student.

Q. Have you been a contributor to periodicals on subjects pertaining to agriculture?—A. I have written for the Political Science Quarterly a series of articles on certain agricultural questions, mainly on the sugar question. I have also written on agriculture in Europe—the economical aspects of agriculture in Europe—for the Annals of the Academy of Political and Social Science at Philadelphia, and have equipped myself in other directions in the study of agricultural questions in Europe.

Q. That study was from personal observation?—A. Yes; from the visiting of farms, and the study of transportation questions, as they relate to agriculture, in the office of the German department of the interior and the English board of trade offices.

Q. Have you examined the plan of inquiry adopted by the subcommission on agriculture of this commission?—A. Yes.

Q. Are there any topics in that plan that you can give information upon?—A. I think there are certain topics to which I have given special attention, and on which I should be glad to state my conclusions.

Q. Please do so; and each topic that you take up, follow it out to your satisfaction in giving the information.—A. Beginning with Part I, No. 17: "Tendency to colonize—to preserve foreign customs and languages." In the United States a large part of our agricultural labor has come from more or less systematic colonization. These "colonies" have taken up carefully selected tracts of land, and thereby laid the basis of a high degree of economic prosperity. They have not selected the land as the individual selected who dislodged himself from Pennsylvania or Massachusetts and went to traveling, but they have selected it through carefully chosen agents, as a rule. My observation of these colonies is that they preserve their agricultural instincts and their agricultural abilities on a much higher level than the American farmer, who has moved from the East to the West. Take the historic case of the Pennsylvania Dutch, who are undoubtedly the finest farmers in the United States to-day, and have maintained the country in the vicinity of Lancaster, Reading, Allentown, and so on; they have maintained their industrial enterprises amidst all changes of prices, rates of interest, and so on, so as to increase their wealth, maintain their standard of agriculture, and keep up the standard of living, while other sections of the country have deteriorated and lost ground, especially in hard times.

Q. (By Mr. CLARKE.) Is that the section known as Chester Valley?—A. Chester Valley is largely English and Scotch-Irish—further south. It is the section known as the Berks section, Lancaster section, especially.

Q. Along the main line of the Pennsylvania road?—A. Yes. After you strike the Susquehanna. York is Pennsylvania Dutch. That is the locality with which I am most familiar. I have lived and traveled a good deal among them.

Q. (By Mr. PHILLIPS.) Is there any special advantage of the soil in that section of Pennsylvania over the soil of other States in the Union?—A. There are special advantages in Lancaster County particularly, but the capitalization is high. An acre of land 80 miles from Lancaster sold for \$200, 15 years ago. Capitalization is high, but at the same time they have always been able to make a very reasonably satisfactory profit, and even a high profit, out of their land. So it is the adaptability on the part of the farmer that enables him to adjust himself to great changes, just as the English farmer does constantly if he is free to do it, if he has not any lease that runs 15 years ahead that obliges him to put in a rotation of crops when there is little sale for that particular crop. The American farmer is free to adjust himself, if he has the agricultural skill and agricultural instincts and keeps himself informed, and maintains himself in a good condition; keeps up house, barns, stock, food, and clothing, and lives well—he is able to adjust himself almost immediately to the changes; just as the Lancaster and Berks farmer turns to tobacco

when grains fail, or something else. Now, these are the people who have practically colonized that section and kept it colonized for 100 years, and I think their success as farmers is largely due to the fact that they have not taken part in that tendency on the part of agricultural people generally to enjoy the luxuries as distinguished from the substantial. That is, they live well—on the top of the pile, so to speak; but they do not waste their resources in luxuries; they put the surplus capital into the farms or into the education of their children. There is where their strength lies. That is the case with the colonies in the Northwest.

Q. (By Mr. FARQUHAR.) What do you mean by luxuries? Trotting horses, fine equipages, visiting watering places, etc.?—A. The purchase of a buggy for every boy as he becomes 18 years of age.

Q. (By Mr. PHILLIPS.) Could that be done in New England, or the Western Reserve of Ohio, in a more level country?—A. Yes; if their customs and race and colonial solidarity had been great enough to hold them together to resist these encroachments on purely business capacity.

Q. Is not the soil in the eastern part of Pennsylvania among the very best in the United States for a diversity of crops and to maintain such a system as you speak of?—A. That is true.

Q. That could not be maintained so well in a level country, could it? West of the Allegheny Mountains, could they diversify as much, or in the hills of New England, as much as in Pennsylvania?—A. I think so. The nearer to the city, the greater the chances for diversity are. In the West, in the rich prairie lands, they have had the same advantages of soil, but have gone on and exhausted the soil until they were obliged to rotate crops in order to get a return on the capital. Take the Scandinavians of Minnesota and the West; there is the same strong colonial solidarity and the same vitality and the same fidelity to the interests of agriculture as a domestic institution. The farm unit is the life, center, and soul of the community. Their lands are, of course, good, but at the same time the high level to which agriculture has been brought in the Northwest and the prosperity of these farmers is due, in my estimation, to the prevalence of that colonial solidarity among them, which resists causes which impair economic efficiency in agriculture.

Q. (By Mr. FARQUHAR.) Do you not mean also the great frugality that is found among them?—A. Yes; of course, they make money, and they save their capital. On the other hand, you have not the development of that kind which has exhausted the capital of farmers in many other sections of the country. That is the general tendency. The process of exhaustion of rural capital has gone on until men had to go to town because they could not borrow any capital to keep up the farms, and could not utilize what they had. They either had to take up new lands, where little capital and labor were required, and land that would enable them to produce with very little capital, or they had to go to the city where they found no capital to utilize, but had to work for wages. You do not find this process going on with these colonies of foreign peoples. They have been the mainstay and bulwark of progressive agriculture. That is my point. And the same thing is evident in the Huguenot colony of North Carolina, which came over from the valleys of the Alps, and which is making itself felt in exactly the same manner. It carries its standards of agricultural energy with it and applies it to the soil and resists everything that would detract from their high level of prosperity.

Q. (By Mr. A. L. HARRIS.) What are their habits of industry?—A. The most desirable in the world. These people in the Northwest, you refer to?

Q. I referred to these elements in Pennsylvania, the Germans and the Scandinavians—all.—A. As a whole, it seems to me they are highly industrious; that is, they work steadily; not any more days in the year than the people on the railroads of New Jersey do, but they attend to their business, is what I mean. They preserve their property; they do not leave their implements lie out in the field after they have used them, but put them away; they keep their houses and barns painted and in repair; they put a part of each year's surplus on the property to maintain it, so the depreciation does not amount to much for any particular year; it is spread out over a series of years.

Q. Do they economize their labor by looking after their crops when they need their attention?—A. Yes. I should judge, from the Pennsylvania people particularly, that they plant and sow such crops as succeed each other in the course of the crop year, so that no crop suffers for lack of attention when it is ready for harvest.

Q. Do they arrange their work so that the greatest economy is at all times apparent?—A. Yes. I should say that is a very high grade of economy, in the use of machinery as well as in the employment of labor.

Q. (By Mr. CLARKE.) Do you know any place in the United States where the farmers plow in clover for fertilizing the soil to the same extent that these Dutch farmers do in Pennsylvania?—A. I think the practice is growing very rapidly in North Carolina, in the Piedmont section, as well as in the eastern section, between Raleigh and Goldsboro.

Q. Do you not think the extraordinary fertility is largely due to that practice?—A. I do, largely.

Q. That might be done in all parts of the United States?—A. I think so. I am not so sure that clover could be raised to as much advantage in all soils. I think there is a substitute for it in some sections.

Q. (By Mr. RATCHFORD.) You spoke of the Scandinavians in the Northwest. What part of their success is due to their own economy, if any, as compared to that which is practiced by the farmer of New England and the Central and Southern States? Are they more frugal, more industrious, harder working, and more careful of their resources than the farmers in other sections of the country?—A. They are more given to continuous labor. Instead of hastening through with the work and having a rest period ahead, they take their pleasure in with the work. The traditions of the Scandinavian farmer are brought over with them. The economic traditions of the European farmer are one of the most valuable assets in American agriculture. The economic traditions of the New England farmer are entirely different. There is much more of the speculative in him, more of a disposition to anticipate prices, to meet the supply and demand through the distributive system than to wait for the ordinary course of nature to produce. In other words, he is a man of the city rather than of the country. Another part of your question was the application of resources. That might be answered by saying that it seems to me the Scandinavian farmer has had centuries of training in the effort to make a dollar go as far as possible; he had to do that in his little patch of land lying on the hillside or in the valley outside of the city in Scandinavia. That same talent of making much out of small resources is brought with him and applied in this colonial community of which he is part.

Q. You are familiar with the conditions of farming in the Southern States?—A. I lived there 7 years, and am fairly familiar with them.

Q. The farmers of that section of the country are perhaps less prosperous than in the central or eastern or even the northern or western sections?—A. Far less.

Q. Is it your judgment that the Scandinavians of the Northwest would be more successful in the Southern States, if transferred there and colonized, than the farmers of the South are at the present time?—A. No; because you take them out of the climatic conditions that have made them, and they would let themselves down very easily. The conditions in the South seem to me to be substantially this: The generation of able farmers has disappeared, and the new generation has not arisen. There is where farming stands; nobody to take possession of it. It lacks directive genius, lacks managing ability, and therefore capital does not go in that direction. The rewards of manufacturing are too great, the advantage of laboring for wages in the factory villages are too great, compared with the isolated conditions in the villages of the South, and therefore capitalists aggregate themselves in manufacturing, and as few people remain on the land as possible.

Q. (By Mr. CLARKE.) Do you not think the building of manufactories in the rural districts of the South will tend to encourage agriculture?—A. Undoubtedly; it comes to be built up from that center, and agriculture is improved more or less around the manufacturing village. The old system was built up on the basis of the foreign demand for cotton; the new system has to be built up on the basis of domestic manufacture as the market chiefly, and the new generation of Southern farmers will have to grow up to that idea. The old generation can not grasp it. You can not expect a man to change his agricultural ideas after he becomes 40 years of age. We are made at 40, and can not be made over afterwards.

Q. (By Mr. PHILLIPS.) We may grow?—A. Yes; in that line we have laid down we may fill out and develop. That, to my mind, indicates the importance of developing the South along the whole line, and the necessity of the South working out its agricultural salvation along this new line.

Q. (By Mr. A. L. HARRIS.) You think there is a possibility of its doing this?—A. I do.

Q. Will that be in the early future?—A. Just as early as the generation grows. I mean the new generation on the Southern farm, both colored and white.

Q. (By Mr. CLARKE.) It was in evidence before us yesterday that there is a new tendency among industrially educated negroes to go into somewhat remote districts, largely inhabited by blacks, and establish themselves upon small farms. Do you look upon that species of colonization with favor?—A. Very much, indeed; and the only thing that can prevent it will be the lack of education—I mean the

lack of wise direction educationally. If the Southern States fail to give the children of these people the proper educational privileges in the locality, that tendency is going to be checked, because the most ambitious character in the South to-day is among the colored.

Q. (By Mr. A. L. HARRIS.) Have you any information in regard to this colony at Farmville, Va.? There appears to be a colored population at Farmville that is making some rapid improvement.—A. No, I am not informed. I know of the experiment, but am not sufficiently informed to speak of it.

Q. (By Mr. FARQUHAR.) What kind of education would you advise for the South; the experience of the farm itself as they may drag along and gradually come into better habits of treatment of the soil, etc., or do you think education furnished by the school proper, which may last over 2 or 3 years, should be the primary and better plan of bringing in the southern farmer?—A. I should say that an education that is not first disciplinary would not be of much value to the colored people; and secondly, an education that is not primarily agricultural in itself would detract from their usefulness in agriculture rather than improve it; that is, it would probably cause them to leave the farm. So that any educational scheme that would be successful would have to first deal with the three R's, and then, secondly, with the plants and the soil and the atmosphere and so on. The child in every agricultural community ought to be taught among the first things that it learns, after it can read, write, and figure, what the resources of the family are, what the resources of the community are, what can be gotten out of it, and how to improve in the utilization of the natural resources of the community.

Q. Of course, as Southern farming stands now, it is merely a matter of grubbing for existence and life?—A. Yes.

Q. As to the education provided at Hampton and Tuskegee and other places in the South for the negro—would you regard the time spent in these schools preparatory for agricultural life as more advantageous than a lifetime simply on the old experiment lines, doing better than he did before?—A. Undoubtedly; but the educational problem must be finally worked out in supplying the locality with higher educational advantages.

Q. We presume, from testimony, that there are some fairly well educated farmers who have come out of these two institutions. Is it not practically a fact, all over this county, that one good farmer, not scientific, we may say, but a good farmer and the best in the community, is the leader of the community?—A. No doubt about it; but he is probably scientific in his own way, though he may not know anything about chemistry.

Q. Would it not naturally follow, if this education is fostered in the South—this very plan, whether for whites or blacks, ought to be the proper machinery to start this new epoch?—A. Yes; I agree with you.

Q. In other words, do you not think the school is of a greater advantage in making the farmer in the present age than it was a few years ago; book accounts, knowledge of banking, commerce, soil, and everything else, that it is really leading a person higher and higher above the old practical way of simply learning from those who preceded?—A. Yes.

Q. (By Mr. A. L. HARRIS.) Are the public-school facilities and the curriculum of the common schools, where the agriculturist usually gets his education, sufficient for the agricultural people?—A. By no means. The agricultural people are the poorest educated people in the country, and in Pennsylvania they get about half per capita from the State fund what they get in Philadelphia; that is, the rural districts get half as much per pupil as is paid per pupil to Philadelphia. If the educational facilities of the country were transferred to Philadelphia, New York, or Boston the people would move away in a mass; if they were obliged to remain there they would abandon such a school system the next day. No public-school system could exist if it did not maintain a higher grade of educational facilities in the city than is maintained in the country. I do not think that could be gainsaid.

Q. To what extent does the farmer take to technical education along the line of agriculture?—A. If it is rightly planned and properly taught he will take an indefinite amount, but if it consists in feeding 70 different kinds of food to 80 different kinds of pigs he will not take much stock in it. You understand what I mean—technical education run mad. He can not keep up with all that combination and permutation, as we used to learn in the arithmetic.

Q. Is it not profitable for the farmer to have a good technical education applicable to agriculture?—A. I think it is necessary. The application of science to agricultural processes is necessary.

Q. Is not a great deal of the improvement we now see among agriculturists largely due to the education they have received both at agricultural colleges and

the technical education which they may be taught in other schools aside from colleges?—A. Undoubtedly; but my observation leads me to believe that the instructed do not go back to the farms, and for that reason distinctively agricultural institutions have not found their normal function yet.

Q. (By Mr. KENNEDY.) How far has this technical education been a factor in the colonial localities you speak of?—A. It amounts to nothing practically as far as the Pennsylvania Germans are concerned, and in the Northwest, I have understood, from what I have heard a representative of one of these schools say, the Scandinavians are very much more apt to avail themselves of these advantages than the Pennsylvania Germans have been. I think technical training and the educational college have proved a larger factor in the Northwest than they have in the Eastern and Southern States.

Q. (By Mr. PHILLIPS.) And yet in this German colony they are more advanced in agriculture than they are where they have had more technical knowledge?—A. Yes; because they are nearer the larger markets, and respond readily to the demands of the market. Location has the most to do with it.

Q. They are learning by experience what others may be taught by science?—A. Yes; and that is all the technical institutions can do, to gather together the experience of the locality and the world, and apply it in such a way as to enable the farmers to make use of it. In this way the sons and daughters go to college and study, and in various other ways, by distribution of documents showing the results of experiments, and farmers' institutes.

Q. (By Mr. A. L. HARRIS, interrupting.) You have been in the lecture field before farmers' institutes?—A. A little, not much.

Q. How many years have you been at the business of lecturing before farmers' institutes?—A. I have done so only incidentally.

Q. You can not state, then, the improvement you have observed on account of the farmers' institutes?—A. No; I can not state to what extent that particular agency has resulted in improvement, though I can state that the localities with which I am most familiar, localities in the East, have made rapid advancement in the last 10 years, both in the condition of agricultural labor, in the capital earned by farms, and in the general improvement of the locality; that is, the ability of farmers to send their children to higher institutions of learning.

Q. What has been the effect, in your opinion, on the farmer, of organizations, such as the Farmers' Alliance and the National Grange? Have you made any observation along that line?—A. The main effect has been to oblige them to look at the relation of agriculture to the world market and the distributive system, with which agriculture has to reckon constantly. The grange movement and the grange legislation in the Northwest, the Farmers' Alliance of the South, and the Wheel in the central South, and almost every agricultural organization has been called into existence by the necessity of explaining why the farmer was getting so small a portion of what the consumer paid for farm products, and they have dealt with the question in various ways in the course of the last 15 or 20 years.

Q. Beneficially?—A. Largely, to themselves; not to other interests in every case. In spite of the failure of the Potter law to reduce railroad rates, I think their influence has had a helpful effect on transportation. As a law it was a failure, and they have also recognized that it is impossible to deal with discrimination from the standpoint of the individual Commonwealth. You remember the effort made by Pennsylvania to prevent discrimination; they had the best talent employed; the strongest and best newspapers in the State were enlisted in their interest; but it practically amounted to nothing because we came to see very quickly that the larger part of commerce was interstate rather than State, and that State local rates were based on State rates, competitive rates.

Q. Has not organization among the farmers raised the standard, not only of living but of profit to the farmer?—A. Undoubtedly, by improving his purchasing power. He has become a more intelligent purchaser in that way, and then it has given him a larger view of his function as a member of the community. He has felt that the agricultural interest is so intimately connected with all other economic interests that he must maintain a high standard of living in order to assert his equality, in order to preserve his social efficiency as a member of the nation.

Q. Has not organization among the farmers to some extent prevented the migration of the young men from the farm to the shop or office?—A. Yes; I should say it has.

Q. It has prevented the farmer boy from looking on the dark side of agriculture?—A. Yes; has given him association with his fellows. Instead of seeing no opportunity for himself as a leader, he has found an opportunity in the very fact of social organization.

Q. What has been the tendency of the intelligent farmers' boy. Has it been to remain on the farm, or has he, as a rule, heretofore gone into a profession or business?—A. I think the general tendency has been toward the professions and business of the city. Many intelligent farmer boys are drivers of trucks, street-car drivers and conductors; many of these positions are filled with farmers' boys; and the Navy is looking after farmers' boys now, and has enlisted a considerable number of them to man the vessels and make up crews.

Q. Is that advisable?—A. Yes; from the standpoint of the Navy.

Q. Does the farmer boy by leaving the farm and going to the town get a greater number of days employment, and thereby a greater profit at the end of the year?—A. Yes; as a rule, he does, if he finds employment. I think he is always capable, and as a rule he makes a much more efficient employee than the boy who has been city bred, and therefore he is naturally selected for his fidelity, for his perseverance, for his desire to make things succeed.

Q. (By Mr. PHILLIPS.) It is not really essential for a very large per cent of the farmer boys to seek other employment? Being raised on the homestead where there is a family of five or six boys, and not having means to purchase a farm, do they not seek other employment to a large extent? By the very nature of the thing, the circumstances which surround the farmer boys, are they not compelled to seek other employment?—A. Yes; and there is nothing alarming in it if he is free to go and free to return, it seems to me, provided a dollar of capital put into a farm holds out as good a prospect of profit to the boy as a dollar put into other enterprises in the city. It depends, in the long run, upon whether capital is as profitably invested in agriculture as elsewhere. In France you find the farmer's boy going to the city and working to accumulate capital, and going back and buying land, buying a little homestead; so that when work is a little slack in the city, or as he grows older, he can fall back upon that as a refuge and a place to maintain himself. There, you see, the movement of capital is to and from the city, and the boy is naturally going to fall back upon the place of his early associations. The city furnishes very few such attachments. In this country that process has not begun to develop yet. Out of the development of transit facilities from city to country, in which you can take advantage of flush times in the city and country, such result is likely to grow, it seems to me.

Q. Can you give the commission any information as to the comparative earnings of capital engaged in farming and other occupations?—A. Perhaps the best thing I can do is to take this statement. These figures are made up from the census of 1890, and they are figures by Professor Emerick, of Smith College, and can be found in his book on Agricultural Discontent in the United States.

Comparative importance of farming in the United States.

Industries.	Capital.	Workers.	Value.	Products (per capita).
Agriculture.....	\$16,000,000,000	8,466,363	\$2,460,000,000	\$290
Manufactures.....	6,525,000,000	4,712,622	4,210,000,000	693
Mining.....	1,340,000,000	636,419	471,000,000	740

Agriculture has invested \$16,000,000,000, has 8,466,363 workers, and the annual value of the product is \$2,460,000, the product per capita is \$290.

Q. Per capita of workers engaged in the industry?—A. Yes.

Q. (By Mr. FARQUHAR.) The \$290 is the product?—A. Yes, per capita. Manufacturing is represented by these figures: \$6,525,000,000; only about half as many workers as agriculture. The product is not twice as much, but approaches that; the product per capita is nearly three times as much. Mining, of course, stands somewhat by itself as being more purely speculative. Now, you can see the farmer's boy, if he had these figures before his eyes, would not decide in favor of remaining on the farm. If you are going to go by general averages, this is a decisive argument in favor of moving to the city to get some of this extraordinary return on capital and labor in manufactures.

Now, I am not speaking of the cause of these results, but simply pointing to the fact that this corresponds to the general movement in this country. The main reason agriculture has expanded in this country is that we have had free land, and have admitted free labor from foreign countries to occupy this land. That probably accounts for the extraordinary development in agriculture; but the

extraordinary returns on manufacture are so much greater than those on the same amount of capital invested in agriculture, that that constitutes the great problem at which we are working; that is, we want to know what it is that causes agriculture to give so much less per capita as a return than goes to manufacturing.

Now, in answer to that question, I should say that we must remember that in agriculture the principal that governs prices and, therefore, the return on investment is competition; but in manufacturing, after a certain limit of competition is reached, the inevitable result is combination, and the combination has come about, not so much on account of anything that existed in the productive process, but on account of the difficulties of distributing or marketing the product. The beginning, the spring and source of combination, is found in the effort to market products in such a way as to give an even continuous return on capital, whether invested in agriculture or manufacturing. Manufacturers run ahead so far as to produce far beyond the demand of the market, and every 10 years or so bring to the country a depression in prices, ruinous to all. We see the importance of something in the way of a regulative. There is where the combination comes in. Between the producer and consumer lies the distributive system, and the principle that governs the distributive system is the principle of combination, while the principle that governs in agriculture is competition. In agriculture prices tend to remain near the cost of production; in other words, the lowest level of productivity—lowest level of efficiency of capital is found in agriculture. Manufacturing tends, after it has spent its competitive energy, to combine and organize the interests with a view of controlling the production in the interest of more regular prices, more regular process of development, more regular prosperity; manufacturing tends toward a higher and higher—toward a maximum of return on capital and reward for labor.

Now, in the distributive system which we are thinking of in connection with agriculture, the principle of competition prevails. When you have merely the small community in which the farmer brings his products to the home market from the farm in his wagon, and backs up against the curbstone, and sells to the housekeeper when she goes around to get her supply of provisions, you have no distributive system; when the Eastern farmer begins to produce for Europe, and the Western farmer for the East, the distributive features come in and grow larger and larger, and the great profits that arise are a temptation for labor and capital to go into that activity. So the distributive system will increase and increase until it becomes an upper millstone and grinds heavily on the community, especially if it has any legislation which favors it and is given any advantage in the way of premiums in the way of export, for example, or anything that guarantees to it a profit. That seems to be the condition at which we have arrived at the present time in the United States, where the distributive system is becoming a very large feature between the producer of agricultural products and the consumer, and under existing conditions the principle of combination prevails in the distributive system.

Now, under such circumstances, what is the wise line of policy to adopt? It seems to me that the line of policy is to equalize the opportunities of capital in distribution as well as production; that is the safe line to follow. If they are not equal, then we want to know why and wherefore. That is the reason I presented the subject, which I did, to the commission as a subject of investigation which would enable the farmer to see whether, after all, he was laboring under any great disadvantage. This discrepancy here [referring to preceding table] makes it plain enough that he is not getting a reward equivalent to that which is found in manufacturing and distribution in general. I class these two under the same general head.

Q. (By Mr. PHILLIPS.) The total value of property in the United States in 1890, if my recollection serves me right, was \$60,000,000,000, and of that \$16,000,000,000 was engaged in the farming industry. The census prior to that showed \$13,000,000,000 engaged in farming, and the census prior to that \$9,000,000,000. There has been a very great increase in the valuation of personal property over farm products, yet we have opened up many millions of acres of land that is very rich. The values of farm lands are settling and all other property is advancing much more than the farm lands. Have you any mode for accounting for that tendency?—A. My explanation would lie in this: That the rewards of capital and labor are much lower in agriculture than they are in other lines of economic activity, and that tends to exhaust the activity and throw the capital out of agriculture, reduce the capital, the valuation, and take with it the population.

Q. About 40 per cent of the people of the United States are engaged in the farming industry?—A. Yes.

Q. Yet they are not making the money in proportion to their number per capita?—A. No; they are not. But, I think, the explanation lies in the fact that, whatever the cause of the disadvantage may be under which it labors, it does not offer the field for investment—remunerative investment—that manufacturing, distribution, commerce, or other lines of activity do.

Q. Since our continental roads have been built, we find there has been a great depreciation of lands in the Middle and Eastern States, or more than is due to the opening up of these millions and millions of acres of lands.—A. That is due to the growth of manufacturing and commercial interests in the East, in which capital finds a much more remunerative field of investment than in agriculture in the same locality; and then, again, when labor finds that it can get land for very little capital outlay in the West, it is apt to leave even a somewhat advantageous position in the East. I mean a young man who has inherited a farm may not stay on it because he sees he has not the capital to make it productive, and that the same capital, if he sells out, will enable him to possess himself of land that is liable to increase in value with the growth of population in another State. That accounts for the depreciation in agricultural land.

Q. (By Mr. CLARKE.) Is not that the principal reason?—A. I do not know that it is the principal reason to-day, but it has been for a series of years.

Q. (By Mr. FARQUHAR.) Is it altogether a question of production that gives this \$200 to the agriculturist and \$800 to the manufacturer? Do you think it is possible under any system of economies or improvement on the farm, or increase of crops, to raise, for instance, the wages of any of the farm laborers up to and beyond \$2 a day?—A. That would depend on the level of prices that prevail at the time. The farmer has to adjust himself to the conditions outside—the demand for his product. If that price is high enough for him to demand labor at \$2, then, of course, it would be safe; if it is so low that he has to dispense with all his labor, he may have to resort wholly to machines, as the British dairymen had to resort to milking machines, because they could not get laborers to milk the cows.

Q. Is not the farmer handicapped in that he can only go so far in production?—A. Undoubtedly.

Q. He must add acres simply to add to the amount he produces?—A. Certainly; he is governed by what we economists call the law of diminishing returns; that is, there is no absolute point at which he must stop production, at which he can not increase the product, but for every additional unit of capital and labor he will get less than a proportionate return in product. Now, in manufacturing, the law of increasing returns applies in general. We are speaking of general principles now; that is, if with 10 looms, or machines which feed looms, which precede it in the manufacture of the product, you can turn out a certain amount of product, with 10 added, you can more than double it. The law of increasing returns comes in, so that the farmer is limited by nature in a way in which the manufacturer is not, to a certain amount. This discrepancy is bound to be attributed to that.

Q. There is an economic law, and while you are discussing this very thing you can not pass beyond that law, because it has the approval of the world already and is accepted by all economists.—A. Yes. But on the other hand, it must be equally clear that the land, which was supposed to have reached the point of diminishing returns, can by some discovery in the art of agriculture, scientific analysis of the soil, or other modes of increasing the efficiency of the land, be made to produce a much higher return than it did under the older principles or older methods of cultivation.

Q. Is there any reason why we should not produce from ordinary good land in this country just as good crops as they do in Great Britain?—A. No.

Q. Is it not really the prodigality of the American farmer that is the cause of a good deal of this productivity?—A. It is due largely to the fact that the American farmer has not had the experience of centuries back of him which the English farmer has. To my mind, the English farmer is the most capable farmer in the world, because the business of land holding and land cultivation are separated there, and the farmer has simply his free capital to put in and pays rent largely as an interest on the capital which the landlord has already invested for buildings and drainage, etc., and he is free to make the most out of that soil within certain recognized rules of cultivation, and his adaptivity is marvelous.

Q. (By Mr. PHILLIPS.) Are there not climatic reasons for it? In England they are not subject to drought as they are in this country; they are not subject to severe winters which interfere with crops as in many parts of this country; there is hardly one country where it is so even.—A. I had the impression that many of

the disadvantages of droughts in this country are offset in England by the heavy rains which they frequently have. In the last decade, for 8 successive years they lost a large proportion of their crops by rains.

Q. (By Mr. FARQUHAR.) Also wind storms?—A. Oh, yes; but in spite of that they keep up wheat growing, and grow in competition with many American farmers to a certain extent.

Q. (By Mr. A. L. HARRIS.) Is it possible for the American farmer with the number of acres that he tills to so carefully fertilize and till the soil as in England?—A. It is hardly possible, and it would not be wise. The farmer would not succeed if he put the capital on his land that the English farmer puts on his land. The American farmer puts capital into his land just as fast as he can utilize it, as a rule, and he does not go much faster than the land requires. That is rather on account of the state of the demand from the land. To put it in another way: If the farmer set up a farm such as the English farmer cultivates, and invested the same proportion of capital in labor and in machinery, etc., and farmed very much the same way, it is doubtful if he could get his return on so high a capitalization. I think, as a rule, American farmers have gone just as fast in improvements, in the capitalization of their farms, as the state of the demand has justified. They cultivated extensively when they had little capital; as their capital increased they gradually became more intensive in their methods; and when capital falls as low as 3 and 4 per cent, then you will find that the capitalist will find the agricultural investments very far from what it is now. Prices remaining the same, they will find in agriculture an excellent outlay for their capital, as they did in the East when the Western farm-mortgage fever struck the country. These movements of capital to and from the land depend on the ability of the farmer to see his way clear to make a sinking fund for himself in the course of, say, 5 years.

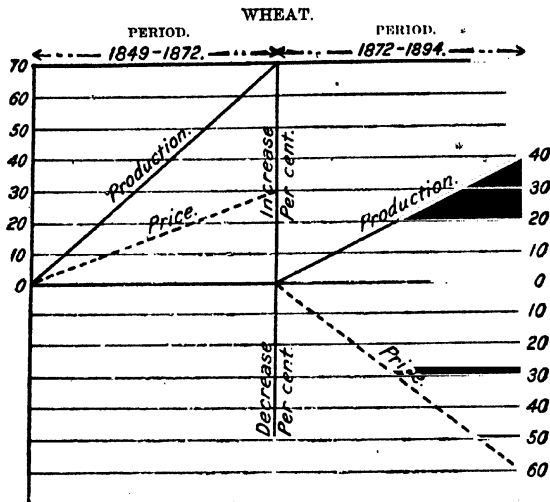
Q. Have you studied the question of the taxation of farm property?—A. Yes, to some extent.

Q. In your opinion, does the farm property pay more than its just share of taxation?—A. Yes, I think it has. It has seemed to me to be very clear that the rate of taxation in many of the States is too high for farmers to buy land and buy rural property. They sell because the values have declined. Taking taxation into account, it is not possible. Take this instance in Massachusetts with which Colonel Clarke is no doubt familiar: I was present at a meeting of farmers three years ago, in which a number of them stated that they had been paying at a rate of \$15 per \$1,000—I believe that is the tax rate generally prevailing in rural Massachusetts—and that when they came to sell those lands, those properties, on a \$1,000 valuation, they realized \$600 and \$700. Now, under those circumstances, you see, their rate of taxation is much higher than is the case elsewhere where property sells a good deal above its tax valuation; and that means that an extra burden is placed on capital invested in rural development which is not placed on capital invested elsewhere. Consequently the tide is going to move away, and people are not going to invest in rural real estate, and its valuation is going to decline. While that seems to me to be the peculiar burden, peculiar disadvantage, under which owners of real estate in the country are laboring, I think it is true, as Governor Roosevelt has stated in his recent message, that real estate is bearing entirely too large a burden of taxation, and that that is especially true of rural real estate.

Q. There is no possible chance for real estate to avoid the assessor?—A. No; he will see every pig and cow, live stock as well as real estate; he will see everything that is on the land.

Q. What do you say in regard to the decline of agricultural products in this country? If there is a decline, what has been the cause?—A. Well, there has undoubtedly been a decline. The level of agricultural prices has declined since 1850. I submit a diagram taken from the report of the royal commission on agricultural depressions, and I think it brings the matter before one's mind in a convenient compass. It shows the growth of production from 1849 to 1872, the first half of the second half of the century, a growth of about 70 per cent; also the price advance in the same period, about 30 per cent. Then from 1872 to 1894 it shows an advance of production to 40 per cent, and a decline in prices to 60 per cent. There is a divergence; that is one of the noteworthy points brought out by this diagram.

The chart above described follows:



Royal Commission on Agriculture. Final Report on Agricultural Depression. 1897.

Now, if a farmer is selling products he is increasing his products and has to sell them in the competitive market of the world at a constantly declining price, and you can understand that he is in a difficult situation. He has contracted debts, as you are well aware, probably borrowed capital in a time when prices were advanced, with the expectation of paying it back and paying the interest on it without difficulty or embarrassment; but when this state of things sets in you see that he is bound to borrow more, most likely, to meet his obligations, and to borrow it against a declining level of prices, so as to embarrass himself more and more as he goes on. He sees no way out of it. His success as a farmer may not be in doubt under the ordinary times, but under these conditions he is simply swept from the land.

Q. (By Mr. CLARKE.) That diagram is based on fluctuations in wheat only?—A. Yes; wheat. That is taken as a representative commodity.

Q. (By Mr. A. L. HARRIS.) Now you have given us the facts, the conditions; what, in your opinion, is the cause, if you have investigated the matter sufficiently to give an opinion?—A. Well, it seems to me that the first cause is the facilities for convenient and rapid transportation; that is, the high efficiency of the distributing system of farm products.

Q. Are the prices referred to on the chart at the place of consumption or at the place of production?—A. They are prices at the place of consumption; they are English prices; prices in the main consuming countries of the world. That is, the commercial wheat, wheat that passes out from one country into another.

Q. (By Mr. CLARKE.) All that great decline in the price of wheat occurred subsequently, did it not, to the enormous development of the wheat-growing sections of America and Russia, and, I believe, some other countries?—A. Yes; of America primarily. The other countries came in later; both Australia and Argentina have come in later, and the Russian export has developed somewhat later than that, but is now practically on a level with the United States. The transportation facilities, including the capacity to carry great quantities of wheat across the ocean in a single ship, as well as the facilities for carrying wheat from the wheat fields of the West to the seaboard—that, taken together, seems to me to be the most prominent agency at work in reducing the price in the consuming market of the world. Now, at the other end, the application of capital in the form of agricultural machinery, to cheap lands, cheap rich land, and hence the great increase in the production, is the other fact. The very low cost of producing a bushel of wheat has enabled the distributing system to take advantage of its position to increase to a certain extent the burden laid upon the consumer; and what New York is trying to get at now through its State commerce commission, is to find out why the wheat goes around by Montreal or Newport News or

Norfolk, or by New Orleans, and does not go through New York on its way to Europe and other countries. Well, the simple explanation is that some additional burden has been wedged in between the consumer and the producer which throws the tide of wheat movement out of the usual channel, and it always will be so; and hence the constant necessity of criticising and examining the methods by which the agricultural products are carried from the hands of the producer and put into the hands of the consumer.

Q. (By Mr. FARQUHAR.) In other words, you say that the cheap production and the cheap transportation have made a cheap market in Europe?—A. Yes; have immensely enlarged the market for our commodities. Now, the consumer is the main factor in almost all economic developments. Economic development has in mind the capacity of the consumer to buy, and if you can put the rate low enough you can put the price low enough to the consumer, and we can sell a very large proportion of the Western wheat to Japan and China; but if we can not put it low enough they will raise their own.

Q. (By Mr. A. L. HARRIS.) Has not overproduction had a great deal to do with the decline in the price of wheat in the last 25 years?—A. It has made the decline more or less permanent, made the low level in prices more or less permanent, and it took some years to correct itself. You see when Europe for a series of years has good harvests, then the demand on the American surplus is very much less, and then we have overproduced; we find ourselves in a state of overproduction, so to speak. When on the other hand the chief surplus-raising countries or any countries—the leading countries of Europe—have had a bad harvest, that draws off probably more than our surplus, and we find that we are short; that is, prices go up. That is what it means to us; they rebound immediately. There is no other place to get the wheat from. We have the position of a monopolist in that respect, because the harvest of the other great wheat-producing countries, the Argentine harvest and the Australian harvest, do not come at the same time that ours does, and we can come in at that point and feel the benefits of a partial failure of crops in Europe, and for that reason prices rebound. And that is just about the place we are in now; we are holding that position. We may be in a state of overproduction a year or two from now. If European countries have a first-class crop, or a crop a little above the average, they will buy little because they have been strained and have had to live on less than usual for the past 2 years, and they are going to demand as much as they usually have. They are eating the bread of penury to a certain extent, and a slight improvement in their crops will cause a considerable falling off in the demand for our supply.

Q. (By Mr. CLARKE.) And when the great wheat-growing country along the Trans-Siberian Railroad is developed the product will compete directly and contemporaneously with ours, will it not?—A. Yes, I think so, as far as the harvest is concerned; so that it would be possible if the Trans-Siberian railroad can handle wheat cheaper than our roads are willing to handle it, are willing to take it from Minnesota, say, or the Northwest to the Pacific coast, it is possible for the Trans-Siberian or the Siberian farmer to put grain in South America or on the Pacific coast at a lower price than it can be bought from the home producers. In other words, the conflict of the future is to be in the Pacific for the ascendancy of American agriculture.

Q. (By Mr. A. L. HARRIS.) At the present time where is the price of wheat determined?—A. What determines it—yes, at the present time.

Q. (By Mr. PHILLIPS.) It is the Liverpool market, is it not, largely?—A. Yes; that is, the Liverpool market is the meeting point of the competing supplies, and where the meeting point of competing supplies of any commodity is, there the price is fixed.

Q. (By Mr. A. L. HARRIS.) If we would raise 550,000,000 bushels of wheat in this country and have 50,000,000 bushels to export, what effect does that 50,000,000 bushels have upon the price of the remaining 500,000,000 bushels in this country?—A. That would depend on our proportion of that 50,000,000 bushels and the proportion which all other countries export—are preparing to lay down at Liverpool or anywhere else in western Europe.

Q. What I want to get at, is whether the export price controls the price in the home market.—A. Yes, if the price for the 50,000,000 bushels should develop a relative scarcity outside of the United States the price would rise. If the export price rises the domestic price would rise, because Liverpool and New York and all other places would compete for the total crop. You see my point.

Q. (By Mr. CLARKE.) At the same time, if anything should happen to cause a large decline in consumption, in the asking for wheat in this country, so as to permit a larger surplus for export, the influence on the price at the meeting point, say Liverpool, would come very largely from this country, would it not?—A. Yes;

would tend to depress the price. If you can release 100,000,000 bushels instead of 50,000,000 it would tend very much to depress the Liverpool price. If it were a larger proportion of the available supply elsewhere it would tend still more to depress the price of wheat. It is a question of proportions.

Q. It is the market of largest consumption that is the main factor in determining the price?—A. Yes; that is just putting it in another way, if I understand.

Q. (By Mr. A. L. HARRIS.) Have you anything to say in regard to the increase in acreage under cultivation in this country?—A. No; I have nothing that would add, I think, to the information of the commission.

Q. Do you care to touch upon the decline in the productiveness of the soil?—A. I may simply say this: That when agriculture reaches the point where the returns on capital and labor are declining, that unless new methods or new agencies are introduced it must result in throwing that land out of cultivation and so decrease the acreage. I am speaking of the general tendency. Now, in the East, where the productivity of the soil has declined to the point where it ceases to compete with the richer soils of the West, it has passed out of cultivation frequently until a new kind of agricultural ability came to occupy the soil, such as market gardening; and that has taken place in Massachusetts, taken place where the French Canadians and others have occupied lands; has taken place in New Jersey; has taken place in Pennsylvania, and has taken place to a great extent along the Eastern coast. So that when the decline in the productiveness, in the productive condition, of the soil is recognized as a fact that is no proof that the land is not going to be a profitable field of investment within a short period, possibly. It is a question with the farmers what kind of investment, what direction, they had better give to capital. It is very much like a man who has a lot; he is prepared to pay taxes on it and hold it out of improvement for a long time, for a considerable period, until he knows what kind of building that locality of the city is going to require. That is what I want to bring out. That land may pass out of cultivation often just because the owners of it do not know what use to put it to to make it profitable; but in the course of a few years a market may arise for a certain commodity, certain product, which will be very well adapted to that soil. That is constantly taking place in the East, and the abandoned farms of New England are coming back to that point where they are finding a market, and many of them, most of them, possibly, in some States have disappeared; such a thing does not exist. It may be that they are going to use them for stock farms. Some wealthy capitalist in the city, not simply out of fancy, but because he believes in good stock and believes good stock will pay, goes out and buys several hundred acres and makes a first-class stock farm. It answers the purpose admirably, and he gets a good return on his capital, gets as good a return as the average farmer does, and he discovers a market for first-class stock.

Q. What effect has improved machinery had to help the farmer meet the prevailing prices for farm products?—A. It has reduced his wage bill very considerably. To a certain extent he had to do it, but to a greater extent he found it profitable to do it.

Q. (By Mr. PHILLIPS.) He can cultivate a great many more acres with less labor?—A. Yes; he has the advantage of individual supervision.

Q. (By Mr. A. L. HARRIS.) Without improved machinery what would be the condition of the agriculturalist to-day?—A. Well, he would be simply farming a small farm instead of farming a large farm.

Q. Now, we come to the question of transportation. I wish you would give the commission such information as you have at hand in regard to that very important question to the farmer and, I may say, the producer and the consumer.—A. That is under 43: "Increase or decrease of transportation rates during the past 50 years." Well, I should say that the rates on agricultural products have decreased largely through the competition of the railroads for freight, and that has had the effect of enlarging the markets for the farmer, but at the same time of not greatly enhancing prices, simply because it has obliged him to compete with the surplus product of the world in his production. That comes back to the point which we had raised some time ago. From the standpoint of the producer, therefore, the decline in transportation rates has not brought much advantage. From the standpoint of the consumer it has brought immense advantage. That is, the consumer is the residuary legatee in a very large measure of the transportation developments of the last 50 years, so far as they relate to agriculture. Looking at it from the other point of view, the transportation facilities have enabled the farmer to avail himself of comforts and facilities of improvement, self-improvement, and increase in knowledge, which has probably been the main factor in enabling him to maintain a high standard of living. So much must be credited, I think, to the transportation facilities, and in that you have to include the United States mail.

Q. Have you investigated the question to any extent of the cost of distribution between the producer and the consumer of farm products?—A. I have looked into the matter to some extent in connection with English agriculture. I find, for instance, one particular fact which might indicate what might be worth recording; take milk, for example. In supplying milk to London the consumer pays the railroad about 7 per cent of the consumer's cost. As a basis for figuring I simply mention that fact. Now, what per cent is paid to the transportation companies for milk in such a city as New York I am not prepared to say, but I know that the milk trade is well organized both among producers and distributors and that the rates are matters of public record. I think in the milk trade generally that is apt to be the case. Now, in cereals the rate is enigmatical; it is a matter difficult of ascertainment. The published rate is well known and can easily be gotten at; that is a matter of record; but a special rate is not well known. I am informed by persons who work on the inside of a railway system's office that it is a common thing for a single official to have a stack of special rates as high as this table by his side, and that in auditing the work of the company and seeing that the proper rates are charged by the freight agents at different stations, and so on, that pile of specials is his main stand-by. Now, those facts it would be very difficult to get, and I can not speak from that standpoint and add any information.

Q. (By Mr. PHILLIPS.) That information that you have is recent, is it?—A. Yes; very recent.

Q. Since the passage of the interstate-commerce law?—A. As recent as last week.

Q. Can you name a person that would come here and give us information, so that we could subpoena him? It seems to be a very difficult thing to establish special rates.—A. No, I could not name you one who would give you the special rates. I could name you persons who would decline to give them to you on the ground that their livelihood depended upon not divulging the secrets of their offices.

Q. You have no doubt, from your information, that special rates do exist?—A. I have no doubt that special rates do exist.

Q. Discriminating rates?—A. Yes; discriminating rates. They are made by contract with the company for a period of months, and I have been informed by an official of the Government, himself interested in transportation, that the rates for probably the last 15 or 20 years have never been in such a chaotic condition as they are to-day.

Q. At the present time?—A. At the present time.

Q. (By Mr. RATCHFORD.) Is it your information that these special rates are given to some particular persons or firms, or are they given to all shippers?—A. Well, I have not any special information on the subject, but it depends upon the importance of the shipper, and the only thing that keeps that state of things from becoming unbearable is the fact that there is more freight than the railroads can easily handle at the present time.

Q. (By Mr. FARQUHAR.) Then why should it give any specials at all?—A. Well, simply because they want to maintain their relations.

Q. (By Mr. PHILLIPS.) Of friendship?—A. Yes.

Q. (By Mr. FARQUHAR.) Are you sure that you have not got the idea of special rates mixed up with commodity rates?—A. No. I understand that; commodity rates are, of course, special rates in the classification of special systems.

Q. That every railroad has to handle in making up its returns?—A. The rates that are published as standard rates have corresponding special rates to them which are open only to the few persons who are concerned with the business, which are known only to the few persons.

Q. (By Mr. PHILLIPS.) They keep the papers to which you allude or have reference to audit their accounts?—A. Exactly. The gentleman to whom I refer, —the maker of the rates—writes to him and says, "Please protect the rate from so and so to so and so, from such a place to such a place, on this commodity." "Please protect"—that means that we have guaranteed a special rate and we want you to figure it out on that line. That is secret; that is kept for themselves only and for the shipper; and that is only one out of that pile as high as this table of these sheets of special rates, which are wholly distinct from the established rates published and hanging in the office of the company, which the small shipper has to pay.

Q. (By Mr. FARQUHAR.) Well, take, for instance, the shipper from New York. Five great trunk lines present themselves, and this shipper selects one of them, as you say, under special rates. How long do you suppose he could get the benefit of those special rates until the other railroads found that the special was on that road alone?—A. Just as soon as they were in need of that freight.

Q. But they very naturally know among the shippers. There is a peculiar quantity that is sent out by great concerns that does not vary much each month. Now, providing they get the special, and say 80 per cent of that concern's goods went on this special line, would not the other four lines know of it inside of 80 days?—A. Certainly; but supposing the other four lines are pretty well occupied, pretty busy, are not hungering and thirsting for any more freight; they are doing all that their road can comfortably handle; my point is that as soon as those roads are in need of freight so as to maintain their earnings; as soon as they see their gross income growing smaller, they are going to enter the field as competitors for that freight and the special cutting is going to begin.

Q. When freights are light and the market has to be searched pretty thoroughly by the freight solicitors is not that generally the time, as appears by testimony before the Interstate Commerce Commission here, when the rates are cut, and when the roads are running full they do not cut?—A. No; they do not cut. The differential between Chicago and New York on the seaboard lines is practically non-operative at the present time, just because they have more freight than they can well handle; but when you come to the point where they have less freight than they can conveniently handle, then the differential will be enforced and the cutting will go on.

Q. Could you prove the special rate if the commission should ask you?—A. I could not bring anyone here to prove it. I simply state the facts.

Q. (By Mr. PHILLIPS.) Could the person to whom you alluded as having seen the stack of papers containing these special rates be obtained to give testimony?—A. No; I think not. He is a capable young business man, and he is ambitious to make a career for himself and is highly trusted; and he would not want to destroy all of his advantages. You see the position he is in.

Q. You have no doubt he was in position to know when he made such a statement?—A. He is one who does the auditing.

Q. (By Mr. KENNEDY.) I would like to ask what is the question about rate sheets, stacks of them; I did not hear that.—A. This gentleman, who is in the office of one of these lines, told me as late as last Sunday, while he was a guest at my house—he is a relative of mine, and I know he is a most truthful young man—that in his office he has a stack of special instructions, special rate sheets, as high as the table, over which he has to go a good many times a day to make sure that he is correct and that he is giving the right rate to a shipper from one point to another on that line, and that the maker of the rates constantly sends him notices, "Please protect this special rate of A to B from such a point to such a point." I think that practice is quite sufficiently clear; but it brings it a little more home possibly to state it as I have stated it.

Q. (By Mr. CLARKE.) Irrespective of this question of discriminations in the railroad business, are there any trustworthy statistics, to your knowledge, which show how much is the cost of distribution of agricultural products between the producer and the consumer?—A. There are no statistics that I know of that could be used to determine just what proportion goes to this or that portion of the distributing system, or what goes to the distributive agencies as a whole. It seems to me that the whole question would have to be worked up from the bottom.

Q. Do you think it practicable to gather such information in reference to, say, a few of the leading products?—A. It does seem to me to be entirely practicable. At any rate we could get the cost based on the standard rate—that is, the published rate—and put those results by themselves; that is, the rate that is in the book, that hangs in the office, open for public inspection of all shippers and of all persons.

I suppose such an inquiry would have to extend not merely to the rates of transportation on railroads, but also to other means of distribution in cities and suburbs?—A. Yes. Take, for instance, butter that comes from the Vermont dairy and goes to the Fifth Avenue Hotel; what per cent of the consumer's cost, the cost to the consumer, is assignable or must be assigned to transportation to the express companies or the railroad companies that bring it? Such things are ascertainable without any great difficulty. Then I cited the milk trade as a trade in which the facts could be gotten at without much difficulty; and the fruit trade—say the strawberries and various other kinds of fruits, on which there is an open rate. We could proceed, it seems to me, on that basis and get the plain published facts about the matter. Then if there are special rates we could probably discover some of them at any rate. The shippers who do not get special rates are often in a position to know what special rates are given to others, and taking those rates and fitting them between the price paid to the producer and the price which the consumer paid, we could see what proportion of advantage was given the shipper by the special rates at a given time on a given quantity of goods; and that is what, it seems to me, is worth while trying to find out.

Q. (By Mr. A. L. HARRIS.) In this cost of distribution you would have to take into consideration also the amount paid to the commission man?—A. Yes; the local buyer and the commission merchant.

Q. For storage?—A. Yes; he takes the goods from the transportation company and distributes them to the retailer, and the retailer distributes them to the consumer. We would have to find out, it seems to me, what the retailer gets at a given time at a given place, and select goods on which the depreciation in course of transportation is a small feature. You see you would have to divide your commodities into different classes, according as there is much or little depreciation in them.

(By Mr. FARQUHAR.) Perishable?—A. Perishable and imperishable.
(Testimony closed.)

WASHINGTON, D. C., January 9, 1900.

TESTIMONY OF HON. JOHN HAMILTON,

Secretary of Agriculture, State of Pennsylvania.

The commission met at 11 a. m., Vice-Chairman Phillips presiding. Hon. John Hamilton was introduced as a witness, and, after being duly sworn, testified as follows concerning agriculture:

Q. (By A. L. HARRIS.) You may state your name, your post-office address, and your occupation.—A. My name is John Hamilton; my home address is State College, Center County, Pa.; my official address is Department of Agriculture, Harrisburg, Pa.; my occupation is that of a farmer.

Q. Please describe the working of the department of agriculture in your State.—A. The department in Pennsylvania is organized very much as the National Department of Agriculture at Washington. It is officered by the secretary, who is appointed by the governor for a period of 4 years. There is a deputy secretary, who is also appointed by the governor; a dairy and food commissioner; a forestry commissioner; an economic zoologist; a veterinarian; and then the several clerks and other subordinate officers. These gentlemen are heads of their various divisions and have charge of the matters that their names, to some extent, indicate. The forestry commissioner has charge of the whole question of forestry in our State, under the direction of the secretary. The dairy and food commissioner has charge of the enforcement of the pure food laws, and also does what he can to promote the interests of our dairy industry. The economic zoologist looks after the diseases and insects that affect our crops, making investigation into their habits and giving such suggestions for the suppression of their ravages as he may be able to give. The veterinarian is in charge of the suppression and prevention of diseases of domestic animals in our State, and he also is a member of another organization known as the State live stock sanitary board, that has very large powers in the way of providing for the inspection of diseased animals, and for the quarantining of all animals that are known to have contagious diseases. The deputy secretary is, under our law, made the director of farmers' institutes, and he conducts them, organizing them in the several counties and providing certain lecturers, who appear before these meetings of our farmers with a view of giving them information in regard to the latest and most approved methods of scientific agriculture. The secretary is supposed to be the chief over all the divisions, has a supervisory control of all the division officers, and is directly in charge of the inspection of commercial fertilizers, seeing that samples are collected of such as are offered for sale in the State; that the law regulating their sale is observed; that analyses are made and the results published for the information of our agricultural people. He also has a fund given him for the making of special investigation into such matters of agricultural interest as he may see fit to select. This is, in a general way, the outline of the operation of our department.

Q. Please give a little outline of your institute work, and you may also state its importance, as you believe, to the agriculturists of your State.—A. The farmers' institutes, as I have stated, are under the immediate direction and control of the deputy secretary of agriculture. The State makes an appropriation annually for the payment of the expenses of speakers, and the rent of halls and such other matters as are connected with the proper conduct of this work.

Q. (By Mr. PHILLIPS.) By whom is the deputy appointed or selected?—A. By the governor. The deputy is an appointed officer. The appointment of the secretary must also be confirmed by the senate; that is not necessary in regard to the other officers of the Department.

The deputy secretary has committees which are made up of representatives of various county agricultural organizations, and these committees are in each county, one committee for each county. They meet upon the second Tuesday of June in each year to select the places and name the dates at which they desire to have institutes held in their county for the coming season. This year there are altogether 308 days of institute provided, and these are held between the 28th day of November and the 1st day of March, being put at the season of the year when the farmers are least occupied with their farm affairs. In order that this number of days may be put into this period, the State is divided into five districts and institutes are appointed for each district. The State provides, free of expense to the locality, three lecturers in each one of these districts. An itinerary is made out, by which the institutes are held in each section, and these three State representatives are expected to be present at every institute held in their section. The chairman of this board of representatives is chosen because of his qualifications as an intelligent practical farmer, a man able to express himself clearly, one who has had experience, and is full of energy, has got good judgment, and is well informed generally upon agricultural topics. The second man of the force is a scientific man. For the last 4 years we have been supplied with these men by the State college, which is a scientific institution organized under the land-grant act of 1862. These men are supposed to be experts in scientific matters along some line of science. The third man of these committees is a man who is selected because he has succeeded in some special line of agricultural work, and this third man is changed from time to time, exchanged for some other man who is an expert along some other line of agricultural work. The first two men—that is, the chairman and the scientific man—are not changed. They are kept through the entire season on the force, but the third man is exchanged from time to time with another who is expert along some other line, done for the purpose of giving variety and getting at practical information of the best sort on all sides of our agricultural work. The local committee, in addition to these lecturers that the State supplies, is authorized to select such persons in the neighborhood where the institute is to be held, who have succeeded along some line of agriculture, and they are invited to deliver a lecture or read a paper upon some of these lines.

We prescribe what shall be done in two sessions of these institutes. Generally they continue for two days, beginning in the afternoon of one day and ending in the evening of the second day. The evening session of the first day in every institute that is to be held in the State is devoted to the interests of the education of farmers and their children, and to that session we invite the county superintendent, school-teachers, school children, all persons who are interested in the education of country people; and the discussions are along lines that relate to the education of farmers and their children—in the interest, in fact, of our public schools. This year we prescribe a topic that must be discussed in every one of these sessions. We require our State lecturers to be prepared to give sample talks upon the methods of teaching nature study in the public school, so that school-teachers and school directors and others can see how nature study may be given in the country school. We have another session that is prescribed, that is devoted to the interest of country homes; that is a women's session. I do not know but I am going into this fuller than I ought. This women's session is very frequently officered by ladies in the neighborhood—some prominent lady selected as chairman; and many of the papers are given by ladies. The general purpose of it is to discuss such matters as relate to country homes, the care of children, the cooking of food, the science of nutrition, the decoration of homes, heating, lighting, and ventilating of country homes, flower gardening, window gardening, and all of the matters that relate to the woman's life in the country home. These are the prescribed sessions.

The other sessions are left for the local managers to indicate what they desire to have discussed, and they make up the programmes so that when our State lecturers appear for work, the programme has been made up and they can see precisely what they are expected to do. I might say also that a pamphlet is published, giving the names of the State lecturers, the local dates, and the location of all institutes that are to be held, and the topics which all the lecturers who are in the service of the State discuss, so that the local managers, in making up their programme, by referring to this publication can see precisely the line of work that each individual is capable of treating, and he is expected to select some topic from the list of topics that are put down under a given lecturer's name.

After the lecture has been delivered there is always opportunity given for any person to ask questions, and that we regard as the most important feature in our institute work. These lecturers are supposed to be experts in the particular lines on which they speak, and are to be able to stand a cross-examination upon the

part of the most critical of their audiences. We hold institutes in horticultural hall in Philadelphia, among the best florists, such as Mr. Landreth, and Mr. Lonsdale, men who understand their business. We put our men on the platform and they are expected to stand criticism from the best men that the country possesses, no matter where they come from. So the work is high grade, and the men we have are the best men we can find, and are thoroughly capable. Before any man goes on our institute force he must submit a short paper giving the history of his life, his education, and his occupation, so that we may judge, and the public may judge, as to what right he has to claim to be an instructor in any particular line of work. That little biography is published in this pamphlet that is issued, so that all our managers can see just what qualifications or what advantages these men have had for knowing about things that they are expected to teach.

Q. You may state what interests, if any, the agriculturists of your State take in the institute work.—A. The interest has been very great. The difficulty now is to secure halls out in the country of sufficient size to hold our audiences. Generally we try to get the use of the country churches. Sometimes we have to take the country schoolhouses, but as a rule the buildings that are possible to be secured are entirely inadequate to hold the audiences. Last year we reached about 60,000 farming people in our institute work.

Q. You may state whether or not, in your duties as secretary of agriculture for your State, you gather any statistics in regard to farm labor; and if so, what they are.—A. We have appointed in each of the counties of the State four gentlemen, who are our correspondents. These men are selected because of their special fitness and reliability for this work. This last year we have a report from them that gives us their judgment in regard to the prices of farm animals, some statistics in regard to crops, and others in regard to wages. I have here a statement showing the rate of wages of farm labor in Pennsylvania in 1899. It gives the maximum, the minimum, and the average. I will just explain that in our State the conditions are quite dissimilar. Wages in a county like Philadelphia or Allegheny are entirely different from wages in a county like Fulton or Pike, so that the maximum and the minimum show a great divergence in amount, but the general average is an average that we have found year by year to be pretty nearly the same.

Q. Will you state the reason for the difference of wages in these counties?—A. Philadelphia County, so far as its agriculture is concerned, employs a higher class of labor; they are market gardeners and florists, and are doing a business that requires more expensive, more expert labor, than some of those outlying counties that perhaps are mostly in forest, so that nearness to a great city implies that the labor will be better paid—more expensive.

The result for this year is given in the following table:

Statement showing rate of wages in Pennsylvania in 1899.

	Maximum.	Minimum.	Average.
Farm wages, with board (whole year).....	\$20.00	\$ 8.50	\$12.69
By the month (summer only).....	25.00	10.50	15.83
By the day, with regular work (with board).....	1.00	.50	.80
By the day, with regular work (without board).....	1.40	.75	1.11
By the month, whole year (without board).....	35.00	10.00	20.07
By the month, without board (summer months).....	40.00	11.66	23.95
By the day, with board, for transient work (when wanted, only).....	1.63	.50	1.05
Harvest wages, by the day (with board).....	2.00	.90	1.29
Household help, with board (by the week).....	3.00	1.25	1.99
Estimated cost of boarding farm hands by the day.....	.50	.15	.35

Q. (By Mr. CLARKE.) When you speak of wages by the year, "whole year," that is per month?—A. That is farm wages for the whole year per month.

Q. (By Mr. FARQUHAR.) How many days of labor does that include, the average month, simply 30 days, or 26 days per month, throughout the whole year?—A. No; it includes the 365 days of the year; the Sabbaths, of course, having very light duties.

Q. Is it predicated on the fact that they are occupied the whole of these 365 days?—A. They are occupied during this entire period.

Q. That is by hire or actual work?—A. By hire.

Q. (By Mr. RATCHFORD.) How are the averages reached?—A. The reports of the four reporters in the county are taken and averaged—added up and divided by four, giving the average for the county. Then the general average for the

State is the average of the 67 counties; that is, the sum of the reports of the 67 counties divided, of course, by 67.

Q. Do these reporters of your department reach their averages by taking the highest and lowest, without respect to the numbers?—A. Each man makes his report, giving the maximum and then giving the minimum, and the average between these is the average that he submits.

Q. The point that I wish to make clear is simply this: That there may be a greater number of men receiving the maximum rate than those receiving the minimum, or vice versa; and that being the case, of course, the average would hardly hold good, would it, unless the numbers were about equal?—A. There is no account taken of that by the reporters.

Q. (By Mr. A. L. HARRIS.) Let us understand a little further what you mean by the maximum; does that mean where you get better skill and better help? Are not farm hands, as a rule, graded according to their ability to do work and their disposition to faithful service?—A. I think there is a degree of grading; but as I explained, near our cities a more skillful, better educated class of work is required, and there the wages are correspondingly increased. In some of the remote outlying counties there is not the same demand for highly skilled labor, and there the day's wages are correspondingly small.

Q. (By Mr. RATCHFORD.) Are there any other reasons for this great fluctuation of wages?—A. I suppose there are, but I have not just in mind the exact data that would prove it.

Q. (By Mr. FARQUHAR.) Would the contiguity of other classes of employment be another reason why it is better paid?—A. It does make a difference sometimes. When you are in a manufacturing district the best class of farm labor is high priced; or where you are near a railroad line, where there is a great deal of work upon the railroad, they pay somewhat more than farmers are usually accustomed to paying. The better class of labor in the community will go where the higher wages are secured, and the farmers must content themselves with the lower grade of labor; so that it does not always raise the price of labor to the farmer.

Q. (By Mr. RATCHFORD.) Might not the productivity of the soil have something to do with it, as well as having a good market? Where a man has both, he can possibly afford to pay better wages.—A. Where he has an extra market he usually is required to pay a better rate of wages.

Q. (By Mr. FARQUHAR.) Suppose the question should be asked you: Out of 100 men employed in farm labor in the State of Pennsylvania, what is the per cent of those that obtain the highest rate and near to the highest rate, and the per cent of the 100 that get the minimum or near the minimum?—A. I have no statistics, and I know of no statistics that go to show the percentage of high-grade labor as compared with that of the lower priced labor, and I would not like to venture a statement because it would be a guess without value.

Q. (By Mr. PHILLIPS.) The different kinds of work in the harvest field, for instance, require different rates of wages, do they not?—A. There is not now the same difference in the wages of harvest hands that there used to be before the introduction of our modern machinery.

Q. (By Mr. A. L. HARRIS.) You may state whether or not farm labor is subject to a greater variation in pay than the labor in the shop on account of the farm laborer having to work by himself and exercise his own judgment and his own faithfulness to the service that he is employed in.—A. I think the effect of manufacturing establishments in the community is to take our best laborers for their use and leave us the balance, who are generally inefficient in the way of being able to do the work that these manufacturing establishments require, and that their value is pretty nearly the same everywhere; that uninformed and uneducated labor is cheap always, and that our farmers have now to do with the cheaper grade of labor and less efficient grade of labor than they used to 30 or 40 years ago.

Q. Is your farm help foreign or native as a rule?—A. Mostly native.

Q. (By Mr. FARQUHAR.) Is the average wage paid in Pennsylvania sufficient to keep a man on the farm? That is, is it inducement enough to keep them at farm work, or is labor on the farm a good deal of a makeshift until he can better himself?—A. I think, as a rule, they accept farm service because they are not in condition to go abroad and do better. There is this, however, to be said, that the precarious character of mill work and of mining has its effect in keeping men in the country districts and making them willing to accept a lower per diem wage, because of the assurance that they will have some kind of employment during the entire year, whereas the mine or the manufacturing establishment may shut down and leave the men without occupation for a period and living under quite expensive conditions. That, I think, has its effect.

Q. (By Mr. KENNEDY.) Do many negroes go into Pennsylvania during crop seasons, as is the case in New Jersey?—A. I think not, except, perhaps, in the neighborhood of cities, where berries are grown extensively; but usually these fruit districts are near cities, and children and women are employed in gathering the crop. The immigration of negro help is not very considerable in Pennsylvania.

Q. (By Mr. CLARKE.) Are the farm hands and domestic help generally treated as members of the family and seated at the table with the heads of the family and the children?—A. The Pennsylvania custom is for all the members of the family to eat together. That is the rule among the farming people.

Q. (By Mr. PHILLIPS.) Labor also?—A. The laborer takes his seat with the family as a rule.

Q. (By Mr. A. L. HARRIS.) You may state, if you please, the adaptation of the school curriculum to the needs of your agricultural people.—A. My judgment is that it is very poorly adapted to the future needs of those who are to make the country their home and farming their occupation. The ordinary country school teaches reading, writing, arithmetic, geography, some English grammar, and physiology is required now in our schools in Pennsylvania. There is not anything said or any instruction given, as a rule, upon common-sense lines that relate to the natural objects that surround these children and with which they ought to be acquainted. My feeling is that the system of education at present in the country schools of Pennsylvania tends to take scholars out of the country districts and send them into the towns and cities. The education that is given in the public schools is quite elementary, and any boy or girl desiring to secure a fair education must leave the country and go into some town where there is a high school or a better ordinary or graded school than the country affords and complete his education there. The parent is under the expense of keeping the child in the town; and the town surroundings and the education and all the influences there tend to wean the child from the home life; and the absence of the small domestic duties that the country child usually is called upon to perform tends to make them regard such things as irksome; and by the time they have finished their high-school course or gone through the normal school or college the child is about as effectually educated away from the country as it is possible to do it, even if the schools had been designed for that purpose. I think that accounts for the overpopulation of our cities and the, to some extent, taking of our people from the country into the city. My thought is that we could remedy all of this by doing what is now being done in France and Germany, and to some extent in Canada, and within the last 3 or 4 years it has been introduced into the schools of New York—the teaching of nature topics, not by way of text-book study, but from the teacher taking some natural living object in the neighborhood, a plant or an insect, and giving a little talk to the children upon its structure, character, and use, so that the child becomes interested in seeing the wonderful character of the things that are just about him.

The Cornell University is putting out what they call teachers' nature-study leaflets, 4 to 6 page leaflets, treating of a single thing; it may be a peach blossom or a honey bee or a caterpillar, and the teacher reads these over. These papers, I might say, are prepared by the best natural-science scholars that the country has, put in simple language. The teacher reads these over and is expected to talk to the scholars along that line, getting them to search for these different things that are mentioned, and write perhaps a little article upon what they see with regard to them. In Pennsylvania we are just starting the same thing. The State College is publishing now a series of nature-study leaflets and sending them out to the school-teachers in the schools, requiring the teacher, before he secures a copy on a different subject, to pass an examination upon the topic previously given, and also make some statement as to the use he has made of it in his school. In New York they are forming, in many of the country common schools, junior natural-science clubs, made up of the children in the school, with a president, a secretary, and a little organization. They collect samples of the various plants or insects that are in the neighborhood, write a description of the plant as they see it, or the insect as they see it, and then affix a number to the particular plant, and also number their paper with a corresponding set of figures, and these plants that these clubs have collected are put together in a box, and the papers written on them also put together, and sent to the Cornell University, and they are there examined and the scholars are graded upon the descriptions that they give of these several plants that they have collected. So that a great interest is being excited among the country children in nature study, getting them interested in the geography and nature history of their own neighborhood. The teachers make excursions with the children and call attention to natural objects of interest in that locality, taking up the plants, the insects, such as ordinary

butterflies, and in some instances raising plants upon the desks in the school-room. The scholars from time to time make drawings of these plants, writing descriptions of them; making their essays along these lines instead of on some abstract question; thus teaching them observation, and trying to have the young people interested in the wonderful things that are all about them, with the hope that they will stay in the country because of the attractiveness of country life.

I think that our schools ought, as rapidly as possible, to adopt this method, and the normal schools should begin at once to prepare teachers for the giving of this sort of instruction, and that the reading books that are now used in the public schools ought to have a considerable amount of the matter of which they are composed made up of the treatment of natural-science objects, so that children will become familiar, before they leave the common country school, with a great many things that the agriculturists of to-day needs to know.

Q. (By Mr. KENNEDY). Is that character of teaching given in the public schools of the State of Pennsylvania?—A. To some extent. It is anomalous in that the cities are doing more in the way of teaching nature topics than the country, and that is due to the fact that they have graded schools and their teachers are better paid and are of a higher grade.

Q. That character of instruction is given in the schools of this city.—A. Yes. The last number of the Ladies' Home Journal, I think it is, gives a full page set of illustrations of the way in which that matter is taken up here in the city of Washington, and it is very interesting.

My thought in addition is that we ought to have in our country districts township high schools to which the children who graduate in the primary school can go. The effect of this would be to keep the children in the home family and make it possible for every country child to get a fairly good education; prepare for the normal school or perhaps college right in his own neighborhood.

In our State we have a law that authorizes the establishment of country high schools of three grades, but this law, unfortunately, requires an appropriation to carry it into effect, and the appropriation has not yet been secured. The law provides that where a two-year course is established in the township high school they shall have \$400 from the State fund; where a three-year course is provided, \$600; a four-year course, \$800. That is the maximum, but we have been unable, so far, to secure the appropriation necessary to carry this into effect, as I have said.

I believe that the most important thing, after the introduction of this nature study into the schools, is the township graded and high schools, so that country children can be educated in the country, be kept in contact with their home people, their home duties, and so be protected from town influence and from town life until they become of sufficient age to understand the relative values of different kinds of life.

Q. (By Mr. A. L. HARRIS.) Are there any States in the Union that have adopted this county high-school system?—A. No State as a State, so far as I know. Ohio has several schools. I think down about Cheshire, in southern Ohio, there is one, and we have in Pennsylvania several township high schools, but not under the State law, simply the result of local enterprise.

Q. (By Mr. CLARKE.) Some of the New England States have them.—A. Massachusetts has them, and in Massachusetts out of a certain radius, outside of a certain zone, they collect the scholars and bring them to the school at the township expense and return them to their homes.

Q. (By Mr. A. L. HARRIS.) Have you made the taxation of agricultural property a study; and if so, will you please give the commission the results of your investigation?—A. I have given the subject, so far as it relates to Pennsylvania, a good deal of attention. It has been several years since I made a thorough examination of the system as we have it in our State, and since that time there have been several modifications in items, but the general system remains the same as it was along about 1890. The system as we have it in Pennsylvania provides for the maintenance of three departments of State government: one is the State itself, another is the county, and the last are the city and borough and township divisions. The taxes that are necessary to meet the expenses of the State are derived mostly from corporations and from money at interest and license fees. The taxes that support the county government are levied upon real estate and upon farm animals, and the taxes that go to support the township government are levied upon real estate and farm animals. In the levying of these the method is to assess the property by assessors who are elected under the law, and this valuation is submitted to the county commissioners and revised by them after opportunity for appeal by the taxpayer is had. Duplicates are made out and put into the hands of tax collectors, who proceed to collect the several taxes with

which they are charged. The board of road supervisors fix the amount of tax that shall be levied for roads. They are township officers. The board of school directors fix the amount of tax that shall be levied for school purposes. They are also township officers. The board of overseers of the poor fix the amount of tax that shall be levied for the care of the poor, and they are township officers. So the township is maintained by taxes that are levied by themselves and the rates are fixed by themselves.

Q. (By Mr. CLARKE.) By their own officers?—A. Their own officers.

Q. The people do not vote themselves on the amount of the tax?—A. No; it is fixed by the officers whom they elect in their localities. Each locality fixes the amount of tax in these several directions, and the taxes are levied upon real estate, as I have said, and upon farm animals, horses, and cattle, 4 years of age; dogs, also, are taxed a small tax.

Q. (By Mr. A. L. HARRIS.) Is that a head tax on dogs?—A. Yes; and the tax on dogs goes for the reimbursement of persons whose sheep have been killed, where it is impossible to find out whose dog did the killing.

Q. You do not tax the intangible property, then, for any purpose?—A. There is an occupation tax that is levied upon citizens; but under our constitution that tax, indeed all taxes, must be upon classes of property, and occupations have to be classified; so that teachers are in one class, and ministers are in another class, and lawyers are in another class. The assessment of the occupation therefore is not according to the man's income at all or his standing as a man of capital, but must be low enough that a man who receives the smallest salary in his class can be able to pay the fee, pay the tax. For instance, a lawyer—I will just read an actual instance. Here is one county: lawyers are put down at \$250.

Q. (By Mr. CLARKE.) Income?—A. No; that is their standing for taxation purposes. Now, if his income is \$10,000 or \$20,000 all he is taxed upon is \$250; and if the millage is a .001-mill rate, he is taxed 25 cents, although his income may be \$10,000; and it is not made any larger, under the assumption that the constitution forbids taxing outside of a classification; and therefore the classification, the tax, the assessment must be small enough to make it possible for the most impecunious lawyer to pay it.

Q. (By Mr. RATCHORD.) Now, in that case the \$250 is only a tax on his profession; it does not reach anything else, any possessions he may have?—A. No; just his profession.

Q. (By Mr. CLARKE.) How long has that law been in existence?—A. Our new constitution went into effect in 1874. Physicians in this county to which I refer are taxed at \$200; ministers at \$75; county superintendents at \$250; professors of colleges and academies at \$250; superintendents of high schools at \$200; common-school teachers at \$50; merchants at \$200; shopkeepers at \$100; clerks at \$100; mechanics at \$100; apprentices at \$50; bosses and foremen at \$75; civil engineers at \$250; surveyors at \$150; bank presidents at \$400; bank cashiers at \$250; county officers at \$250; president judge at \$300. The law gives the president judge a salary of \$4,000 in our State. Farmers do not pay an occupation tax in Pennsylvania.

Q. (By Mr. FARQUHAR.) How much does the occupation tax amount to annually?—A. I can not give you that. The townships differ in their ratings of real estate very materially, according to the judgment of the assessors who make the valuation. I have known of a property, divided by the township line, where one part was assessed at double the value of the other, and yet, in the market, they are as nearly alike as possible. The system of valuation is a very imperfect one, and, although the law requires that the assessment shall be made upon the cash value of the property, the rule varies from one-fourth to more than the property is worth, according to the judgment or want of judgment of the persons who make the assessment; and the tax rate differs according to the pleasure of these several boards in the township. It may reach 80 mills; it may be only 8 or 4 mills, as the different boards desire. The county rate, used for county expenses, as distinguished from township, is fixed by the board of county commissioners, and usually is from a 3 to 5 mill tax upon all property that is assessed for township purposes. The State taxes are fixed by statute. I suppose it is impracticable to at this time go over the list of items that are taxed for State purposes and give the particular method that is used for each. As I stated, the general system is to tax corporations of all kinds, money at interest, and licenses and fees from the county offices for State use; and our State returns to the counties three-fourths of the whole amount that is received from personal property taxation, money at interest; one-fourth is reserved for State use.

Q. (By Mr. CLARKE.) When are the assessments by the local boards made up, before the amount derivable from the tax is known or afterwards?—A. The

assessments on real estate are made once in three years. I believe that is about the only answer I can make.

Q. What I wanted to draw out was this: how can the highway commissioners and the commissioners of the schools and the commissioners of the poor know exactly how much they can have?—A. They make up their estimate and levy their tax upon the preceding assessment. For instance, if the assessment is made this year, the school directors, who have to meet the expenses of the schools before the new tax is levied, levy their tax upon the basis of the levy of the preceding years.

Q. There is no limit, then, to what they may see fit to impose?—A. Yes, there is a limit. The 10-mill tax is a limit for school purposes, excepting special taxes that may be levied for building purposes; for ordinary school purposes a 10-mill tax is all that is allowed. That is true also with regards to roads, but the supervisors of roads can get around that requirement by running the township into debt to any extent, and their successors must pay that debt; and they have authority then to levy an additional tax sufficient to pay the debt.

Q. The only restraint upon them, therefore, is their desire to maintain good standing with the people?—A. That is the only practical restraint. As to the relative amounts of tax that different kinds of property pay in our State, examination was made a number of years ago by the department of agriculture to try and get some reliable information on that point. It was alleged by some that the tax on the farm property of the State was very much greater than upon any other kind of property. In making that investigation the department had a large number of persons visit the various county towns and consult the records, getting at actual sales of farm property and sales of city property and town property, seeing also the amount of tax that was levied against each on the records in the county town. In 1890 Secretary Edge, of the Pennsylvania State board of agriculture, collected statistics from actual sales of farm property in the State of Pennsylvania showing the amount of those sales and the tax that was paid by each piece of property. The total number of farms returned was 556 in 48 counties. These farms had been sold for \$4,225,805; the tax paid by them was \$40,282.65. The rates in actual value, not deducting the personal property tax, which is simply a tax upon farm animals over 4 years of age, and is comparatively insignificant, was 9½ mills, and after deducting the personal property was 8.06 mills. I made an examination at that same time of a county, omitting the boroughs, and found that the taxation upon the actual value of the property in the county outside of the boroughs, and including horses and cattle, was 9.9 mills. This examination was continued in 1891, and then the secretary of the State board of agriculture collected statistics upon 8,081 farms, and the estimated value of these farms amounted to \$51,525,929, and the total amount of tax paid by farms on the list was \$440,317.96. In 1894 the number was increased on the list to 19,719 farms, and in 1895 that was still further increased to 24,734 farms. The total value of these farms is given at \$151,529,458, and the total tax paid on the farms on the list amounted to \$1,259,847.17, which would make a millage of 8.3 mills on farm property. An examination that was made about that same time upon a different method shows that real estate in Pennsylvania at that time paid about 15 mills; real estate, counting country and city and town, paid about 15 mills of taxation. These figures show that farm property paid between 9 and 10 mills of tax, and the figures are, I believe, as accurate as we can get; they were very carefully secured. Of course, the amount varies in different localities. As I stated at the outset, some townships levy a tax of not more than 5 mills, perhaps 3 mills, and other townships levy a tax of as much as 80 mills; but these figures that I have been giving are the average for the entire State for a given year. The matter of the amount of taxes that real estate shall pay is wholly within the power of the local authorities within the township, with the exception of the county levy, which is usually from 3 to 4, and not often more than 5, mills. That is in the hands of the county commissioners. So that the control of the amount of tax that farmers shall pay in their community is within their own hands absolutely; they can have a low rate or a high rate, as they see fit.

Q. You think that is a good system?—A. I believe it is a good system. It has the advantage of being flexible, so that the peculiar requirements of a locality can be met by the people of that locality. If the expenses are very great or the necessities are very great, the people can levy more tax. If things are in good condition, a smaller tax answers their purpose. There is no hard and fast rule by which every township is required to levy the same amount of tax, but it leaves that to the judgment of the local people.

Q. (By Mr. PHILLIPS.) How does this tax on farms compare with the whole tax of the State on other matters?—A. In the year that this examination was made

the amount of State tax was something over eight millions. The auditor-general's report for the year 1889 gave the total amount of State tax at \$8,182,847.84. The expenses of government for that year amounted to \$40,007,649.12, so that \$31,824,801.78 would be left as the amount that real estate raised. Real estate, including the farm animals taxed, raised about \$34,000,000 as against all of the other taxation of the State, which amounted to something over \$8,000,000. I think the proportion has not been very greatly disturbed or changed by enactment since that time. There have been some slight changes. The 3 mills State tax has been increased to 4 now, and there is some little change in the taxation upon our transportation companies; that has been raised slightly, but these are practically the relative amounts that are raised by real estate and corporation and other property.

Q. Have you the facts in regard to the value of real estate in Pennsylvania as compared with other values, personal and other properties?—A. No; not at hand.

Q. Then, in your judgment, does real estate bear entirely too much in proportion to what is collected from other matters, so far as the whole government is concerned?—A. I think that it does. I do not mean thereby to say that real estate is taxed too much, but that some other things are taxed too little.

Q. (By Mr. KENNEDY.) Does not that mean, after all, that it is taxed too much?—A. By that I mean that it is not taxed to the extent of driving the business out of business. That I would regard as being too much tax; but the amount of tax that it pays would be very greatly lessened if a proper tax were put upon other items. When the Government was first founded most of the citizens were owners and employers, but with the advance of civilization and the incoming of great corporations and other institutions and immense development of private business, most of our people are employed and receive salaries. Some of these salaries are very large, and, as I indicated in going over the matter of assessment of salaried people, the amount of their tax, according to their assessment, is so out of proportion to the amount that they receive that it is almost nothing. I know of men who get salaries of \$5,000 a year who pay a road tax of 75 cents; and a man living in a little log house, with one arm, and a common day laborer, who must depend upon his own services for the support of his family, and in the same community, pays a road tax of \$1.80. There are judges of courts who get salaries ranging from \$4,000 to \$5,000 who pay a tax upon \$300, and a man who owns a house worth \$2,900 or \$3,000 will be taxed upon the full value of that property, although he may have no income whatever, and may be in debt for eight-tenths of that house.

Q. (By Mr. CLARKE.) Is there no exemption for debts?—A. None whatever.

Q. (By Mr. RATCHFORD.) A tax on the profession in effect is a tax upon income?—A. Well, it is a tax upon the profession. There are clerks, mine men, mill men, getting salaries anywhere from \$1,000 to \$10,000 a year—and the number is very large—who pay almost no tax. Merchants who have large business pay scarcely any tax on their occupation in our State. If the occupations were rated according to the amount that the real estate holder receives upon his investment the tax receipts for our State would be tripled, in my judgment, and the tax would come upon people who are able to pay it and have the money. The tax upon farm property, say a 10-mill tax upon a farm worth \$8,000, is \$800 a year. The farmer's income from that investment, after his own labor is paid, will perhaps not be over \$300, if it is that much, and upon that \$300, therefore, he is paying a tax of \$60, because the tax must come out of that fund; and if his income is nothing whatever—if there is a failure of crops—then his tax must come out of the original property unless he has other funds from which to pay it. The salaried man, getting a salary of \$5,000 a year, we will say, as a judge, would pay on a 10-mill tax on his occupation, \$3 as against the real estate holder in the country whose income is merely \$300 paying \$60. The inequality is so marked and the injustice of it is so clear that I feel that we are neglecting our duty in not calling the attention of the public to it.

Q. (By Mr. A. L. HARRIS.) Does this condition of affairs come from your constitution of 1874?—A. I think that that is made the excuse for part of it, but we find that when we want to do a thing we can generally get a way. For instance, our constitution says that all things shall be taxed in classes, and we go to work and reclassify our cities, and we accordingly have cities of the first class, and cities of the second class, and cities of the third class. There is only one city of the first class in our State, and so legislation is made for that particular city because it is put in a class by itself. Now, I think it would be possible to classify attorneys into those who have a business of so much and others who have a business of so much, if we want to do it; but the pressure is the other way. I speak of attorneys just as an example. We may take the salaried men, men in the professions,

I do not care in what line, those who get salaries of so much should be rated at a certain rate, and we could have classifications running so as to divide up what are now single classifications, if we desired to do it.

Q. Are we to understand that under your law, until a man with a high salary invests in real estate he is substantially exempt from taxation?—A. Yes, or puts it in a mortgage; then he must pay 4 mills. If I invest in our State \$10,000 in a mortgage on a farm, I pay on that investment a 4-mill tax to the State. The farmer who perhaps borrowed the money will also pay upon that same amount his local tax, which runs anywhere from—well, it is an average, as I said, of 10 mills, so that that particular money is taxed 14 mills.

Q. (By Mr. RATCHFORD.) According to that, the farmer is paying a tax upon his debts?—A. He pays a tax on his debts; that is what he does.

Q. Now, reverting, if you will, to the illustration made between the farmer and the salaried man, I would like to get some more light on this subject. If the salaried man's profession is not taxed, his money is invested in real property or personal property, otherwise it is in the banks in the form of money or in stocks of some kind. In either case he is supposed to pay taxes on it; according to law he is bound to pay taxes on it; is that not right?—A. Yes; excepting the deposits in banks.

Q. Well, is it found that personal property is pretty generally taxed and paid for according to its value?—A. The law is that this money that is invested in a mortgage shall pay a 4-mill tax, but, as I stated, the man who borrowed the money, if he is a farmer, must pay his full local and county tax on that same money; so that the man who has money, the salaried man who invests his salary in a mortgage on a farm, pays a 4-mill tax. If he takes that money and puts it into a farm he will pay a 10-mill tax. The effect of that is to keep men from buying, from putting their money into a farm in its purchase, and rather to lend money to somebody who has a farm, and so get rid of paying about 6 mills of tax.

Q. I speak mainly of money that is invested; of money that is largely in the form of personal property?—A. We have no personal property tax in Pennsylvania excepting bonds, and mortgages, and securities bearing interest, agreements bearing interest, articles of agreement bearing interest, and trust bonds, and horses, and cattle.

Q. You have no tax upon valuable household furniture, jewels, diamonds, etc.?—A. No; we have nothing of that sort.

Q. Do you consider it just to have the lawyer, and the college professor, and the bank cashier placed on an equality for purposes of taxation?—A. I think the whole thing is an injustice and an inequality. There are professors, and there are bank cashiers, and there are lawyers who ought not to be taxed on an occupation of over \$200. There are others in all these professions who ought to be taxed on an occupation of \$10,000.

Q. (By Mr. FARQUHAR.) From what you have explained, this tax is simply a head tax?—A. It amounts to that. It is hardly that. It is hardly to be dignified with the name of a tax. It is a farce, simply a burlesque on taxation.

Q. I would like to know how long it has been in existence, this system of capitation tax?—A. Well, it is not a capitation tax; it is supposed to be equitable. [Laughter.] Some features of it for many years, and some other features of it since 1874; but the inequality of it was not so great when most of our people lived in the country.

Q. And you were all alike?—A. And we were all alike. As it is now, a good many men are living upon salaries and a great many of them have gone into professional life and into occupations that are very remunerative, and the system has not been adjusted to meet these new conditions, so as to tax these people who are the most well to do of all our citizens. They still make real estate bear the burdens of the Government, which was an equitable thing at the origin of the Government, but has become inequitable as the productive power of our country has changed from real estate into brains and ability.

Q. In other words, the taxation has not kept step with the civilization?—A. No. (After a recess from 12.55 to 2 p. m., the hearing of Mr. Hamilton was resumed, as follows.)

Q. (By Mr. A. L. HARRIS.) Before you proceed to your suggestions as to remedies, will you make a little clearer to the commission the amount of money raised for local purposes, and the amount of money raised for State purposes?—A. The total amount of real estate as given by the secretary of internal affairs in his report for 1889 was \$2,121,638,452; a 15-mill tax on this would therefore be \$31,824,801.78, which represents the expenses of local government for 1889. The expenses of the State government for 1889 were, as per the auditor-general's report, \$3,182,847.34; making a total of \$40,007,649.12 as the expense of local and State government for that year.

Q. That amount has increased somewhat in later years?—A. Very much. The annual revenues for State purposes now amount to over twelve millions, and the relative proportion, I think, is maintained, although I can not state positively, having made no accurate examination since that date.

Q. (By Mr. FARQUHAR.) From what sources are the State revenues derived?—A. From collateral inheritances, mercantile licenses, taxes on corporations, from money at interest, bonds, mortgages, and securities, notes, articles of agreement bearing interest, license fees paid to county officials for recording, and similar work there, etc.

Q. Is the larger amount derived from the corporations?—A. I dislike to answer that, because I can not answer accurately. My impression is that it is, and yet I can not say just how much. I could easily discover. It is a very simple matter.

Q. (By Mr. A. L. HARRIS.) Please explain how you arrive at your tax on corporations?—A. Each corporation is required to make a sworn report to the auditor-general of the State, and that gives the capital stock and bonded debt, and other items which explain the commercial standing of the corporation in the State, and the amount of tax that they pay into the State treasury, so that it is a simple matter to go over the auditor-general's report and find out precisely the amount of money that they pay into the State treasury annually.

Q. Are your transportation corporations and industrial corporations upon the same footing?—A. In what respect?

Q. In the amount of tax they pay.—A. Manufacturing establishments in our State pay no tax. They pay tax upon their real estate, but not upon their business nor their machinery.

Q. Same as an individual?—A. Very much the same.

Q. In reaching the amount you collect from your railroads, how do you arrive at that?—A. By going over the auditor-general's report, and separating that from the others; they are given as separate.

Q. The gross receipts, or net receipts?—A. The tax has been changed within a few years. The tax was upon capital stock, and upon gross receipts for traffic wholly within the State. I do not know just what it is now.

Q. Do the home corporations and the foreign corporations pay upon the same basis exactly?—A. No.

Q. Will you state the difference?—A. The discrimination is against the foreign corporation. A domestic insurance company used to pay 3 mills on the actual value of the capital stock, and 8 mills on gross premiums, and 4 mills on mortgages. A mutual insurance company paid 8 mills on gross premiums, and a foreign insurance company 20 mills on gross premiums, on business in the State. There has been some modification of that, with which I am not quite familiar.

One of the difficulties in our system in Pennsylvania is in the method of assessment in the several districts. The officers who make this assessment are elected, and frequently their intention as to what they will do if elected, in the way of raising the valuation or lowering the old valuation, is known and becomes a part of the political canvass for election, so that in many cases it is understood in advance that a candidate, if elected, will lower valuations, or if there are large property interests in a locality, held in the hands of comparatively few persons, and the large majority of voters are men holding small amounts of property, then the chances are that the pledge will be made that values shall be raised, because the burden of tax will then fall upon a few large property holders, and so make it to the advantage of the large majority who have but very little property to have a man who will raise valuations. That causes inequality in various districts and injustice. My thought is that these officers should be appointed, say three assessors be appointed by the court and selected because of their good judgment and integrity (just three to be appointed in each township), to make the assessment of property in the township and make out their returns; then have one man from each of these boards meet together and revise the assessment throughout that county, so as to see that no great inequality exists between the assessments in the various townships. These men are thoroughly familiar with the value of property and would make a board of revision. At present, the county commissioners have that power. They have no knowledge of the situation in the various localities, and any revision that they make must be largely arbitrary without accurate knowledge, but if these several lists from the different townships were brought up and passed upon by all of the men who have made the assessments, there is probability that there would be a more just equalization. That report, then, as revised, should be final, and be turned over to the county commissioners. Then provide for an appeal in each of the townships, so that individuals who may be aggrieved for any cause, because of overvaluation of their property, could have an opportunity to be heard before the board of county commissioners. But there should also appear before the board at the same time the board of assessors

who conducted the assessment, so that when the individual makes his representation to this board the assessors will be there to give reasons, if any exist, why the original rating should stand. The board of commissioners become a jury, hearing the evidence on both sides from the parties interested, and their judgment is likely to be just, after full information from the parties who are best informed. This would, I think, tend to prevent the inequality that now exists in the original assessment of taxes.

With regard to what ought to constitute an equitable system of taxation, my views, perhaps, are a little radical.

Q. We would be very glad to hear them.—A. The aim in levying tax should be to make it equitable, bearing equally upon all citizens, according to their ability to bear the burden, and any arbitrary method that only takes cognizance of things they see without investigating into their conditions is likely to be unjust. There are certain things that I think ought to be wholly exempt from taxation in any State.

Q. Will you please name them?—A. All churches, meetinghouses, and other places of stated religious worship, all universities, colleges, academies, school-houses belonging to any county, borough, or school district, or incorporated, erected, endowed or established by virtue of any law of the Commonwealth, with the grounds thereunto annexed not exceeding 10 acres; also all burial lots, and lands and premises of all cemetery companies where such property is held in trust for the sole purpose of improving said lands and premises, and whose revenues of whatsoever kind are devoted to that object and in no way inure to the benefit or profit of the corporators, or any of them; also all lunatic asylums, almshouses, poorhouses, houses of refuge, penitentiaries, and asylums, schools and hospitals supported by the appropriations annually made thereunto by the Commonwealth, together with all lands attached to the same; also all charitable institutions provided by charitable gifts or otherwise, the chief revenues for the support of which are derived from voluntary contributions, together with the lands attached to the same.

It is perhaps enough to state in favor of this exemption that a tax on these would be in discouragement of religion, morality, and education in the State, and in restraint of the exercise of the practical charity that is so beneficial to, and cares for so many of the unfortunate and helpless in our midst.

Q. When you say churches, do you mean all church property?—A. Church property that is held for church purposes. Not property that would be owned and rented out for income, but that is held strictly for church purposes, the parsonage and church buildings, and the chapel that is attached to it, or the Sunday-school room.

Q. Trinity Church in New York have a great deal of property, and every other city has property laying around the city not used for church purposes.—A. I think, where not used for church purposes, it is liable for tax the same as other property.

Q. Is any of this property you have mentioned taxed in Pennsylvania now?—A. No. I also think that there should be exempt from tax implements of one's trade or occupation, carriages for personal use, furniture, watches, wearing apparel, books, jewelry, gold and silver plate, and works of art, on the principle that property that is naturally unproductive should not be taxed. No citizen can, with any show of justice, seriously object to paying his fair share of tax on his income-producing property, but when taxes are assessed on property that not only is incapable of production, but is a source of continual expense to its possessors, the tax becomes oppressive and is equivalent to confiscation. The items that I have mentioned are not income-producing capital, and yet they are important and even necessary parts of the equipment of every comfortable home. To tax these, therefore, is to lay hold of them piece by piece, until the entire list is confiscated by the State.

Another and entirely equitable reason why these articles should not be taxed is found in that principle of public policy which encourages the population of a country to provide themselves with comfortable homes. There can be no civilization worthy of the name so long as the inhabitants of a country live in squalor, like the nomadic tribes, and are restricted to the use of only the crudest implements and the fewest forms of comfort.

The State does well to protect the bric-a-brac and window garden of the housewife from the hand of the gatherer of tax, and give fond parents a chance to adorn their homes and save their growing boys and girls from the allurements of the saloons of vice.

The equitable principle that I think should control our laws in assessing and collecting tax is the one that I have partly stated; that all property naturally unproductive should not pay tax, and all income producing property, profession,

trade, occupation, and industry, including franchises of corporations, licenses, charters and commissions, should be assessed and required to pay their share of tax. The amount of tax that each should pay should be according to his net income or profit, and profits should consist of gross earnings less the necessary expense of operating the business.

Q. (By Mr. RATCHFORD.) Under that principle would the home be exempt from taxation? A home is unproductive, is it not?—A. Not naturally unproductive. It is such a thing as can be rented and will produce an income for its possessor.

Q. Is it not also true that a man can rent his carriage?—A. Not as a rule; it is not a rentable article; but where they are held for rent they ought to be taxed.

Q. The home is used for private purposes, just as a man's carriage would be used, according to the principles set down by you, and his furniture, and all these things that go to adorn the home and make the home comfortable. We will assume that the home is used for the same purpose, private purposes. Is it to be understood that under that principle you would favor taxation of the home, or would you exempt it?—A. I would do just what I have said; all naturally unproductive property should be exempt from tax. That which is capable of production should pay tax. A man's watch should not pay tax; it is naturally unproductive, and yet it has become a part of his necessary equipment; clothing, his hat, his cloak, the blankets upon his bed, dishes upon his table; those things that every man needs and that require expense to maintain, instead of their being a source of revenue to him, should be exempt from tax; but property, like a house, or a building of any kind that may be rented, should be taxed.

Q. Well, is it not a fact that none of those things of which you speak are as absolutely a necessity as the home; is a watch, carriage, or any of those things that you have enumerated? And also is it not a fact that the watch and the carriage can be made a source of revenue equally as the home can, if the possessor desires to dispose of them or rent them?—A. When he keeps them for hire, they should be taxed; where they produce income. The keeper of a livery stable; the seller of watches and clocks and jewelry, in the jewelry store; but where they go into a private home for the use of the possessor, not for rent, my judgment is that they are nonincome-producing property, and therefore should be exempt.

Q. The livery stable, and the store selling clocks and watches, are in much the same position as the man who has several tenement houses to rent. I have not such a person in mind. I have in mind a man who has only one home in which he lives and in which, perhaps, his lifetime savings are invested. He builds it for the purpose of living in it, yet if it suits his convenience he may dispose of it either by rent or sale, as he would his watch or his carriage.—A. If a man sells his watch or sells his carriage and invests his money in income producing property, such as a garden or farm, then he ought to pay tax upon it, because it becomes income-producing; but so long as it is invested in dead capital, that is naturally unproductive. My position is that he should be exempt on the ground that to tax him is to confiscate the property, and the object of the State should be to enrich her citizens. The State becomes wealthy as her citizens are wealthy and well to do, and anything that impoverishes the citizens is a detriment to the State. A State, therefore can not afford to require an individual to pay a tax greater than the producing power of the property; to take an absolutely unproductive property, as furniture in a widow's home; a tax on that will take a chair this year, when she has no outside income, and next year it takes another article of furniture, unless she has some means by which she can pay the tax gathered outside of this particular kind of property she possesses. In the case of the house, she can go and live with somebody and rent hers, or she can sell the house and invest the money in income-producing property naturally. Now, in the case of the vacant lot, that is unproductive. It is hardly absolutely unproductive in law, but I would rate that according to its producing power. For instance, the assessment valuation taken 10 years ago and the valuation taken to-day might be divided by ten to get at its income-producing power per year, and that income ought not to be wholly taken, or certainly not more than that income should be taken by the taxgatherer because anything else means confiscation. On the other hand, the tax ought to be such that a portion of the income would be left to the possessor as a recompense, in the way of interest, so that he can be induced to keep his money in that kind of property, and so ultimately make it highly productive; in other words, the State can not, under equitable or business principles, tax a piece of property to such an extent that it takes a portion of that property to pay the tax.

Q. Your conclusions, then, are that industrial and land values, perhaps, summed up in that language, should bear the burdens of taxation?—A. Industries, professions, trades, occupations, franchises, privileges, and everything that is valuable and that produces income should pay tax.

Q. (By Mr. FARQUHAR.) In your non producing property, would you apply the same rule to the undeveloped mining property?—A. My thought is that I would do with that as in the case of the vacant lot; estimate its valuation a series of years previously and its value to-day; find out its average producing power during the years, and let that be a basis then for the levying of tax. The individual can not afford to pay a high tax if it has been undeveloped—it lies dormant until some future period. Whenever it is developed the State will get the advantage of the tax; and the same is true of wood lands.

Q. Do you take into account the natural increment that goes to undeveloped property?—A. Yes; I think that is included in this system of valuation. If it were worth \$100 10 years ago, and to-day it is worth \$1,000, I think that that increment of value appears in this division into tenths that I suggested, or any other division.

Q. (By Mr. CLARKE.) Would you tax a lot on its present valuation or former valuation?—A. The general principle is that the man who is a capitalist is entitled to interest on his money wherever it is invested, and there ought to be an inducement for a man to invest his money in some kind of property. Say a lot was worth \$100 10 years ago, and was worth \$1,000 now; that would be an increase at the rate of \$100 a year. Now, that \$100 is 5 per cent interest on \$2,000. I will take that. You would rate the lot according to this new valuation, of which 100 is 5 per cent.

Q. Suppose the owner of that lot is holding it for a high price to prevent people from building upon it, who would be very glad to pay a reasonable price and cover it with valuable property which would yield a revenue to the public. Would you indulge the owner in holding that at a low rate of valuation for a high price at some future period?—A. I would wait until he would die—the State is perpetual—rather than do a wrong.

Q. Why not appraise that according to the value of similar property all around it, and tax it right along from day to day?—A. You are taking a piece of comparatively unproductive property and putting on it a value the interest of which it will not possibly pay, and so are confiscating the property. Why is it not fair to put your own valuation on it now, and compare it with the value of 10 years ago, and let that valuation be the rate of increase that the property is bringing, rather than to take it suddenly, and put your valuation upon the last and highest possible amount, compelling the man to sell? It may be his only possession, and he may have no outside income from which to pay this tax, and it becomes confiscation.

I have in mind a case of a man who was one of the wealthiest men in our State, who owned a large amount of real estate near the city; it was in farm property. Improvements were run out there against his consent, and it resulted in a practical confiscation of the man's entire property to pay for these public improvements, and the answer to his protests was "sell out."

Mr. FARQUHAR. Or die.

The WITNESS. He did die, but he died poor.

Q. (By Mr. CLARKE.) Why did he not sell and die rich?—A. That was his individual right that he exercised; to prefer to hold it cheap for his own purposes, which the State had no right to confiscate without recompense.

Q. (By Mr. RATCHFORD.) You speak of exempting the comforts of the home, including furniture, jewelry, etc., and other things tending to make the home cheerful and happy and thus encourage the building up of those comforts. Where is the harmony between doing that on the one hand and levying a tax upon the lawyer, or the teacher, professor, whose salary supplies those home comforts? Is that not direct discouragement of what we are trying to encourage?—A. The tax that is levied upon the productive power of the individual is a tax upon income-producing property; a lawyer's skill or the minister's extraordinary power to present matters in such a way that he gets a call to a \$10,000 position—has capital in his intellectual ability; or it may be manual skill, as in the case of a tradesman; that is his income-producing property, just as an acre of limestone land, or a house that is rented in the city or country, and should be taxed. It is naturally productive. The other is not naturally productive. I do not seem to make the distinction clear, but the distinguishing feature is in whether it is naturally productive or not. The question is, is it naturally productive or unproductive, on the ground that the State can not afford to confiscate an individual's property. The assumption is that no individual will put money into unproductive property to a greater degree than his circumstances warrant, and he ought to be protected in his desire to make investments for the good of himself and for the advancement of civilization without having it confiscated for tax.

Q. If a man is called to fill a position that pays a salary of \$10,000, and the State

sees fit to levy a tax upon it, does it not levy a tax upon the income of \$10,000 rather than upon \$250?—A. It certainly does.

Q. In case a man is capable of filling a \$10,000 position, but can not get any at all, then what?—A. Then he would not be taxed, except a nominal tax to keep him recognized as an individual; that is all. You can not afford to put a man by law in the poorhouse or in the debtor's court.

Q. (By Mr. CLARKE.) Should not the principle of equality govern in any tax system, so far as it might be practicable; that is, that individuals possessing a certain amount of property or income, also institutions, should be taxed somewhere nearly alike?—A. It depends upon the character of the institution, in my judgment. If the institution, as I have indicated, is wholly devoted to the advantage of the general public, such as a hospital or a public school, I think it should not be taxed, because it does not produce revenue for the benefit of any individual; but if it is a private school run for the enrichment of the individual, then I think it should pay tax.

Q. Well, take the case of two churches; suppose there is a church of 500 members, an old church in the business section of the city, the land upon which it stands having become very valuable for business purposes if it could be so used. There is another church in a distant part of the city with 1,500 members, and valued at \$200,000. Is there not a gross inequality in exempting those two churches? Is not the exemption of one from taxation the taxation of another?—A. I should think not; and I do not see who is injured by the fact that one is worth more than the other, inasmuch as both are unproductive so far as revenues that are to go into business are concerned. They are eleemosynary in character; they are for the moral improvement rather than for the commercial advantage of the community.

Q. Suppose on that very principle that both were appraised at their market value and taxed upon that. Is it not probable that the rich old church in the center of the business section of the city would sell its property and build a new church nearer the residence of its members, which would cost a great deal less money, but answer the purpose just as well—perhaps better—and thus leave its present site for the development of business, whereby the public would be a gainer in a financial sense?—A. I think that this tax that would be levied would have to come from people who are already paying voluntarily for the improvement of the community, without any hope of return in a financial way, a sufficient tax in the way of compensation to the minister, and for the support of the moral and religious institutions connected with that organization, and for the State to go in and impose an additional tax would be in discouragement of men who are already voluntarily—without any special advantage to themselves—certainly not money advantage—paying a large amount of their income. No matter what the ultimate advantage of having that lot might be to some business men, the State can not afford to go and impose upon a class of its best citizens and compel them to move when they do not want to do it.

Q. Suppose every citizen in a community is a contributor to a church. One man is a contributor to the modest and convenient church, and another to an extravagant church, occupying a site that ought not to be occupied by a church any longer. Now, is there not an inequality introduced between those two men, both contributing to the maintenance of the same good cause?—A. There is an inequality between any two men who contribute to the same cause, but contribute in different amounts in the same church. It is not necessary to carry the illustration into different churches, but there is an inequality that is very marked in the same church, many individuals of considerable ability giving very little, and others with comparatively small incomes contributing a great deal. It is impossible to equalize the voluntary gifts of people, and I do not think that the compelling of the church to move would tend toward equalization of expenditure in that direction, particularly when both pay taxes, in moving into a new situation.

Q. You believe in the principle of complete separation of church and state, do you not?—A. I do.

Q. Suppose you exempt a Christian church from taxation. Do you not thereby tax people who are not Christians?—A. I hold that every man is bound to support good order in his community, and the church is the best policeman in any city that we have.

Q. Supposing a man did not believe that it is?—A. Then he is an exception, and the State can not change its regulations to agree to the peculiar views of every individual. I think the general consensus of opinion is that they are of inestimable advantage to every citizen.

Q. You would not put any limit then upon the valuation of the church property that may be exempt from taxation, if it is used for church purposes?—A. No. Allow them to spend all the money they see fit.

Q. No matter how extravagant they may be and how much they indulge that extravagance?—A. No. If the church is as fine as the Temple at Jerusalem I believe it would be a mistake to tax it out of existence. It would be an advantage to the locality where it is, from the motive of good citizenship, liberality; its beneficent influences will go out over a large territory beyond the area in which it is located.

Q. Do you think that if all churches were taxed with fair equality as to their value that it would drive any one of them out of existence?—A. I think the tendency of it would be to do that, although I do not think it would do it.

Q. Why would it not be better to let every tub stand on its own bottom? Let the people who belong to that church make their contributions to it just enough larger to pay the tax, and then there will be perfect equality between different churches.—A. I do not quite understand what is meant by equality in this sense; but the general principle that I stated, I think, ought to hold with regard to churches. They are natural nonincome-producing property. To tax them, if their contributors were to go out of existence, would be to confiscate the property, or if the contributors were to withhold their support, which is a voluntary contribution out of their income which they are under no obligation to make except a moral one, it would tax the property, and I think it would be confiscated, and the state can not afford to do it.

Q. Should it not be confiscated when the contributors to it have lost their interest and will not maintain it?—A. I do not think the state has the right to confiscate private property unless the exigency is very great.

Q. Is not every man's property taxed to the extent of confiscation if he does not pay his tax?—A. That is nonincome-producing property. The amount of taxation that would be upon it would not be greater if the tax is equitable than its income-producing power. The other has no income-producing power, naturally.

Q. (By Mr. FARQUHAR.) Is it not a fact that the communicants and the members of any congregation support the church themselves?—A. Yes.

Q. Is it not also a fact that a man that supports a church and all the educational institutions of the church, Sunday schools, and everything else—that the amount of money that he contributes to that church, and to the well-being of the community is, averaged all around, half the tax he will pay even on his home and other property?—A. I think it probably is.

Q. If you tax church property as you tax business property, and the ordinary church, which is only supported by voluntary contributions, had to take out of their funds this tax for the benefit of the general treasury, would it not naturally entail a reduction in the revenues of this church that go to foreign and home missions, and the building-up of little country churches, and the spread of civilization, and everything that makes American civilization, or the world's civilization, simply because it is a question of taxing and putting into the common treasury this money?—A. Yes.

Q. (By Mr. CLARKE.) If you increase your public revenue by levying a tax upon churches, do you not therefore diminish by just so much the revenue that you derive from the individual contributors to those churches?—A. The church is made up of individuals, and any burden that is laid upon the church is an additional burden, is a burden upon individuals; the ordinary tax that the individual has to pay he must pay. If the church property is taxed, he must pay, in addition to the ordinary tax that he is called upon to pay, whatever this assessment upon the church property may be.

Q. But the assessment upon the individual would be less if the Government derived what it needs from the other source, would it not?—A. The amount so derived would be so insignificant, and the injury to public morals and interests so great, that I think the Government could not consider it.

Q. Would it not be just the same?—A. I do not think so.

Q. (By Mr. PHILLIPS.) Do you know what part of the people of Pennsylvania are church-going—members of or contributors to churches?—A. I do not; I have no idea.

Q. (By Mr. CLARKE.) If you exempt the church from taxation, do you not thereby tax people for the support of that church who do not belong to it, and is not that a mixing of church and state?—A. I think the taxation upon the general public outside of the churches is so trifling and so remote that it can hardly have serious consideration among legislators. The fraction, when distributed, would be so insignificant as to really mean nothing at all to the great mass of people outside of the churches; and they are advantaged to any burden additional that they might be called upon to bear in the general morals of the community, and in saving in police and other expenses that they as citizens are taxed for.

Q. If the churches were maintained they would be advantaged just the same if they were taxed, would they not?—A. The general principle, I suppose, is just this. We could doubtless argue the question for a long time. The general principle is that it is unfair to increase the burden of men who are already doing their full duty as citizens in the payment of tax, by requiring them to pay a tax upon an object of beneficence.

Q. You would not attempt to equalize this burden among the good people who are willing to contribute voluntarily to maintain churches as institutions of religion and good morals, but let one be extravagant and another economical, as they may please?—A. Just as they please; yes. It is their own money to be expended as their liking may be. A very expensive church is entirely proper in one locality, and in another it would not only be in bad taste but would also be a great burden. Yet it is not well to look a gift horse in the mouth, and be too critical when people are taking money out of their own pockets and giving it to a matter that is for the public good, and from which they expect to receive no return.

Q. (By Mr. A. L. HARRIS.) Now, your additional remedy?—A. I wanted to call attention to one of the effects of the present method of taxation that is seen in the condition of the forests of the country. About 50 years ago Pennsylvania was forested from the Virginia line up to the York State line, through a breadth of, perhaps, 100 miles, but to-day there is hardly any timber in all that region, so that the country is practically deforested. That has occurred within about 50 years, and it is impossible to-day for a man in Pennsylvania to hold timber land. The tax upon timber land in Pennsylvania will confiscate it in a very few years, and the result of that has been that our lumbermen have gone in and cut the forests out of Pennsylvania. Thousands and tens of thousands of acres that would have been standing to-day if the taxation had permitted it. The localities, seeing a valuable tract of timber land, raised the taxes upon it to such an extent that the annual growth would not begin to pay the amount of tax, together with the interest on the money invested in it, and the owners have had to cut it off and sell it in self defense; and quantities of lands have been abandoned by the owners and sold at tax sales, simply because the original owners could not afford to hold them; they cut the timber off and then turned it over and let anybody have it that wanted it. I think that is one of the great evils of the present system of taxing what is in sight at what it seems to be worth if it were sold right now, without taking into account its income-producing value year by year. Our farms are taxed by what the assessors consider they would sell for in the market, whereas their real income-producing value is away below the 6 per cent on the amount that he has been taxed for, and the effect of that is confiscation. So that the amount of tax that ought to be levied should have a direct relation in each particular piece of property to its income-producing power, and never should the amount exceed the income after the necessary expenses of conducting the operation are subtracted.

Q. (By Mr. PHILLIPS.) The denuding of this timber land occurred largely along the foothills of the Allegheny Mountains, where it was pine and hemlock, the soil not being very good for cultivation; was it not, largely, and in the east?—A. And clear over the Allegheny range; the entire region has been denuded.

Q. But the surface itself has not been very valuable for farming, and, therefore, it has been sold for taxes?—A. Sold for taxes. We have now in our forestry division in Pennsylvania an option on 50,000 acres of forest lands, and plenty of people are coming to us now and wanting us to take their lands at from 50 cents to \$1.50 an acre, that a few years ago were worth a large amount of money because of the timber that was upon them; but now they are comparatively valueless; and the reason why they are in the condition in which they are is largely due to the fact that men could not hold them who cared at all about having their money bring in a fair revenue. But if there had been some system by which the forest growth had been valued and the owner allowed a fair income upon that and the balance taken for taxation, millions of acres, I believe, would have been—certainly a million of acres would have been in the hands of the owners to-day, and would have been there for the maintenance of a great industry that has pretty nearly left our State.

Q. (By Mr. A. L. HARRIS.) You may state what, if any, is the value of forests to the agricultural citizen, outside of the forest regions?—A. Well, our cities now are dependent upon the head waters of our rivers for their water supply, and the deforesting of a country takes away the reservoir character of a district; the water that falls running off nearly at once into the streams and flushing them to full height, immediately, so that the floods are very destructive and a slight

drouth dries them up almost completely. The forests act as a reservoir and the water is prevented from flowing off, and percolates into the soil and is held by the leaf material and the roots and gradually fills the river, preventing these sudden rises in that respect and continuing the flowing of springs and streams during the entire season, and providing a healthful and abundant supply of fresh water to our cities. Philadelphia and Pittsburg suffer almost every year from both of these causes; and in our State authority has been granted to purchase on the head waters of our three principal rivers—the Allegheny, the Susquehanna, and the Delaware—lands not less than 40,000 acres and as many more as the commission see fit to purchase, for the purpose of protecting the water supply of these great cities that are situated upon the rivers.

Q. Is your legislature doing anything to encourage the growth of new forests?—A. Yes.

Q. And protect the old?—A. Our forestry commissioner has authority to purchase lands at tax sale, and we have a commission outside of our department of agriculture that has authority to condemn lands and appropriate them for forestry purposes; so that we have, I think, the best forestry laws of any State in the Union, but they are just going into operation. We have some lands purchased outright and now in title of the State, and, as I said, a large amount of land is held upon option awaiting the redemption by the original owners, which is not likely to occur; and we hope that the State will have many thousands of acres of land in the near future that will be reforested and preserved from fire, and allowed to grow up for the purpose of protecting the water supply, and being a source of revenue to the Commonwealth in the future. The German Government, only a few years ago, in their report showed that they received annually about \$95,000,000 from their forests, and that about \$55,000,000 of that is clear profit; and there are many districts where there are no taxes whatever levied for any purpose. The forests supply all the revenues for the schools and roads that the district requires. And Pennsylvania, by a proper system of reforesting, can, in the course of ninety years, and perhaps somewhat earlier, pay a large part of the expenses of government from the income derived from forests, and in the meantime give profitable employment to a good many of her citizens in doing a thing that we ought to have prevented the necessity for, plant out forests and maintain them.

Q. (By Mr. PHILLIPS.) Has there not been a very large acreage, for instance, of hemlock timber cut simply for the bark, and the trees themselves left to rot?—A. I think that was true to a great extent years ago, but just now it is not the fact. They are gathering up everything that they can get. I have known large tracts to be cut down in windrows, the finest timber that could grow, and allowed to lie a year, and then burnt up; hundreds of acres of it. A large part of the district up toward Lake Erie was cleared up in that way; the timber was burnt up right on the ground.

Q. (By Representative GARDNER.) What comes up on that land after the forests are cut off?—A. It depends on the character of the land. Some places white pine, other places white oak and chestnut. The white pine grows very readily wherever there has been white pine in the woods previously.

Q. (By Mr. FARQUHAR.) How have you utilized the hemlock?—A. It is cut into boards; it is cut into square timber for building purposes, the bark is used, and the tops are used for wood-paper.

Q. Have they taken up the fallen timber there and utilized it in any other way?—A. It is not the fallen timber.

Q. I mean the cut timber.—A. I think there was not as much of that as perhaps my statement would indicate. The timber originally was comparatively of little value, and hemlock that lies for any considerable time is worthless. But districts that have been cut off in recent years are being cleared up of their tops and rejected portions, by persons who come in now for paper wood, and large amounts of it are being exported or used up in our own State for pulp.

Q. (By Representative GARDNER.) You say that various woods—white pine and perhaps principally white oak—come up on the land after the original tract is cut off. Now, is that quite generally destroyed by fires?—A. Yes; very frequently.

Q. Does the high taxation make the notion of holding land until that timber grows up, hopeless to the owner so that it is abandoned and does not come into the position of taxable property, mostly due to the lack of care, which in turn allow the destruction of the young forests by fire?—A. I think so.

Q. Have you any suggestion as to a mode of taxation, after the timber has been cut from a piece of land, for the period while the new growth is coming on and before it has become profitable? That is to say, after you cut off your timber, and even if white oak follows, it is 7 or 8 years before you can get an income, the

~~it is not correct that and they must have seven years; so there~~

is a period of 7 years when there is no income. Have you a method of taxation during that period of time?—A. The method of valuation that I suggest is that the income-producing power of a piece of ground should be discovered, rating it at its value 10 years ago, probably, and its value now, and then let it pay tax upon that income-producing power and keep that up as long as the timber lot exists, and then when the timber is finally cut down let there be a tax levied upon the product instead of such a ruinous tax being put on the land while the timber is growing. Let the main tax come on the product, so as to defer the cutting of the timber as long as possible and make it to the advantage of capitalists who wish to invest their money over a long series of years to put it into timber land, having the assurance that it will not be taxed out of existence, and that ultimately it will pay a fine revenue for their estates.

Q. Is it not the business practice of large owners of timber lands to select trees to cut, and not denude the whole section, but keep the growth about even from year to year?—A. That is being done to a certain very limited extent; that is, they go on with that system as a system of thinning until the growth becomes pretty nearly uniform, then allow the rest to continue, and when that matures they cut it all off and reforest—either let it sprout out or replant. I think the German method does both; that is, takes out at first the better portions and allows the other to grow for 30 or perhaps 40 years, and then the forest is pretty nearly uniform—the trees that remain. That is allowed to continue for another 30 or 40 years, and when it has fully matured they cut the entire section off and reforest it.

Q. Does this German system, or any other with which you are familiar, encourage the planting of trees of high value?—A. Yes; that is what they do encourage, mostly the conifera; the German foresters plant these, and they also plant some trees of inferior quality, simply for pruning purposes; that is, trees that will grow in amongst the cone-bearing trees, evergreens, and have the effect of tending to prevent the growth of lower limbs on the other trees; and after a while these are cut out and the others allowed to grow without any further growth amongst them.

Q. (By Mr. A. L. HARRIS.) Is there any disposition on the part of the farmers to emigrate from the farms into other localities or other States from your State?—A. The statistics show that along about 1800 nearly 89 per cent of the people of Pennsylvania lived outside of incorporated towns and cities, and in 1890 44 per cent lived outside of the incorporated towns and villages. And in 1800, of the 89 per cent that lived outside of these cities and incorporated towns, almost the entire number were engaged in agriculture in some form. To-day, in Pennsylvania, only about 21 per cent of her citizens are engaged in agriculture, showing that there has been not only a great immigration into the cities, but that the percentage of agricultural people has been greatly reduced inside of 90 years.

Q. What is the cause?—A. I think, perhaps, there are many causes. One doubtless is the hope of gain that our cities present for young men, in their estimation, opportunities for advancement and gain that they feel the country does not present; and another cause which, perhaps, affects the older persons who have been engaged in country life, who have been engaged in agriculture, is the absence of suitable rural schools for the education of their children.

Most of our people now see that it is absolutely necessary for the young people to be educated more highly than they themselves were if they are to successfully compete in the industries and occupations of life, and inasmuch as people live for their children, many families go to the towns, where the schools are graded and are better, for the purpose of getting educational advantages for their children. I believe that affects a great many people. Another reason, I think, is due to the fact that the country is remote from towns, because of the difficulty of access. The poor roads make it troublesome to get to towns that are within ordinary distance, and this influences a good many people to go there, who, otherwise, would stay in the country, if they had reasonably easy means of access to the post-office and the town, and the stores, and all that sort of thing.

Q. Have you any remedy to suggest?—A. I believe that the introduction, as I have said, of a better quality of rural schools, both primary and high schools, with the introduction of good roads into the country, will not only keep in the country many who would otherwise leave it, but will bring into the country from the neighboring towns and villages large numbers of our better class of people who would prefer country life, if it were made accessible, and if the comforts and conveniences of life could be had in the country. With the introduction of lighting apparatus that is not too expensive, and the ease with which water can be placed all through houses, and houses can be heated throughout, and with all the conveniences of city and town life to be had in the country, it would bring many thousands of people—is bringing many thousands of people now out into the country 5, 10 and 20 miles from the cities, who would not go into the country at all if it were not for the good roads and the possibility of having these conveniences.

If we can supply good roads and conveniences and show the people how they can fit up their homes with all the modern appliances without too great expense, it will do a great deal to bring back into the country many who have gone from it, and keep there many who would otherwise leave it.

Q. Is there not a decline in the money value of farm lands in Pennsylvania?—A. Yes.

Q. (By Mr. PHILLIPS.) In what periods?—A. I have made an examination into the value of farm lands in Pennsylvania between the years 1859 and 1889; the one in 1859 is, I suppose, a normal period, and these other different periods of 1869 and 1879 and 1889 are perhaps abnormal.

The price of farm lands in Pennsylvania in 1859 averaged \$63.27; in 1869 the average was \$90.61; in 1879 the average was \$72.68; in 1889 the average was \$53.37.

Q. (By Mr. A. L. HARRIS.) Now, you may state the cause for that decline, if you can.—A. I do not suppose that there is any one cause that has produced this result, but there is one that seems to have had a good deal to do with bringing it about; I refer to the extension of railroads during that period.

I made a comparison between the extension of railroads to the lands of the far West and elsewhere, and the value of farm lands in Pennsylvania. In 1859 we had in this country 28,789 miles of railroad, and the price of farm lands was \$63.27; in 1869 we had 46,814 miles of railroad in the entire country, and the price of farm land had gone up to \$90.60 per acre. Of course, there was an inflated currency at the time that you must bear in mind. In 1879 there were 86,584 miles of railroad, and the price of farm land had dropped to \$72.68; in 1889 there were 162,000 miles of railroads, and the value of farm land had dropped to \$53.37. In 1891 there were 171,000 miles of railroad; that is, between 1871 and 1891 there were built in this country 119,554 miles of railroad, and the table shows that as the railroads extended and this enormous territory of free, fertile land in the far West was developed, the price of farm lands in the East dropped. There was a placing on the market of the agricultural lands that had been appropriated by Congress to the States, many hundreds of thousands of acres, all coming very nearly at the same time, that reduced the price also. Young men who were intending to make farming a profession, who lived here in the East, refused to pay \$90.61 an acre for land when they found that by going West they could buy land at from 50 cents to \$1 or \$1.50 per acre, better than the lands they had here, except that there were no improvements on them, and that the rates of freight to the East were not prohibitory, and that the yield was greatly in excess of what they could grow here, and that they could get cheap homes in the West by going and taking them and investing but a small amount of money. The effect was there were fewer purchasers for land in the East, and this other putting of land on the market so glutted the market, and the supply of farm lands on the market for a time was so great, that the price had to drop in the Eastern section of the country.

Q. (By Representative GARDNER.) The law of supply and demand?—A. I think so. This was brought about largely by the improving of these lands and by the enormous development of these railroad systems, and the cheap rates that were offered to shippers in the far West.

Q. In the statement of the shrinkage in the selling price of farm lands within given years, as you have stated it there, is it or is it not true that that decline is based on the earning capacity much more than appears by the figures? In other words, does not the rate of interest, which in that time materially declined, did not that have a natural effect to decrease the price of land? For instance, if a farm sells for \$10,000 when the prevailing rate of interest is 7 per cent, in so far as that is any basis of its earning capacity, it means it is worth a clear income of \$700 a year?—A. Yes.

Q. At the time you state your lowest decline, is it not a fact that the rate of interest had fallen to 6 per cent or below, and was not the decline greater than appears, if you take into account the rate of interest?—A. I think so. The value of farm products, during a portion of this time, owing somewhat to the inflated condition of our currency, I suppose, made farming a very profitable business. Wheat was a good price, and other farm products; horses were a good price, and pretty much everything that the farmer raised was a good price, so far as the debt-paying capacity of the product was concerned. It might not really have purchased more of given things than the same money later, but it paid more debt, and consequently the farming business was a somewhat better business at that period, so far as debt paying was concerned, than it was later.

Q. (By Mr. A. L. HARRIS.) What effect did this rapid development of the West have upon production?—A. It has increased the aggregate production of the country very greatly, and it has changed to some extent the agriculture of different sections. It has been found that there are certain districts in the Far West

that are especially adapted to the growth of certain crops, and they grow them to great perfection. Our Eastern States have found it necessary to vary to some extent the character of the crops, and we are getting to raise a greater variety, taking up the culturing of more perishable articles and such as are not so easily transported for long distances.

Q. What effect did this production in the West have on prices of farm products?—A. I suppose the general effect has been to bring down prices upon certain crops—wheat, for instance. I do not think it has affected hay, and perhaps not greatly affected corn, because of the bulk. But wheat has been affected by the opening up of these districts and the cheap freight rates that prevail.

Q. Have you made the extension of foreign markets a study to any extent?—A. I can not say that I have, excepting this far: I believe that the introduction of our products into the markets of other countries must begin here at home, having a more rigid inspection of the articles that we export, so that inferior goods can not be sent abroad to impair the general reputation of the goods sent out from this country. A cargo of poor goods labeled "Good" will do almost irreparable damage to the trade that previously may have been excellent. We need to protect our best exporters by requiring that goods going abroad shall be of a certain quality, or at least, that the quality, whatever it is, shall be marked upon them, so that the purchaser can see from the label itself whether it is first class or whether they are of a lower value. That is about as far as I believe I have any suggestion to make; a rigid system of inspection so that goods going from this country with our brand will be guaranteed to possess a certain quality that the brand indicates.

Q. Is that required now by Federal law?—A. The United States Government has inspectors of meats, and our foreign exports of meat must undergo an inspection by Government officers, and that has been of great service; but I believe there is no such inspection of fruits nor dairy products, nor of many of our canned goods, manufactured articles of various sorts.

Q. Would such inspection be advisable?—A. In my judgment it would, because we are anxious to have a foreign market, and are called upon to compete with our neighbor Canada, and they are sending goods that are guaranteed right over to England and are rapidly taking the dairy market that we ought to have. They are taking it by putting their goods over in good condition and guaranteeing that they are all right.

Q. (By Mr. CLARKE.) You do not claim that we have any better right to it unless we can produce a better article?—A. That is the right that is recognized everywhere.

Q. (By Mr. PHILLIPS.) In regard to the pure-food law of your State, do you consider it amongst the best, or should it be amended?—A. I am not familiar enough with the laws of the other States to be able to make a comparison, but our pure-food law has done good service for us in clearing the shelves of groceries and stores of articles of food injurious to health. It was the practice, before the establishment of the department that has charge of the pure-food law, for manufacturers of canned goods and others of a perishable nature, to use preservatives, boracic acid and salicylic acid, things that are regarded as injurious to the health of those that consume them. We have by a system of inspection and analysis and prosecution rid the shelves of our stores in Pennsylvania largely of goods of that character, and I think have done as much for the public health as many of the physicians in the State.

Q. You consider it, then, as being pretty well enforced?—A. We are trying to enforce it, and we have, I think, some 13 inspectors out all the time, whose sole business it is to secure samples; and we have a number of chemists whose business it is to analyze them, and reports are made to the dairy and food commissioner, and whenever our chemists report that the article is clearly a violation of the law in its constitution, suit is brought and the parties are brought to answer for it.

Q. Have these inspectors of your department found any special defects in the law, so far, that ought to be remedied?—A. The difficulty that we have to contend with just now is one that our law does not reach. A man may adulterate his goods with a harmless adulteration, and in that way impose upon the public. It must not be a thing injurious to health; if it is injurious to health, we can suppress it; but if he will mark on the package that this is a compound, then he can put into it what he pleases in the way of adulteration, provided only that that adulteration is not injurious to health. And the public may thereby be deceived in supposing that the thing has more of the valuable ingredient in it than it does possess, and you are not sure of what you are purchasing; for instance, in pepper or some other spices, or perhaps buckwheat flour, or many other articles of food.

Q. (By Representative GARDNER.) If the stomach is filled with that which lacks

nutritive value, although the individual may not be poisoned or injured by way of having the organs deranged, still if he is a laboring man, the muscle-making material is less; and if a man, to take an extreme case, were fed with something that would satisfy the stomach but had no nutritive value, and he attempted to work, it would only be a question of time until he would die. Now, is it not true, in adulteration, that the compound that looks right, but is deficient in nutritive value, is injurious to health?—A. We do not so regard it. A certain amount of such material seems to be necessary in order to distend the stomach in order that the action of the stomach in the process of digestion may be healthful. I think the difficulty that they found with some of the concentrated rations for soldiers has been due to that fact; they have all been too concentrated, and did not have enough of this extra material, such as ordinary cellulose fiber, that is practically indigestible, to distend the stomach and so keep up a healthful condition of the organs of digestion. In most of our foods, wheat and most of the cereals, there is a certain indigestible portion, and while it does not directly give nutrition, it does aid digestion. So that we do not consider that harmless substances put into any food is likely to be an injury in the sense of injuring health, as does salicylic acid or boracic acid. It makes it less nutritious, and there may be so much of it put in as to make the food practically worthless.

Q. (By Mr. KENNEDY.) Is butterine, which is made from the fat of slaughterery animals and 25 per cent of pure milk injurious to health?—A. It depends very much on how it is made and the condition of the material. I would want to know how it was put up and how preserved. If the animals were all healthy, and the articles all pure, and the material prepared without the use of injurious substances, it would not be injurious to health, in my judgment.

Q. You spoke about Canada getting a market abroad for dairy products which this country should have. Have you any statistics which show what surplus, if any, there is of dairy products in this country?—A. No; I can not give them to you. I think that Secretary Wilson, of the Department of Agriculture, could give that without difficulty.

Q. Do you believe there is a large surplus over the needs of the home market?—A. There is not in Pennsylvania. The butter that we produce in Pennsylvania amounts to about 90,000,000 pounds; we consume annually about 160,000,000 pounds. So the business is not overdone in our State, but I am not familiar with the condition of affairs so far as the General Government is concerned.

Q. (By Representative GARDNER.) Tell us, if you can, why it is, in the State of Pennsylvania, in this state of affairs, that the creameries are all the while seeking outside markets? Why is it they try to sell outside so much butter to be replaced by other butter?—A. I presume they are doing just what all merchants are doing—seeking markets; and I am not sure that they prefer an outside market, but knowing of outside markets, they do not feel under obligation to sell wholly at home. I think also, as part of the explanation, that the Northwest have organized their dairy industry in better shape than is ours. They have boards of trade, such as the Elgin Board of Trade, that inspect dairy products; and their stamp gives character to the product; so that our merchants in many instances, desiring to have a steady uniform grade without having to inspect it, take an Elgin brand, and are sure, from the fact that it is branded by the Elgin people, that it is all right, and that the second consignment will be equal to the first, and so on. We have no boards of trade in our State, and the effort now is to try and organize boards of trade that will inspect the dairy products of the community and give character to them by giving the result of their inspection on the stamp upon the article, and when that is fully inaugurated I think our own merchants will stand up for our own goods in preference to those that come from abroad.

Q. Then the answer is in part that the people seek a convenient market without regard to State lines, and that competition is made more effectual in your State because of the more reliable brand coming from the outside?—A. Yes.

Q. (By Mr. CLARKE.) Is there not another reason? Do not the producers of the highest grade of your dairy products seek outside markets because they can get a higher price after having supplied the higher-priced customers in Pennsylvania?—A. I do not know how that is. Naturally, the producer of a good article seeks and can get a higher price both at home and abroad than the man who produces an inferior article, but I am not sure that the surplussage of high-priced butter is great enough to warrant our producers in going outside of the State. We have enough people in the State who desire to purchase it if they could be sure of the same quality year by year, and the supply would be sufficient to meet their needs.

Q. Take, for example, "Philadelphia prints," a butter which some years ago attained a very high reputation outside as well as inside the State; has there not

been a continuous market for it outside of the State, even when the occasion for it has largely disappeared by reason of the development of the system in the West and other States, producing good butter?—A. I am not sufficiently informed to speak accurately upon that.

Q. (By Mr. A. L. HARRIS.) You touched a while ago on the subject of good roads. Do you wish to say anything further in regard to the importance of good roads, and what your State is doing in that direction?—A. We are very much interested in this question. Our State system is a very imperfect one, and perhaps we are further behind in the matter of the construction of roads than any other single part of our government. It is the old method, in most of the districts, of working out or loafing out the tax. That is the method, and it is in the hands of perhaps the most inefficient of our people, because the system is such that a business man, or a man with any considerable occupation, can not afford to be a road supervisor. He can not stand, as our system requires, and oversee half a dozen people or more working—or going through the motions of work—on the public road, and collect duplicates, 10-cent taxes and 15-cent taxes, and all that. So that the system is defective in the matter of our supervision. That is the radical defect of the old method as it is pursued in our State. Until we can have an efficient supervision we can not have good roads.

Q. (By Mr. RATCHFORD.) The supervisor who gets a half dozen men at one time is a lucky man, is he not?—A. He, in many cases, wants to keep the position, because usually he is a man that has nothing else to do. He is selected because he is unable to do anything else, and it is a polite way of keeping him off the township often. He gets \$200 or \$250 or \$300 for the supervision of roads. That will keep him and his family very well, and so he desires reelection annually, and does not urge those that are called out to work under him to do more than is absolutely necessary. So it is that he secures his reelection year after year, and after 20 years of such service the roads are no better than they were when he began.

I made a very careful examination into the road system of our State, collected the names of all the supervisors, over 3,000, corresponded with them, and tried to get at the mileage and see what the conditions were, and I found we had about 100,000 miles of roads in Pennsylvania, outside of the boroughs and cities, and that this costs us about \$4,000,000 a year, or at the rate of \$40 a mile, and the most of them are no better than they were 20 years ago. In some localities they have improved very much, near cities, where gentlemen have put up country residences and have taken an interest in the improvement, and where the taxes that are levied are not a burden on those that live there. They have built good roads, notably about Philadelphia; but of the great body of the roads, 80 per cent, maybe 90 per cent, are very little better than they were a good many years ago, and this tax is being annually expended.

It is perfectly practicable to take the taxes that we now have and put our roads into reasonably good condition in a comparatively short time. In most districts throughout this State we have an abundance of good material for ballast, and with proper care and some business energy put into this we can have our roads very greatly improved.

Q. (By Mr. KENNEDY.) Is there any sentiment in your State in favor of working the convicts on the roads?—A. We have a law, passed this last winter. I am not quite sure that I can give it exactly; but it is, in effect, this: That the prisoners in all county jails may be taken out and worked upon the roads in the immediate vicinity of these prisons. The penitentiaries, however, were not, as I understand it, included in that law; simply the prisoners in the county jails. They can be worked on the roads at the discretion, I think, of the town officials, and yet I can not give you the exact authorities who have that matter under control.

Q. (By Mr. PHILLIPS.) Would you think such a law would have a degrading effect on the prisoners, working them in that form under supervision?—A. It seems to me it depends on the way it is done. If they are to work with ball and chain, it looks as if it was a spectacle that we would prefer not to witness as we drive along the roads. If they are worked under supervision and the authority that keeps them in subjection is in a measure concealed, not obtruded, then I think it would be all right.

Q. (By Representative GARDNER.) How can you keep them from running away?—A. In California they have been securing stone quarries and building a temporary prison at the quarries, putting up strong inclosures, and having the men quarry the stone, and run the stone crusher. The guard is there, but it does not require an extraordinary force to keep the prisoners under control. The stone is then hauled from this central station to the point where needed.

Q. I suppose they are fenced in?—A. In some cases they have built temporary prisons, and they have found it to work satisfactorily.

Q. (By Mr. PHILLIPS.) Have you anything further to suggest in regard to the good road system?—A. I believe our country would be greatly advantaged by the introduction of good roads. Inasmuch as the tendency is toward the towns, and the business of the country is with the town, the railroad station, and the store, the building of a good road out to the farm brings it about one-half nearer the place of business, and to that extent it is an advantage; and it also enables the farmer to haul double the load that he did before, and save his time to that extent. Labor and time on the farm have come to be much more valuable than they used to be, and if the farmer can double his load and haul four loads instead of two, it will be of much more advantage than years ago, when it was not of so great value as it is to-day.

Q. Have you any amendment to the law in mind that would make it more valuable?—A. We have a law, passed in 1897, which provided for a uniform system of supervision throughout the State. Our supervisors now are elected in many ways. Some serve for 1 year, some 2, some 3; different prices are paid to the supervisors; in some counties no two townships have the same rules. This law that was passed 2 or 3 years ago contemplated the election of boards of supervisors composed of three persons, one to be elected each year, and to serve for 3 years; making the township board responsible. Then we contemplated the giving of State aid. The general feeling is that it is impossible for the farming people to build the roads themselves, and that they ought not to be expected to build them. When the country was younger and many more people lived in the country, all were interested in the good roads and could afford to meet the expense. Now all who live in the cities, merchants and manufacturers, are interested in roads as distributing agencies. We hold, therefore, that the State tax coming from corporations and from all kinds of business, distributed over the country in the interest of good roads, the building of good roads, would be a proper distribution of the money and necessary in order that we may have them. Farming people can not be taxed to the extent necessary to build the kinds of roads that modern civilization requires, so we are in favor of State aid.

This law which was passed contemplates further that during the construction of the road and afterwards there shall be a road master in charge all the time. Sections are districted so that each man is responsible for his section, and his business is to see that the material put on the road is kept there, and that the drains are kept open, and the ordinary road repairs made promptly. The act is inoperative, because the law requires \$1,000,000 to be appropriated before it shall go into effect, and our treasury has been in such a condition that it was impossible to make this grant. But just now a new board, of which Mr. Cassatt, president of the Pennsylvania Railroad Company, and General Beaver, judge of the superior court, are members, is appointed to take up this road question and make a report for the next legislature, so that we hope to have a law in operation in the course of a very few years that will give us good roads, and provide the assistance necessary for that purpose.

Q. In the meantime you are getting along under the old system?—A. Under the old order; yes.

Q. (By Mr. A. L. HARRIS.) Under the topic of remedial legislation, State or national, what suggestions have you to make?—A. As to oleomargarine legislation—we have a law regulating the manufacture and sale of oleomargarine. Several years ago there was a prohibitory law, and we found that it could not be thoroughly enforced, but last year a law was enacted that repealed the old prohibitory law and gives us a license system by which oleomargarine may be manufactured and sold in our State if it is without color, and if it is marked "oleomargarine" on every package that is sold, and if the hotels and restaurants that use it, and the groceries that sell it put up placards supplied by our department, stating that oleomargarine is used or sold there. The enforcement of this law is in the hands of the dairy and food commissioner of our department, and we have just had a suit determined in Pittsburgh on the question of the constitutionality of the color clause; the suit was decided in our favor. Another suit was heard in Philadelphia last Tuesday on the question as to whether the wholesale dealer could sell oleomargarine in the original package under the United States interstate-commerce law, and that decision we expect to have any day; perhaps the judges have given it to-day. They reserved their decision for a few days. We hope to have these two questions settled, and when that is done we think we can regulate the sale of it in our State; but I think there ought to be a tax put upon it, as some propose, of 10 cents a pound by the United States Government instead of the 2 cents that I believe is now on it, so as to raise the price of it, so that it can not undersell butter in the same market. The 2 cents tax, added to the 7

cents that it costs to manufacture it, brings the price up to about 9 cents, perhaps 8 cents a pound. All the dealer gets for it, which is about 18 or 20 cents, is pretty nearly clear profit, making it to the interest of the manufacturers and dealers to evade the law. They sell it as butter and represent it as real butter. A law by the United States Government taxing it 10 cents would raise the price to about 16 or 17 cents, so that the amount of profit in the business would not be great enough to justify these people in going to the risk of trying to evade our laws.

Q. What, in your opinion, is advisable in national legislation along the line of the pure-food law?—A. The difficulty that we have now is, as I stated, in the purchaser being protected against an adulterated article, and I think if the United States Government would pass a law requiring all kinds of food products to be labeled, giving the constituents of the article in percentages, so that individual purchasers might see upon the label the amount of the ingredients that the article contains, it would prevent fraud upon the public and enable a man who wanted to get a good article to purchase that, and the man who was contented to have an article diluted to purchase that; and the price of the two would not be the same. A law of that kind must, of course, be national, and just now there is a bill in Congress that is offered by Mr. Brosius, of our State, that looks toward the regulating of this matter by the National Government.

Q. (By Mr. CLARKE.) Would a law of that kind, in your judgment, be effective to prevent the adulteration of milk?—A. I hardly know. The cities have local regulations with regard to the adulteration of milk, and it is a matter that is easily detected, and just now the boards of health have taken up that question and the milk supply through our cities is fairly pure. We made an examination 2 or 3 years ago of the principal cities in our State and in New York City, to see just what the milk supply was, and found in some places that it was very impure; but since that, after the publication of the results, the boards of health in the several cities took the matter up and the milk supply is now reasonably pure. We make inspections occasionally to learn the conditions, and we find they are very greatly improved. I think that can be well referred to the localities to take care of.

Q. How would the law that you speak of, for printing on each package the quantity of the ingredients contained in it, work as a local regulation in the several States?—A. I can not see that it would do any harm, and it would be a notice to every individual who is a purchaser, of the character of the goods, and in my opinion he is entitled to that notice. He can not know, unless the State discloses it, just what the goods contain; and the several States could have analyses made to see that the goods in these packages correspond to the statements made upon the labels.

Q. (By Representative GARDNER.) A few years ago, when a great many people were canning sugar corn, a concern in Maryland bought up horse corn and put in it a whole lot of brown sugar, and commanded the market of the world, simply because it was sweeter than any other corn. Now, that label might have been all right, for it is so much corn and so much sirup, but should we not go further in such a case and require them to state what kind of corn was in that can?—A. I think it should; there should not be anything about the label that would conceal the character of the contents, or mislead.

Q. (By Mr. CLARKE.) Would you carry the same principle to wearing apparel?—A. No; I think we can safely leave that to the judgment of the purchaser. I know that there are frauds perpetrated there, but they do not affect the public health to any extent, and it is likely that any firm will soon be discovered if they sell an article that is a fraud upon the face of it; and their business instincts will lead them to give a pretty fair article.

Q. Suppose a man's health requires that he should wear 75 per cent of wool next to his person, and he buys an article which proves to contain only 50 per cent wool; will not his health be injuriously affected by that?—A. Yes; and he would have his remedy if the individual stated positively that it did contain a certain amount.

Q. (By Mr. A. L. HARRIS.) Is the Federal law to prevent the spread of disease among domestic animals satisfactory?—A. I think so; as far as it goes. They have a quarantine law which shuts out animals from Southern districts that are liable to be affected with anthrax, and prevents their coming in, unless they have been thoroughly treated so as to destroy the germ that breeds it; and the several States also have laws that tend to protect them against the spread of any contagious disease. We have a law in our State that authorizes our State live stock sanitary board to quarantine animals (and we do quarantine all cows that come into the State), and which requires them to be tested for tuberculosis.

Q. (By Mr. PHILLIPS.) At what point is that done?—A. It is done in Pittsburg.

Q. If they are in the State they can not be sold?—A. They can not be sold. When they come in they have quarantine officers who require a certificate from the dealer that the animals have been inspected, and that they are free from this particular disease. Then we have authority to quarantine animals that are found to be affected with any dangerous disease and isolate them from other animals right in our own State. The result is that we have been able to suppress most of these contagious diseases, such as glanders, anthrax, and various dangerous diseases common to cattle.

Q. (By Representative GARDNER.) Is there any inspection of stock as a matter of interstate commerce? For instance, almost all the horses coming through from the West are unloaded or inspected at Pittsburg, are they not?—A. Yes; they are unloaded, but can not say as to inspection.

Q. Is the same true of cattle and hogs largely, or is there any inspection whatever?—A. Yes; all stock is unloaded, but am not certain as to inspection.

Q. Is there anything at all to prevent the farmer of Ohio from sending diseased stock into the market of Cincinnati, and from there shipping into Philadelphia, and from there distributing into the other States?—A. Yes; we have a law which prevents his doing that. He can not ship cows into our State that are not tested for tuberculosis.

Q. But suppose they are being shipped through the State?—A. Well, they can not stop in our State. If they stop in our State, then they must have been inspected, and if they have not been inspected they must be inspected, and animals found to be diseased must be slaughtered.

Q. (By Mr. RATCHFORD.) Can they be shipped from one part of your State to another?—A. Yes; they can from the interior of the State. We, however, are inspecting the herds of the State—our State live stock sanitary board—and condemning large numbers of cattle.

Q. Is that board organized under the laws of the State?—A. Yes; under the State laws. Owners of herds are invited to apply for tests, if they suspect that tuberculosis exists in their herds, and our State live stock sanitary board sends a veterinary surgeon who tests the herd, and if any are found to be diseased they are slaughtered. The owner of the herd must, before the test is made, agree that any animals that are found diseased shall be slaughtered, and that his premises shall be properly cleaned up and measures taken to prevent the balance of his herd from becoming diseased. These animals that are slaughtered are appraised according to the regulation that the State provides. An ordinary cow can not have awarded as damages for her more than \$25, and the animal that is registered can not have awarded by examination more than \$50.

Q. Does the same inspection apply to hogs and sheep, for instance?—A. No.

Q. (By Representative GARDNER.) You spoke of cows coming into Pennsylvania. That does not apply to beef cattle?—A. No; it does not apply to beef cattle.

Q. It proposes to protect the dairies, then, and not the food supplies?—A. Yes; this is a dairy protection. In the beginning of our work, about 4 years ago, 25 per cent of the cattle in inspected herds were tubercular; now, although the method of selecting herds to test is more rigid and there are more infected herds reported by their owners to select from, only 11.6 per cent of the cattle in inspected herds are tubercular. These figures represent the conditions in the most extensively infected herds in the State. Up to this time the number of cattle tested under these regulations is 33,147, of which 4,561, or 13.7 per cent, were tubercular. For these \$102,909.62 have been paid, or an average of \$22.56 per head.

Q. How does that average compare with the value of the cows if they had been healthy?—A. I suppose the cows would have been worth anywhere from \$25 to \$40.

Q. (By Mr. RATCHFORD.) In a healthful condition?—A. Yes.

Q. (By Mr. CLARKE.) Is there any method of instituting an inspection by the public?—A. The only method is for the individual who suspects his herd to be infected to make application to the State live stock sanitary board; then they send a surgeon to inspect his herd, and if any are found to be diseased they are slaughtered under an agreement that was made, and the damages assessed.

Q. (By Mr. PHILLIPS.) They have a right, then, to enter a man's premises and do this without his consent?—A. They have a right to do it, but have not yet exercised it. We do not do that excepting where examination discloses tuberculosis and the milk is being used; then we go in and require that they shall be slaughtered or that the milk shall be destroyed.

Q. (By Mr. CLARKE.) How do you test for tuberculosis—by the use of tuberculin?—A. Yes.

Q. That is regarded as effective?—A. It is the most reliable.

Q. (By Mr. PHILLIPS.) Has there been a great deal of disease traced to the use of milk infected by tuberculosis?—A. Doctors disagree about it, but the general impression among the best veterinarians is that tuberculosis is transferable from the milk of cows to the human being. It is disputed, I know, but that seems to be generally believed. It can not be demonstrated to a certainty unless you can take a human being and find out whether he was tuberculous or not, and then give him tuberculous milk.

Q. Have there not been some cases where infants using certain cows' milk were affected in that way, where there was no tuberculosis in the family, which pretty nearly proved the proposition?—A. They claim that the evidence is so nearly conclusive that it is extremely dangerous to use it.

Q. (By Mr. CLARKE.) Has there been any imposition upon the State under this law whereby the farmers have disposed of cows at a good price that they have purchased outside at a very low price?—A. I do not know of any instance where that has been done. Generally the people of the locality know about the operations of their neighbors, and if such tricks were played doubtless our veterinarians would get hold of it, and the matter would be investigated. I do not know of any such thing having occurred.

We have a quarantine law which protects us from foreigners importing cattle, so we are not likely to be loaded down with diseased cattle from other States; but in our own State we are trying to cull out all cattle that are affected with tuberculosis, no matter in whose hands they are, and the regulation is that they are to be appraised at their actual value at the time the appraisement is made; and if they are badly affected that valuation is very low.

Q. (By Mr. RATCHFORD.) What does the State require to be done with cattle slaughtered under that law?—A. They are usually sent to fertilizer manufacturers.

Q. Are there any exceptions to the rule?—A. There are—or burned. It is only when the cases are bad that they are burned; and there is always a post-mortem examination made, assisted largely by the veterinary surgeon.

Q. Have any cases come to light in your State where they have reached the butchers?—A. I heard of one case, and only one, of all the number, and that was by a trick.

Q. Was it proven?—A. No, it was not exactly proven. The man himself stated what he had done in a rather boastful way to some person. He had bought the carcass for dog meat, and instead of using it for the dogs he had sold it, and was discovered. That was the only instance, I believe, in all our experience.

Q. (By Mr. PHILLIPS.) The hides are sold in the market, are they not?—A. They can be sold.

Q. (By Mr. KENNEDY.) Have the farmers of Pennsylvania manifested any interest in the proposed amendment to the interstate-commerce law? Are they opposed to pooling? And what are your own views on the subject of amending that law?—A. I am not familiar enough with the law to express myself upon it, and I am not familiar enough with the views of our farmers upon it to give an expression of their views.

Q. You can say nothing on the subject, then?—A. I believe I have no information that would be worth much.

Q. You do not know whether the farmers of Pennsylvania are opposed to permitting the railroads to pool? Do not the Granges or other organizations discuss it?—A. They do, and I think the feeling generally among the farmers and others is that the interstate-commerce law has been a very valuable aid in preventing discriminations in freights; that it has done a great deal in that direction; but I am not prepared to make a statement in regard to it such as would come from the knowledge that a man ought to have who pretends to give information.

Q. (By Mr. PHILLIPS.) Have you any suggestions to make in regard to the improvement of the tax laws of Pennsylvania; in regard to farming industries or farm lands?—A. I believe there ought to be a readjustment of the tax laws and that they should be put upon an equitable basis; that every man should pay his just proportion of tax and that no man should escape, and that our citizens should pay according to their ability. It would be impracticable to outline a complete system here, even if I were able, but I think working along that principle, along that line, is the proper method; and then take up some of these objects that have escaped taxation and try to even them up, so that they will bear the burdens of government according to their ability, along with real estate owners.

Q. It is your opinion that the farmers of Pennsylvania bear too great a burden of tax, is it?—A. I believe that the real estate holders are taxed out of all proportion to the other classes of men engaged in business, and the farmers are members, of course, of that class; but I would not want to say that they were taxed beyond the taxation that affects other real estate holders. Real estate pays tax

out of all proportion to the amount that is derived from other income-producing sources.

Q. (By Mr. CLARKE.) And yet that has not served to prevent Philadelphia from becoming world-renowned as a city of homes, has it?—A. It is world-renowned for its homes. How much better these places might all be if things are adjusted a little more equitably no one can tell.

Q. (By Mr. RATCHFORD.) How do the farmers view the present tendency of combinations, consolidations of interests, commonly called trusts? Have your State lecturers brought that prominently before the people of your State?—A. We have not taken that up in our institutes generally. It has arisen. The fact is, in our institutes we have been discouraging political discussion, or sectional or sectarian discussion, holding our people down to the teachings of the principles of agriculture, or, rather, leaving these controverted questions, such as tariff, free trade, silver, gold, and all that to the regular election periods and to the orators who are sent out by different political parties. We have tried to avoid that, because we think it rather brings confusion into our work and distracts attention from the real object of it, which is to get information upon practical agricultural subjects. I am not authorized to speak for the farmers of Pennsylvania in that matter, and I do not know that I could at all voice their sentiments. I think they are very much like other people, divided along party lines, and some think one way and some think the other, and when they come to line up they line up, as a rule, along with their respective parties, so that perhaps there is no universal view, or a view that is universal among them.

Q. Is it to be understood that they regard as partisan politics the subject of combinations and trusts?—A. I do not know what they would say if they were to answer for themselves.

Q. We only ask your opinion.—A. I think it is becoming apparent now that it is becoming a question of politics and that this is the form in which it will be presented in the future. My own feeling is that they are large corporations, and the legislation that is needed is just the same legislation that is needed for the smaller corporations, and that we should have power everywhere such as will control them and keep them from transgressing the laws of the land and infringing the rights of the individual. We have them. They have come to stay, and we must deal with them. I do not believe it is possible to banish them from the country or that it would be wise to do so any more than to banish our corporations, of which these are only aggregations; but that we should pass legislation, as I have said, that will enable the private individual to protect himself in the exercise of his rights against the most powerful combination that there is in the country and that the force of the State should be back of him to the full extent of its powers, to enforce the laws in his behalf, just the same as it would be back of him if an assault were made upon his person or his property. In such a case, first of all, the police are authorized to protect him; then the posse comitatus; after that the force of the county; then of the State; then of the United States, if necessary, to protect a citizen. There should be in our legislation some method that would be inexpensive to the individual and that would protect him against the most highly organized and stupendous corporation that the State has created. The State is bound to do this, on the principle that it granted the franchises and gave these institutions the great powers that they possess and made the individual citizen largely defenseless. While he has now the right to go to court we all know he has no power to gain redress, unless he has large personal influence or more money than the average individual possesses.

Q. (By Representative GARDNER.) Would you not put the duty of the county and the State and the Government to protect the citizen on a broader ground, even, than the fact that a corporation had its power granted from the State? For instance, if it should be found that a combination could exercise a power equally oppressive without being a corporation at all, the obligation of the State to protect the individual would be none the less, would it?—A. I said all aggregations of power, and it would include every great interest that was authorized by the State, particularly incorporated companies, because an incorporated company has been directly authorized by the State to exercise power, and the State, therefore, is under special obligation to protect its citizens from abuses of the power given by it directly in the charter of the corporation.

Q. Is the obligation of the State to protect the individual against unjust power anywhere as great as any obligation can be?—A. It is; it is a great obligation.

Q. As to the matter of going to court against corporations. Is there any suspicion that you know of in Pennsylvania or elsewhere that the individual is at any disadvantage over a corporation before a jury?—A. No, the disadvantage is in his not being able to supply counsel and meet the expenses that are necessarily attendant upon a suit at law against a great corporation.

Q. That is, the corporation can afford to carry on litigation?—A. Yes. I think that is the trouble! The juries, I think, perhaps, are against the corporations as a rule, but that was not the point I was making, but that the individual, by reason of his poverty, was unable in many instances to secure proper counsel to protect him.

Q. (By Mr. CLARKE.) You would not have the State help him to carry on litigation of a private nature, would you?—A. I would ask the State to protect me in case I was assaulted on the street—and that is a private matter—or if a man undertook to enter my house, I would feel that I could call upon the State for protection without expense to myself.

Q. (By Representative GARDNER.) That is in the class of things recognized as criminal, but I take it Mr. Clarke means civil matters. For instance, you have grievances against a corporation for discrimination or some thing that is a matter of civil action; you also have a grievance against John Jones, who leases your farm and has refused to move at the expiration of the lease, keeping you out of your property. You have a civil action in the court. I understood Mr. Clarke to be asking if you would have any discrimination between two such cases as to the State's rights to interfere?—A. In the case in which the State has directly given these powers, as I remarked, the State thereby assumes to see that that individual does not transgress the powers that it has been given, and is to that extent more liable, it seems to me, to protect the helpless against the abuse of this power that it has given.

Q. Has not the State directly given almost all powers, including the right to hold title of the farm?—A. Where the franchise is given, there are specific powers granted that sometimes are misused. I am not to be understood as opposing corporations. I believe in them. I am talking now about the regulation of them as against the private individual, particularly since these aggregations of corporations have come into existence and whose great power is feared by the individual citizen. I think in such cases it is the duty of the State to so protect the individual against any possible harm from them that public security will be established, and that our business men and others may feel that there is no reason for being antagonistic to these great organizations, but that they will be kept within the limits of that law, just the same as the individual is required to stay in the limits of the law that regulates him.

(Testimony closed.)

WASHINGTON, D. C., January 13, 1900.

TESTIMONY OF MR. J. H. HALE,

Farmer, Fort Valley, Ga., and South Glastonbury, Conn.

The commission met at 12.10 p. m., Mr. Clarke presiding.

Mr. J. H. Hale was introduced as a witness, and, after being duly sworn, testified as follows, the topical plan of inquiry upon agriculture being followed:

Q. (By Mr. A. L. HARRIS.) You may state your name, your post-office address, and your occupation.—A. J. H. Hale. My address, I might say, is Fort Valley, Ga., and I also own and operate a farm at South Glastonbury, Conn. My business is that of farming.

Q. How long have you been engaged in farming?—A. All my life; I was born on a farm, and never followed any other occupation.

Q. Where did you first follow the vocation of farming?—A. In Connecticut as a farm laborer, by the month.

Q. How long did you follow that occupation in Connecticut?—A. I maintain it there now, in connection with my Georgia farm.

Q. How long has it been since you began farming in Georgia?—A. Ten or eleven years.

Q. What class of farming?—A. Fruit growing is my principal occupation, although I grow the incidental crops to the support of my farm; but fruit growing is the main cash income.

Q. How extensively are you engaged in farming in Georgia?—A. I am cultivating 2,160 acres.

Q. You necessarily, then, employ a great deal of labor?—A. During the entire year we employ about 60 hands regularly; then additional help as occasion requires—during the busy season on the farm from 500 to 700 people.

Q. Is that labor largely colored?—A. The field work of the year is nearly all negro labor. In the fruit season we employ a little more than half negroes, and

nearly one-half are white people, in the gathering and packing—the handling of the fruit.

Q. You may take up the plan of inquiry as you have it there, and answer each topic in your own way, and answer it as fully as you desire to.—A. Some of the questions, perhaps, are of very little importance, and, perhaps, you have been through them all before; I have tried to meet them as briefly as possible.

The first question is, "Increase or decrease of number employed in agricultural labor." I think there is a general increase of agricultural labor in the South. As to the conditions of that labor, my observation of 10 years is that it is steadily improving; that they are knowing how to live a little better, are living a little better, and are generally improving in their efficiency and in their manner of living.

Q. (By Mr. CLARKE.) Do you refer to men of both races?—A. I refer more particularly to the negro labor, as that is what I come most in contact with throughout the whole year. The white is the transient labor, which we have only in the fruit harvest, and I do not know so much about their home life, but they are improving in efficiency; they are more efficient than I supposed.

As to the third question, "Effect of improved machinery on labor," there is only a moderate amount of improved agricultural machinery used in the South, but where there is improved machinery used it is used with the greatest efficiency in agriculture, and increases the wages to some extent of those who are able to handle the machinery. So the use of improved machinery is increasing the efficiency of the laborer and also increasing his wages; but this is only in a moderate degree, because the machinery is not as freely used as it might be.

"Causes of irregularity of employment:" In the South this is because there is too little diversity of agriculture. The one cropping—cotton, the main staple there—makes a short season of a certain number of months when the labor is all employed, and the balance of the season there is very little for them to do. There is the one cause of the irregularity of labor. In certain months in the year much of the common labor of that section of Georgia where I am has very little source of income, very little to live on, if it has not saved it.

The question of "Transient labor in busy seasons:" Of course, my busy season might be different from the busy season of the cotton planter. My busy season in the fruit harvest, in June, July, and into August, is rather a dull season with many. Cotton has been planted and the crop mostly made, so we find an abundance of transient labor. Give out the word through the local newspapers, or in any way, and they come in far greater numbers than we can use. If we want 500, we can readily get 1,000. We have had no difficulty in getting all the blacks we want for the field work and heavy work, and also all the intelligent white people for picking, handling, and packing the fruit. We have had sometimes as high as 260 to 300 intelligent young men and women from the better class of homes of Georgia, South Carolina, Alabama, and Florida come to us to pick and handle the fruit, because it was a little cleaner, nicer grade of work and it was an opportunity to earn a little money—very largely people who had seldom earned any money before.

Q. (By Mr. PHILLIPS.) Young ladies?—A. Yes. They come in numbers; sometimes a whole family comes; sometimes 3 or 4 girls and 3 or 4 boys from a neighborhood come there. We furnish hotel accommodations where they can room by themselves. We board a portion of them, and a portion care for themselves—a sort of camping-out picnic for a couple of months. It is a better class of white labor than I would be able to get together in the North, in intelligence and good, moral behavior. Some come from the university town of Athens, and other college towns. It was a little outing and a chance to earn a little money at the same time. Transient labor is abundant, with us in the busy season.

Q. Do they do this gathering by the piece or by the day?—A. Our work is all by the day. We aim to do it very carefully, and we find we can not hold them up to as high a standard of efficiency by piecework.

Q. Do you make a difference between the women and the men in wages?—A. No; one who does the same work gets the same pay. The ladies do nearly all the work in the packing house.

Generally speaking, there is an abundance of labor for everybody that wants it, for a short time or longer, without any difficulty.

The hours of labor are pretty long in the South—too long, I believe. From 8½ to 9 hours in the shortest days in the year, and from 12 to 14 hours in the longest days in the year, but certainly an average of 11 hours a day of field work throughout the whole year.

"Average number of days employed in the year:" From 150 to 175 days of the year is about all the laborer can get on the cotton plantation. It is all-the-year-round work on fruit and truck farms, really a 12 months employment, except

when they want a little vacation at Christmas; while the cotton business gives only about 150 to 175 days.

"Tendency of agricultural labor to seek other employment." There is a general tendency among the negroes to wander a little, but drift back finally to the plantation and the farm. They really belong more closely to the soil than they do anywhere else, and the general tendency is to drift back to agriculture, although they go away. But there is only a moderate amount of drifting in the part of Georgia where we are—right in the black belt.

As to "Wages and method of payment," in our fruit and truck business, it is a weekly payment, in some few instances a monthly payment; but on the cotton plantations it is an irregular payment, a payment at almost any time when the laborer must have it and the employer can pay it, and a final yearly settlement at the end of the year. I do not know of a cotton planter in the South that pays regular weekly wages, and yet I suppose there are some that do so.

Now, as to the wages of colored labor and white labor—the two have to be separated somewhat. The maximum wages of the colored laborers with us is \$1 a day, and rather a high wage generally is 75 cents, while the lowest is about 40 cents, with an average in our section of the State of not quite 60 cents, I would say.

Q. (By Mr. CLARKE.) That is the wages of men?—A. That is the wages of men. The wages of children and women (I am speaking of negroes) will vary from 25 cents to 50 cents, with an average of perhaps 37½ cents. Now, coming to the question of white labor. In our experience in the fieldwork in the harvest we use mostly white men as superintendents, although we find some of the negroes who make efficient superintendents. To the whites and negroes who are superintendents, superintending the picking and running it in, we pay \$1 a day. In the packing houses we pay on the basis of \$1 a day for the standard day's work, which is checked. We check all the crates and the baskets, and the handling is done by the ticket system, and if they fall below the standard they are scaled from \$1; if they go above the standard they get that much more; so that probably 10 per cent fall below the dollar, both of men and women, and probably 50 per cent just about earn the dollar, while the other 40 per cent run all the way from \$1 up to \$2, according to efficiency.

Q. (By Mr. FARQUHAR.) How many hours do they work in the day?—A. Day-light to dark.

Q. Sunup to sundown?—A. Practically that.

Q. Is there any intermission for meals?—A. One hour at noon.

Q. (By Mr. PHILLIPS.) They board themselves?—A. Yes. I own a hotel building on the place, where we furnish them good and comfortable rooms and beds free of charge. We run a commissary department or table, where we give them good substantial board at what it costs us; we call it 10 cents a meal—\$2.10 a week. It actually cost us \$2.60 last year; but we give it to them at that. But probably two-thirds prefer to and do board themselves, thinking they can live cheaper than that.

Q. (By Mr. FARQUHAR.) Are your overseers usually all whites?—A. My permanent superintendent and assistants are white. They have under them foremen of different gangs of workers who are negroes, and very efficient men they are, too.

Q. (By Mr. PHILLIPS.) What kind of fruit do you raise largely?—A. Most largely peaches and Japanese plums. I also grow some of the finest varieties of Eastern melons, citrons, muskmelons, or cantaloupes, under different terms.

Q. You spoke of there being 2 or 3 months in the harvest season?—A. That is, the average crop extends over that length of time. By planting the earliest and latest varieties of the Japanese plums, which have an extended season, we get a harvest season from the last of May to, I think, the 10th of August—an 8 or 9 weeks, sometimes 10 weeks, season.

Q. Are they considered as fine in flavor and as good in quality as the New Jersey and Delaware peaches?—A. Very much better than any grown anywhere else in quality. The season is a little longer and apt to be drier. The fruit is a little drier than that grown at the North, but is richer and sweeter. As you go north and reach the northernmost limit of any fruit, they are more juicy and thought to be, by many, more luscious; but they lack the maturity and richness that you get in the extreme southern limit, where the Persian strain of peach may be grown.

Q. What about the size?—A. It depends on the system of culture and handling the soil.

Q. Is the same kind of peach about the same size?—A. About the same. It depends, of course, on the season, but with the same methods of culture there is little difference. They get a little higher color on account of the sun.

Q. (By Mr. FARQUHAR.) What are your facilities for handling this perishable crop?—A. We use refrigerator cars; we pack them in 6-basket crates—a crate which holds six 4-quart baskets, similar to tomato crates now in use in Florida. They are piled up with an air space between each one, and we put about 500 in a refrigerator car.

Q. Are the cars owned by the railroads?—A. No; they are owned by different refrigerator companies, and we contract with the different owners. The Southern Railway Company does own some cars, but we find we get better service, so far as the refrigerator cars are concerned, to contract with the refrigerator-car companies. The cars are reiced better. Some of our growers have taken the cars of the railroads and attempted to do their own reicing along the line, but there is an uncertainty and general dissatisfaction about it.

Q. Are your rates reasonable?—A. So far as the service given. The Central Railroad of Georgia and the Southern Railroad have aimed to give the growers most excellent service, and they have given us very fast time, and have had to charge a pretty good rate for it. I prefer good service first rather than low rates. They have aimed to give us very good service. The proportion of the Northern rates, in proportion to the Southern, is much the heavier. I come in contact in New England with the New York, New Haven and Hartford Railroad, and their rates are exorbitant as compared with the Southern. They aim to give us an excellent service and excellent terms; in fact, I have not a word of criticism as to their methods of doing business. As to the real value of the rates, I do not know enough about the value of railroad rates to know whether they charge too much or too little; but the Southern road gives excellent service and are willing to listen to our grievances. In fact, we have been sort of partners and worked together harmoniously. Our interests are mutual.

Q. Do you know whether you are getting the regular open rates of the railroads or a commodity rate?—A. I do not quite understand that term, but we get a special peach rate, that is made up. It is a special peach rate. We pay \$365 a car to New York.

Q. (By Mr. KENNEDY.) Where is it made up?—A. It is made up by the railroads previous to the opening of the season; they make it up among themselves.

Q. And there is no difference from that made-up rate?—A. No; it is all the same rate.

Q. (By Mr. C. J. HARRIS.) To all fruit growers?—A. The same to all fruit growers. The man who ships one carload has the same rate that I do if I ship 100 or 200.

Q. (By Mr. KENNEDY.) Have you only one line to ship on?—A. We have the Southern Railway and the Central of Georgia. We may go out of Fort Valley on either road, or we may go to Atlanta over either road, and then we can go to New York over the Southern as the quickest service, or we may branch at Macon over the Central, and it will take us around to Savannah, which is a longer distance, and put us on the Coast Line. They aim to take the fruit over the old Georgia road to Augusta and Florence and there hit the Coast Line.

Q. But, taking the direct line, there is no competition, practically?—A. There is the competition of the Coast Line and the Southern.

Q. The Southern is your more direct line?—A. It is the shortest line. The Southern and the Coast Line are the only two ways to reach New York. Of course there is the Seaboard Air Line, which tries for a little, but at present it can not handle it well. It is practically these two roads, and practically the Southern. I should say the Southern probably brought 80 per cent of the Georgia peaches to the northeastern section of the United States. Here at Washington it is all turned over to the Pennsylvania.

On the question of labor and prices of labor in the South, there is too much good and cheap labor in the South for its own good. It results in overplanting, spreading out too far, to the neglect of thorough agriculture, because labor is so cheap that it does not matter much how it does, because it does not cost much anyway. It is a temptation to overplant and skim over a great many acres and get poor results. It is also a temptation to neglect personal attention by the farmer or planter himself, because if the labor is not intelligently worked out or supervised it does not very much matter; it only costs 50 or 60 cents a day, and there is a temptation to neglect the best methods of modern agriculture; and therefore the abundance of cheap labor in the South is rather against the success of agriculture. If agriculture was not so good a business; if we could not get a living so easily, we would make more money out of it. That may be a peculiar statement, but it is warranted by the facts.

As to "cash payment, store orders, and payment in kind," there are a great many store orders given, because the planter has not ready money, and he can

make a deal with the supply store to supply him and pay at the end of the year. Some pay cash and some supplies are furnished by planters.

The fruit and truck farmers most largely pay cash, because they have cash coming in at more varied seasons of the year. Some of them pay partially in supplies. On my own farm we have always paid cash. For 10 years we have paid every Saturday noon in cash. I prefer to pay cash. The workers are better satisfied than by any other payment.

As to the tenant houses and tenant-house allowances, it is the general custom of the South to furnish the tenant houses to the laborers; in some instances it is furnished entirely free, and in others two days' work a month pays for it; but most of the plantations furnish a small tenant house and about 2 acres of land without any charge whatever to the tenants, and that includes fuel. On the plantations they nearly all have tenant houses without charge, and from 2 to 3 acres of land to grow what sweet potatoes and corn and other things they need for themselves.

Q. Is Georgia one of the Southern States which legislated on the subject of enticing laborers away from their employment?—A. It does have such a law.

Q. It has such a law?—A. Yes.

Q. Can you recall the substance of the law?—A. I can not. I have run up against it once or twice.

Q. Well, can you state the real object of the adoption of the law?—A. I hardly think I can. I suppose it really is the outgrowth of the somewhat roving tendencies of the negro, and to rather hold him in place, and, possibly, judiciously used, is a good law, but there also is the opportunity of it making some trouble; but I do not think it amounts to very much one way or the other.

Q. (By Mr. FARQUHAR.) Have you any knowledge of the traveling black missionaries there, who went in and out among their people there and made them discontented by these colonization schemes that were started throughout Kansas and other places? The men had no particular habitation where they were, but were kind of missionaries among their black folk, and held out inducements, in other words.—A. Well, what we call walking delegates?

Q. Of that character. Was the law particularly framed to meet that class of people who went in and raised discontent among the working hands?—A. Probably so; and if that was true, it was a wise law. I think, possibly, the law is not an unjust one in a general way, and did accomplish some good purpose. There was that class of tramp negroes who were not industrious themselves, and it was easier to live by trying to move others than to do anything themselves. But in a general way our labor throughout that section of Georgia is very content and permanent in its home life. They move about from plantation to plantation every 2 or 3 years—some of them; but to-day I have men on my place who were slaves on the place, living there during the reconstruction troubles, who were very much alarmed because a stranger came in and bought a farm. They thought they would have to move off, and they could not keep their old ways; but we let those people raise cotton for a few years, while gradually working them up to fruit culture. They have always lived there and will probably die there, right on the plantation where they were born.

The crop sharing, partnership, tenancy, etc., in the cotton business, which of course is the main business—it furnishes very largely the tenancy and leases of crop sharing. In either case there is too little of the owners' direct management, because with this renting and tenancy there is the tendency I spoke of before, of halfway work, neglect to look after it. The owner is sure of his land rent anyway, if any cotton is made, and it is easier for all of us to live easy if we can, and let some other fellow do it.

The question of loans to tenants, and liens on growing crops, etc. The owner of land always has a lien on the crop; that is, has a lien on the earnings of the tenants; so they work out their rent, while the landlord takes a lien on the crop. He is sure of his land rent anyway, and therefore he has not the interest to encourage the very best tillage to the very highest production, as he is pretty sure to get his share of it anyway, and if there is likely to be a failure of that, there is then more tendency to stimulate a little better culture, in the crop sharing, where the landlord furnishes the land and the mule, as against the negro's labor, and they share the fertilizer expense together. The landlord usually buys fertilizer, or gives security for it, and there is a lien on the crop for that also; and generally the year's supply of rations for the family.

Q. Does the owner of the land have a lien on the advances he makes in respect to living?—A. He has no lien at all. He does if he acts as the loaner. Possibly a local store may furnish it, and then take a lien on the tenant's half of the crop.

Q. (By Mr. C. J. HARRIS.) How much fertilizer is used to the acre as a general thing?—A. Far too little. There is one of the great troubles again of this cheap labor—spreading out from as low as 150 to rarely as high as 400 pounds of very low-grade fertilizer per acre. If it was fertilizer of the highest grade it might be all right, but the very serious hindrance to successful agriculture in the South is the use of low-grade fertilizer, and not fully understanding the economic value of using the highest grade. The South is overrun with cheap goods of every kind, made for the Southern trade. If any of you gentlemen know anything about manufacturing, you know there are certain things of low quality that are made for Southern trade. The South has been overrun and robbed with a low grade of products of every kind. Manufacturing companies put their goods there—and fertilizer is one of the main things at the present time—and all the goods they buy are mostly of a low grade, because they have not been educated to buy a higher grade of goods.

Q. (By Mr. KENNEDY.) You say the South has been robbed in that direction?—A. Yes.

Q. Is the South more to blame than those who manufacture for that demand?—A. Oh, both are to blame.

Q. It is willing?—A. It is a willing victim, because it is a temporary make-shift, and it is the penny to-day, then the dollar to-morrow. The poverty of the country has had much to do with it—the lack of ability to buy. The good Book tells us that "The destruction of the poor is poverty;" and the poor man has to buy cheap goods because it is the best he can do, and to-morrow he wants some more.

Q. (By Mr. FARQUHAR.) You do not mean to say it is imposition?—A. Of course, manufacturers are not moral agents and educators, and they give the people what they want to buy; but something is needed to stimulate the use of better goods down there.

Q. (By Mr. C. J. HARRIS.) Is it your experience that the land is pretty well worn out there?—A. Only just the surface is scratched off. It has never been tilled very thoroughly, and there is yet great fertility in much of the subsoil.

Q. (By Mr. FARQUHAR.) Is there any subsoiling?—A. It is a very decided advantage, but there are so many people who have a one-horse plow and a weak mule, and the land is just turned over, 2 or 3 inches of the surface, and that answers for plowing. Now, the opening up of the soil with modern implements, or subsoiling where it is necessary, means the bringing out in abundance of the plant food that is lying there and only wants getting out.

Q. (By Mr. A. L. HARRIS.) Your fertilizer is phosphate?—A. Well, to a moderate degree. A complete fertilizer contains phosphoric acid, potash, and nitrogen.

Q. You have your large phosphate beds in the South?—A. Phosphoric acid comes from the South Carolina rock phosphate, and is probably the cheapest source of phosphate in the South. The nitrogen is supplied from cotton-seed meal, but it is a low grade of fertilizer to use, and is only used in a very moderate quantity.

There is a tremendous high price charged for inferior goods; and there is a very high rate of interest that has to be paid.

Q. Is this fertilizer a part of the goods that are bought and a lien given for them?—A. Yes.

Q. What effect has that had upon both the landlord and tenant of the South—store liens?—A. Well, I do not know that the lien itself has any. It is a temptation to the man without business experience or business tact. It is tempting him to go on and tempt fate for a year, because he can be supplied. The lien itself is only to secure a just payment of a debt; but because the negro himself, or the white farmer can get a loan upon his crop, a loan upon cotton, he is tempted to plant more than he otherwise would, and he perhaps is tempted to buy more than he ought, that is, more than he has ability to pay. There is temptation in that, and yet if many of us could not get credit we could not do much business.

Q. What do you know about per cent of profits on the goods?—A. Well, I know that there must be a tremendous per cent of profit, and only in a general way; but I should say all the way from 25 to 50 per cent. The prices that I found there when I knew the real market value were, I should say, from 25 to 50 per cent; and one great trouble there is that there are too many people trying to get a living in small one-horse stores; in a town where there should not be more than two or three general stores there are a dozen. There is not enough business for all at a reasonable profit.

Q. (By Mr. FARQUHAR.) In the case where the owner of the land makes the contract, furnishes the mule and the fertilizer, or a portion of the fertilizer, for the black man, half of that crop instantly becomes mortgaged in the interest of the landlord?—A. Yes.

Q. Are there many blacks that farm on this crop-sharing system, and who get advances on their half of the crop from the stores, who ever get out of debt, or will they ever get out of debt as long as they live?—A. Well, many of them do have their debts lapse over from year to year; but I think a majority get a clean settlement once in two or three years, when they have an exceptionally good crop or prices are a little high; consequently excess prices are charged to make up for the small amount of sales.

Q. And then start over again, making new debts?—A. Start over again; yes.

Q. So they never get out of debt, practically?—A. Practically not.

Q. That is, those who go in the crop and lien system, and who have also the store-lien system?—A. Well, they get out of debt. I think the majority of them get out of debt each year, in October, but start in again in January with a new one. It seems to be the only way they know how to get along at the present time. There are others, of course, who have a moderate bank account and who do business on business principles. I was told by the president of a bank in our place a few years ago—possibly it was the cashier; it was one or the other—that the largest depositor in our local bank at Fort Valley was a negro farmer; he had the largest deposit there.

Q. (By Mr. A. L. HARRIS.) What rate of interest is usually paid on loans?—A. From 8 to 12 per cent, and sometimes a bonus besides; on a note it is usually 8 to 12 per cent.

Q. (By Mr. FARQUHAR.) What is the time of the note, usually?—A. It is usually from the spring months, when business begins, to October or November, at the end of the cotton season.

Q. (By Mr. A. L. HARRIS.) Is money scarce in the South?—A. Yes.

Q. What is the cause?—A. The majority of the bankers there who loan money have to get it from the North. There is not enough money in the South to do the South's business.

Q. What is the cause of that, if you know of any cause?—A. Well, I am not a financier and do not quite understand that. I do not believe I could answer it intelligently or satisfactorily.

Q. Does production have anything to do with the scarcity of money?—A. Well, they have been producing a crop there of cotton which has only just allowed them enough to eat it up every year. That is the trouble. There have not been any great accumulations by the majority.

Q. (By Mr. CLARKE.) Is there not a lack of capital?—A. There is a lack of capital. The capital is all tied up in land; it is land capital; it is difficult capital for them to borrow on.

Q. If there was as much wealth there as in the North, there would be as much money?—A. Yes; probably. Their capital is largely real-estate capital, and that of course ties it up.

Q. (By Mr. A. L. HARRIS.) Why is it difficult to borrow on real-estate security?—A. The uncertainty of the income from it; the uncertainty of the landowner being able to pay notes when they become due; and, in case of foreclosure, the difficulty of quickly realizing on the land. More and more money is being offered in the South on real-estate security at continually lowering rates of interest. I only speak now from surface indications, as what money I need I always borrow at the North; but I can see the general tone is that there is more money being offered at the South on real-estate securities at a lowering rate of interest. Money, I notice, has recently been offered at our own place at 7 per cent on real estate security.

Q. Do you look for that healthy condition to promise well for the future?—A. It is a blessing for some people to be able to borrow money, and it is a terrible curse to others. It is a misfortune for some to be able to borrow money, and the harder it is to get it, it makes them better off. Of course on broad general principles, the more money there is, and the cheaper the rate, better it is for the producers.

Q. (By Mr. FARQUHAR.) How frequently in the course of 12 months do you have use for money in the South in large quantities? Is it simply in the movement of the cotton crop?—A. It is in the movement of the cotton crop from September to March.

Q. First of all in your planting season, and then ultimately in your cotton gathering?—A. Yes; in the cotton gathering.

Q. So there are months in the year in the South that any banker might as well close up his doors, as there is nothing to be done?—A. Well, so far as there is any profit in his business; of course he does a little business at all times, but it is moderate. It is but a few months of the year that there is a movement of money to any extent.

Q. Would that account for the high rate of interest and small amount of capital you have there as floating capital for loans? For instance, you could utilize it nearly the entire 12 months of the year up North, and South only 2 or 3 months. Would that naturally bring a higher rate of interest down South?—A. Possibly some, but I think the uncertainty of the borrowers to quickly pay is the greatest difficulty.

Q. (By Mr. PHILLIPS.) Has land enhanced in value in a large part of the South, or has it been settling for quite a number of years?—A. My own experience as a farmer is that land values have been steadily lowering everywhere east of the Mississippi for the last 25 years, and I think it is no more in the South than any other section of the United States.

Q. Well, cotton lands suffered very materially after the war, when they had to employ labor to cultivate the cotton?—A. First; then somewhat of an increase in prices, and then a decrease in the last 4 or 5 years, I think.

Q. Have not some large plantations which were worth before the war \$100 an acre or more settled as low as \$5 or \$6 per acre?—A. I can not think of any that were worth as much as \$100 an acre that have settled at that rate. There are many plantations that were at one time worth \$40 or \$50 that have settled to as low as \$5 to \$8 per acre, but in our section of Georgia, for the last 10 years, there has been a rather steady appreciation in agricultural values—very little, but a slight appreciation in the value.

Q. Is that because of their being adapted to fruit culture, corn culture, and diversification of crops?—A. I think on account of the diversification of crops and more largely the development of peach culture.

Q. Is there a large section of the South or Georgia that is adapted to fruit culture?—A. Yes.

Q. A pretty large section?—A. A pretty large section; yes. A large section of Georgia and North Alabama, a section of South Carolina, and also Tennessee, are applicable to fruit lands.

Q. What kind of agriculture are you engaged in in the North here?—A. I am producing fruits entirely; in Connecticut; plums, peaches, and apples.

Q. (By Mr. A. L. HARRIS.) How large is your Connecticut farm?—A. Well, the acreage under cultivation is about 300. It is not all one solid block. It is hard to find 300 acres of land contiguous that you can drive a team over in Connecticut. It is rolling land; it is scattered fields, rough and rocky, and then we have to take the elevated lands for our fruits, because the frost will kill the buds in the valley in extreme cold weather in the winter; so we have to select extreme elevations.

Your other questions, 15, 16, 17, 18, and 19, are questions of immigration, of which there is very little in the South; practically none.

As to the twentieth—the colored labor and the extent of it—I should say 90 per cent of the agricultural labor in the South is negro labor; that is, labor that can be employed. My experience in handling labor both North and South is—of course in the North we use all nationalities—Yankees, Italians, Irish, Germans, Swedes, Poles, negroes, or anything else.

Q. (By Mr. PHILLIPS.) Not many negroes?—A. Not many negroes. They came there quite freely after the war, but most all of them drifted back South. I count that the negro labor of the South as the best agricultural labor in America to-day. I will recommend them way ahead of our New England Yankee. The Yankee boys we think are perhaps a little smarter for some expert work, but for agriculture throughout the year I think the negro labor of the South, at least the section where I am located, the Black Belt, is the best agricultural labor in America to-day, and I can accomplish more work for \$1 in Georgia than I can for \$3 in Connecticut, and get the same crop result. I do not know as I can get the same final result, but as far as labor is concerned I can get as good results for \$1 in Georgia as for \$3 in Connecticut.

Q. Is that because they pay so much less wages there?—A. No; in Georgia the average on my farm is about 65 cents as against \$1.25 in Connecticut. The extra advantage is in the efficiency and the honesty of purpose and the faithfulness of the negro labor as compared with what we can get in Connecticut. I went South with the idea that the negro was a rather stupid creature and could be used only in the grosser lines of work, and I have learned different by using them for a number of years.

Q. (By Mr. A. L. HARRIS.) You would not think, then, that the best interest of the South would be for the negro to be colonized in some other part of the country, or in some other country?—A. I do not know what the South could do; I do not know how the South could live without negro labor. It is the life of the South; it is the foundation of its prosperity; and the great future prosperity I see in the South, and believe in the South, is because they have such splendid labor

and such good labor. God pity the day when the negro leaves the South, or if they have to have labor from foreign countries to take the places of the negro.

Q. (By Mr. PHILLIPS.) Do they not require more serious direction in the work than the white labor in the North?—A. I do not think so. They need a clearer explanation at the start, and a more definite order. You can not leave as much to their judgment, but you give them a clear explanation of what you want, and a direct order to do it, then they will get along, and you do not need to follow them up any closer than you do the average white man; that is my experience.

Q. (By Mr. A. L. HARRIS.) Are they improving in efficiency?—A. Very much so, indeed.

There are one or two points I want to speak about freely. I planted my orchard very largely on borrowed capital. An orchard will give no cash returns for 3 or 4 years after it is planted. I needed an income; I needed money as quick as I could get it for the further development of the orchard. I looked about a little to see what might be done, and decided to grow some nursery stock, and so I planted largely of nursery stocks, planning when they had grown the first 6 months and were ready for grafting, that I would take some skilled men from the North, for about \$3 a day, to do the budding and grafting. When the stocks were apparently ready to work upon, my superintendent and myself went out to test them and see if they were in the right condition, and we began a little budding. Myself and the other gentleman knew the art of budding. We took along a couple of boys, 15 or 16 years old, to tie the buds in after us. When we arrived at the house for dinner we found business matters calling us to town, and we did not come back until nearly 2 o'clock, and we found those boys experimenting with budding. They were very much frightened. We examined what they had been doing and showed them a little, and they did so well at the first experiment that we spent the afternoon in instructing and watching them. The following morning we brought out 4 boys to tie for us. To make a long story short, the negroes worked into our budding or grafting so that we never had to take any skilled labor from the North, and we have been growing from one to three million trees a year, and they have been propagated and grown by negro labor. The men do all the work and they are aided in the planting by the superintendent. They do good work. We have men on the place who have put in 2,500 buds a day. Any of you gentlemen here who tried to do a little budding yourselves in the early days would know that it is pretty good work for the best, the most efficient men in the Northern nurseries, to put in 3,000 a day, and they want \$3 and \$4 for it.

Q. Are they honest and trusty?—A. Yes; I think so. They are like white folks in a good many things. A little instance of faithfulness: During the time of the Chicago Exposition my superintendent planned to go in September, and I was disappointed in going there. Some family sickness prevented my being on the place. After a little correspondence, I instructed him to go ahead and put the place in charge of one of the negroes in the field work, and told the other one to stay about the house, and look after the house and barns, as it was a good modern house and things needed looking after. The superintendent was taken sick in Chicago, and it was five weeks before he returned, and he wrote me that he found everything in perfect order as to cultivation and care. I went down a week or two afterwards, and I was thanking these two men who had charge, and one of the old darkeys who had been placed in charge of the house, said: "Captain, a heap of responsibility on dis old niggah. I knowed the boys on the plantations wouldn't make no trouble, but I se 'traid some ob dese town niggahs might make some trouble, so soon as I got through work nights, I got de old musket and kept up around the house till 2 o'clock evry morning; den I went and called Mose to feed de mules; and he watched out the rest of the night."

I never saw a man in the North who would watch my property all night without special contract and extra wages. And that same man, in common with one other man—when the great freeze in Georgia destroyed the life of the fruit trees, I knew that my only salvation was to get along with as few men as I could; and that old ducky came to me with tears in his eyes, and he said: "I know it cos' heap money to build up an o'chad when dey won't beah foh three o' foah years, and it is goin' to be a ha'd pull on you. Just what I want to say is dis: We want you to cut our wages down one-half, and we will work for that till the trees get big enough to fruit again."

Gentlemen, that brought tears to my eyes; when they said they were willing to work on half wages until the orchard began to bear again. There is faithfulness, and it is no wonder business goes on successfully when we have that kind of help, because it is loyalty for a man's interest that is worth something; and they have shown it in various ways.

Q. Are they temperate in their habits, as a rule?—A. I think the darkey likes whiskey if he can get it; likes it pretty well; but the Georgia law of local option of the counties is pretty well enforced. I think more than three-fourths of the counties of Georgia are prohibition, and the law is pretty thoroughly enforced. There is no liquor sold in our county, and really, I am never troubled by it. I am seldom troubled by drunkenness. But occasionally, in fruit harvest, outsiders we do not know anything about—we get occasionally a blackleg in the crowd, and they go to Macon, which is in a "wet" county, and get a jug; and I believe there have been two carousals by a few.

Q. (By Mr. PHILLIPS.) Do you find any trouble in melon patches, about losing melons?—A. No. We plant melons enough to feed all; land is cheap; labor is cheap; and we simply plant a large field of melons, and then we give notice to everybody that they must keep out of the melon patch; and as soon as the melons are ripe they are usually picked, and every morning we bring a wagon load to the house and barn, and extra wagon loads are driven around to the cabins and are divided up. We grow them for the purpose of feeding the help on the place.

Now, the question of pruning. The pruning of trees is scientific, and you can not let every man do it. We find the negroes are very adaptable, indeed. For instance, in this great freeze last year my superintendent took 10 men and instructed them; I took 10 more and worked with them, and in a few hours I got them onto the idea of pruning. We have 260,000 trees; the original 100,000 planted 10 years ago, the other 160,000 representing an increase of the past 6 years. We have done well in our spraying since we have had insects and fungi. We have to have some chemical laboratories for making Bordeaux mixture, and various sprays we use. We found no trouble in teaching many of our negroes what to do, and how to do it, and when to do it, so that they mix the solution and do the spraying.

Q. There is a possibility then, you think, of them becoming mechanics?—

A. Yes. We have our own carpenter shop, and a number of our buildings have been built by the men on our place. Our own negroes build cabins on the place; they built my original packing house, and they did it all, except a white foreman. The second packing house I built, they built entirely, and they do all the crude carpenter work. We have a blacksmith on the place who does good blacksmith work. Of course, he does rather coarse welding, but he can shoe a horse, if necessary, and keeps all the farm tools and machinery in repair.

Q. Is the character of your ground rolling?—A. No; mostly level.

Q. Does your water all come from springs?—A. Yes, and we have a force pump and force it up.

Q. (By Mr. A. L. HARRIS.) Is there a disposition among the colored people to accumulate property?—A. No. It is the hardest thing in the world for a darkey to keep anything. They want to spend it. They are simply children, and they will do anything you tell them to. We could pay them one-fourth of their wages every week and keep the other back, if we desired to, without any serious protest on their part. We do urge upon them, and in a measure insist upon their saving a portion of their wages throughout the year, and when it comes Christmas time they want that surplus, and if we can encourage them to buy some staple article of household furniture or some staple necessity, we do so, and in that way they are furnishing their houses a little better each year.

Q. Do they take good care of your tenant houses?—A. Fairly good; yes. They have mostly been unpainted. Two years ago I told them that if they would keep them painted we would furnish the material if they would do the work; and it was very much to their delight, and they are now keeping them painted, and we are furnishing material and the other expenses, and they rather take a pride in painting them.

Q. Do they take good care of your tools?—A. No. They are very careless and will leave them anywhere and everywhere, and we have to have very strict discipline to make them take care of them. They have a tendency to drop a tool anywhere when through with it.

Q. (By Mr. PHILLIPS.) What kind of houses do you build for a tenant house, as a rule?—A. The original plantation houses of the South, I regret to say, were mostly 1-room affairs, 20 or 25 feet square, and those were mostly of logs. The modern house is a frame house, boarded and sheathed, with 3 rooms—a general family room, which is used only to put the family beds in, and then a separate bedroom, and a kitchen. The general modern tenant house now is a 3-room house.

Q. Have you the inside of the places sheathed?—A. They oftentimes do paper these, but generally sheathe them; at least mine are sheathed, in all of them.

Q. (By Mr. CLARKE.) Do they have cellars?—A. No. There are no cellars under any of them, and there is scarcely a white man in our county—so far as I know

I have the only house in the county that has a cellar under it; but I presume there are some others; but the large plantation houses have no cellars under them whatever, which is a very great mistake, I believe.

Q. (By Mr. PHILLIPS.) There is no climatic reason to prevent them from having cellars?—A. Yes; it is a climatic reason; they are not absolutely necessary; so they do not have them, because they can get along without them. They do not know the value of them for cooling and caring for their family provisions in the summer, and for making the house warm for winter use.

Q. (By Mr. FARQUHAR.) Independently of the advantages of the cellar there, do they not usually utilize the small springs and the springhouses, and also the smokehouse?—A. They do not have enough of them.

Q. But usually on the large plantations they utilize them?—A. Yes.

(After a recess from 1 to 2.45 p. m., the hearing of Mr. Hale was resumed, as follows:)

Q. (By Mr. A. L. HARRIS.) When we took a recess we were on the topic of colored labor; have you anything further to say on that topic?—A. I think I covered it pretty well this morning. The point I wanted to try to make at that time was that in the skilled or semiskilled work of either pruning and propagating or gathering of the fruit it requires a higher class of labor than the ordinary work of the farm. We found the negro abundantly able to carry his share with any other man; perfectly satisfactory.

Q. Then you may pass to the sufficiency of the public school facilities.—A. The public school facilities of our section of Georgia are very good, considering the amount of money that they have to put into them; they are very good, indeed, and are steadily improving, both for the whites and blacks.

I am not sure what the law is as to compulsory school attendance, but there is certainly an apparent lack of compulsory attendance on the part of the blacks. I am not sure that there is any law that empowers local authorities to force them to go to school, as they do in other States, but I judge that not more than 60 per cent of the black children of school age do attend school, or if they do it is only a very short season of the year. That seems to be the trouble; but there is a larger per cent of whites that do attend—much larger per cent.

Q. What is their capability as to learning?—A. I think they are as bright as the average of children of any nationality, under the conditions which surround them. We find they are quite bright. We have at one time had a private school on the place so that they might have more schooling; and I occasionally went in there and I found that they were as bright as the average of school children. Of course the facilities are not nearly as ample as at the North, but I think they are capable of a reasonable amount of education.

Q. Is the course of study adapted to the needs of the people in the country?—A. It is a general education, a general education in its simplest form; but to my notion the whole need of the South, both black and white, in the common school is, of course, the rudimentary education as a foundation and, I believe, some simple text-books perhaps not directly pertaining to agriculture but in the line of agriculture, because it is the only way that you are going to reach those people with a practical education. The only opportunity they are going to have is in the common school. It seems to me, whether in connection with the courses of reading or how, but in simple language, perhaps to teach agricultural chemistry, as in the general rural-science series which is now being published—King on the Soil, Bailey's Plant Breeding—Roberts on the Fertility of the Soil gives the whole foundation of plant life; and Voorhees on Fertilizers, which is in simple language; and one particularly important in the South is on Leguminous Plants and Nitrogen, by Professor Hildgard, of the University of California; those are simple text-books, and yet deeply scientific and so practical that a very simple mind would get considerable from them. I do not know just how they would go into the course of study, but some one of those, or a number of them, ought to go into the rural schools of every section of America; and there is more need of it there than there is in any other section of the country, and it would be very valuable aid to those people. A majority of those people for a good many years are to get their living out of the soil; the wealth of the South largely lies in its soil, and that wealth will be brought out only by intelligent agriculture.

Q. That applies to white as well as colored?—A. Oh, I am referring both to white and black.

In the way of technical education, in the State of Georgia there are two institutions of a moderate degree of efficiency, one at Atlanta and another at Savannah, and I think there is one for girls at Milledgeville. I do not know very much about it, but I know there is a little opportunity; and the State University of Georgia, which receives the agricultural funds from the Government under the original Morrill Act of 1862 and the supplementary one of 1890, is a classical insti-

tution, but aims, of course, to do enough of agricultural and mechanical education to be enabled to receive that money, and that is about all. That is the trouble in a good many States. That money is not applied where it ought to be. It is misapplied; but I am not saying any more so in Georgia than in a number of other States of this country. Someway or somehow Congress ought to see that that money is used as it was intended to be. There are a few agricultural students there at that college and always have been, but agricultural education is not magnified as it ought to be. The general line of classical education in the South, and technical in a moderate way, is all tending to lead them away from agriculture instead of toward it; and the idea has been—not any more there than in any other section—that if a boy or a girl could get a little classical education they were going to be enabled to get a living in some way without working. But I believe if that same idea was applied to the education along agricultural lines, that there is a chance also to get a good living as easy as you could get it anywhere else, and be a king among men. I believe the best opportunity anywhere today for education lies along agricultural lines, and I believe a young man's chances to-day are better. And if our young men who are in Yale and Harvard, or high-class colleges of that kind, would put the same energy, same study, and same effort into a scientific agricultural education, and then apply that to their business as farmers, their chances of making money and getting ahead in the world are greater than they are in the professions. I would like to see some means arranged whereby the agricultural funds, so called, from the National Government would be applied directly for that purpose.

Q. Has the agricultural college been successful in number of students and financial support?—A. Perhaps not. Kansas and Michigan are doing very well; perhaps the best in the country. Those are turning out a goodly number. Michigan is a marvelous success, and is turning some bright men out over the country. Kansas has done exceedingly well, and some of the other States.

Q. (By Mr. FARQUHAR.) Is not the success of the Michigan college due to the excellent foundation they originally gave it, being purely agricultural?—A. They caught on to the real idea of it at the start. The majority of the States at the time the first appropriation was made had not begun to realize that farming was anything more than mining—digging a little something out of the soil. To-day we go on the theory that it is a scientific business as much as manufacturing, as making and selling goods or hardware, and it needs an educated man to properly carry on the business. Michigan was one of the original States that saw the need of it; but the other States turned it over to their various classical institutions, and, of course, they had not a management who took any interest in the agricultural side of it. They were teaching the classics, and so that helped out along that line; and people were not led up in the way they should have been. When this new fund came along in 1890 those same institutions went out and gobbled it up wherever they could.

Q. Have not you an agricultural society in the State of Georgia?—A. State Agricultural Society.

Q. Why does not that foster this same idea of making a distinct school and utilizing this money under this law for it?—A. The matter has been agitated in the State both by the leading agriculturalists and by the society, but you know the powerful influences that are always at work. The graduates of the Georgia University are in the law offices; they are in the newspaper offices; they have the power to control public opinion, and they do it. And Georgia is no worse in that respect than a great many States; not at all.

Q. (By Mr. A. L. HARRIS.) The complaint is pretty general?—A. The complaint is pretty general. Of course we have the Macon Institution, which is an educational institution also, and it is doing splendid work. I believe myself that, as many of the Southern States are comparatively poor and unable to do as much as they would like, if this agricultural college fund were used throughout the Southern States in a series of agricultural institutes such as are provided in some States, it would accomplish a wonderful uplifting. Keep it out of politics; put practical and scientific agriculturalists traveling about the State and holding meetings here and there, where you could get a dozen or 25 farmers and boys together; call in the school children, and carry it to the people; and if you could once get a thirst for that knowledge, it would take care of itself. I believe the national fund could be better used in a great many of these States, Georgia in particular, and others the same, by carrying to the people some form of agricultural interest in that particular.

Q. (By Mr. C. J. HARRIS.) Do you know of any successful farmers who are graduates of agricultural colleges?—A. Yes; I know of a number in Massachusetts, Connecticut, Michigan, and New York State.

Q. Do you think they succeed as well as those who have not gone to the agricultural colleges?—A. If they have, in connection with the education, a love of the soil and the business ability that the other man possesses, they far outstrip him. The mere fact that they have an education will not make successful farmers if they have not a taste for the business and have not the same business ability that they would have to put into any other business to succeed.

Q. Do you think they are more successful on account of that training?—A. Yes.

Q. Have they proved it so in actual life?—A. So far as they have had an opportunity to prove it, it has followed in proportion as with others in other professions. There are many doctors and many lawyers and many managers that make a wonderful failure of their profession; but the education is not at fault; it is the material you have begun on; and if you begin on the wrong material to make an educated farmer, you can not make a brilliantly successful man out of one that would make a failure anyway.

Q. (By Mr. A. L. HARRIS.) You may state to the commission, if you will, what the opportunity for capital is to earn something in the South invested in agriculture.—A. I think under intelligent business management that capital has as good an opportunity in the South as in any section of the United States. I am under the impression that in many lines it has a better opportunity, on account, of course, of the cheap labor and the cheap land and the long season in which work may be carried on. Of course there are specialties in different sections of the United States where a man can do better, but on an average investment in agriculture, it seems to me to-day that there is a brighter outlook for it in the South than anywhere else.

Q. In the South is it as good as capital invested in banking or manufacturing or merchandising?—A. Well, of course I can not speak from actual experience, as I have not been in any of those lines of business and am not closely acquainted with it. For myself, I should rather take my chances at agriculture, of better dividends. I believe with the same equipment for agricultural business that a man would have to put into manufacturing or banking—say mental equipment—that a farmer has a better chance on an average.

Q. (By Mr. C. J. HARRIS.) Is there any profit in watermelon raising in Georgia now?—A. No; it has been overdone. Occasionally a few will make money, but on the whole there is no profit, or very little.

Q. (By Mr. A. L. HARRIS.) What have you to say in regard to the taxation of agricultural property?—A. The taxation of agricultural property is not excessive in the South; it is on a par with real-estate holdings. But in Georgia, and everywhere else, real estate pays more than its equal share of taxation; but that does not apply to agricultural real estate any more than to any other real estate. It simply seems to be one of the unfortunate things of taxation that real estate, wherever it is, pays the taxes and the other property does not. But I do not think agriculture is paying in excess of any other real estate. Taxes are moderate there. Perhaps if they were more, and used more for the public benefit, it might be better.

On this question of taxation, as to suggestions for modification and unification of tax methods, etc., it is a pretty hard proposition. But I have always had in mind that there should be a uniform law in every State that would require the listing of all property that a man owns once a year; a listing of everything he owns in the world. You can exempt as much of it as you like, but once a year, under a very severe penalty, a man should render an account of all he owns in the world.

Q. Tangible and intangible both?—A. Yes; once a year, and then we will see what will escape. But once a year the citizen should go before the proper authority and make oath and put on record all the property he owns in the world. And I am rather in favor of an income tax.

Q. (By Mr. CLARKE.) In the States?—A. In the States. I think that an income tax is certainly a just tax, a fair tax to everybody; and I believe in some sort of an income tax. I believe myself that a graduated income tax is not unjust, but I would have everybody a taxpayer. I think the humblest citizen, the man working for the smallest wages, if he paid a little bit of a tax, would have more interest in his local government and in his State government and be a better citizen and look a little sharper after how the money was spent. I would make it very light on one with a limited income, but I could like to see that done—a graduated income tax that should touch everybody.

Q. (By Mr. PHILLIPS.) Do you not think that there are a great many persons engaged in business whose incomes it would be impossible to tell each year?—A. Well, I would not ask a man to swear to an impossibility, but a man can come pretty near knowing what his income is from year to year.

Q. In the case of great banks and great industries, where persons are running rolling mills, for instance—have a large amount of money out—they often lose very largely, and in this year it would be a loss to them.—A. Well, if you do not have an income, you can not lose what you do not have.

Q. They have an income, but it is out in paper that is not due. Is that to be put in as an income?—A. Well, they would not put it in. If it was uncertain or of doubtful value, you would not count it.

Q. Very frequently it is carried down in the banks as loss.—A. I do not think anybody would be compelled to pay taxes if they did not have the income.

Q. There is another case, in which persons engaged in the manufacturing business make a very considerable amount of money in one year and yet have a very large debt—carry a very large amount of borrowed money. Does it not affect their credit very frequently if they give their income one year and do not give any the next year? Are not they liable to fail, because creditors will desire to collect everything they can?—A. No, I think not; for a man's credit stands largely on his moral character and his uprightness in doing business and whether he does his business squarely and in a straightforward way. I have found in my own experience in a limited way in dealing with banks and bankers that they want to know what you are doing as an individual—a clean, straightforward way of doing business, whether it is up or down. Now, in Georgia this year the frost came along and wiped everything out. Not a dollar of income in 1899, whereas in 1898 there was a large income.

Q. It was stated as to the income tax, the war tax, that persons would give in an income one year, and failing to make any income the next year, would give one in to sustain their credit.—A. Well, if they are as shaky as that, let them go down; but I do not think any square-toed, upright business men have got into difficulty by having the public to know the facts. I think they stood stronger. I think to keep it covered up is an injury to the men. I think a straightforward, open understanding of things is better for honorable business men.

Q. (By Mr. FARQUHAR.) Do you not think that if there was an exposé of the credit of individuals and firms demanded by the State, that it would really be injurious to the credit of a great many concerns that come to bad debts and bad markets and slack times and must go to the banks to tide over, and temporarily assume debts that did not belong to the prosperous years? Would it not be apt to shake the credit of persons and firms with the bankers, and even with the general public?—A. It might with a very few, but I do not think enough so as to affect the business interests of the country at all.

Q. Do you not think that half the business of this country is done on credit?—A. Oh, probably more than that.

Q. But we will say safely half.—A. Safely half, and probably more.

Q. And credit is one of the most touchy things in the commercial world—the easiest thing that can be overturned. Would not that be the difficulty in these State income taxes? In the second place, the weakness very often of individuals and firms who, without thus having to expose that weakness, could swim through and ultimately recover in the succeeding year or a few years after—would it not tide over, as it were, a good many difficulties that every man has in his business?—A. It might tide them over.

Q. Have there not been times in your own life that you would not care that everybody would know?—A. I have been in some very tight places. I have been in the mud a good many times very deep; but when I was deepest in the mud and things were the worst off I always went to my bankers and told them the very worst of everything, and I found I had no trouble in getting on.

Q. But if you were in a position in the city of Macon with four or five men in the same business actively competing— —A. (Interrupting.) I would be willing to risk it.

Q. (By Mr. PHILLIPS.) Is there not another class? Where a company is engaged in business with not a very large capital, as a good many industries of this country are, and they give in an income that is a very large income to the capital invested, and capitalists see that there is a great profit in this business, and they put in a very much larger capital than the thing demands—than the concern does—may they not be bankrupted by exposing their business to the general public?—A. The trusts are doing that now anyway.

The question of migration—there is very little migration from that section to other parts of the country, except some farmers go to the Southwest, where they think the land is more fertile, Texas and Arkansas; but they are very few in number.

As to the decline in prices of agricultural products, there is a general decline, but, with the exception of cotton, I question whether the decline is any greater

than it is in manufactured goods and supplies that a man has to buy; so that one offsets the other. I think, with the exception of cotton, that the general decline of agricultural prices has been kept pace with by the manufactured products and the general supplies a man has to buy.

As to the decline of agricultural lands, which we touched upon this morning, in our section of Georgia it is slowly increasing in value—very slowly, but surely increasing.

Q. That is, since the great decline it is beginning now to advance?—A. It is beginning somewhat to advance.

Q. From the great decline several years ago?—A. Yes, that general decline; and that general decline was both on the Atlantic coast and along the Mississippi River. But there is land within 20 miles of Washington which is cheaper than it is in the plain of Kansas, and it is actually better for people to buy.

Q. (By Mr. A. L. HARRIS.) How do you account for that?—A. Well, the advertising and the hurrah for the West and all that, and the people here not readily adjusting themselves to the new agricultural conditions. They were living on the old-time agriculture of Maryland and Virginia, and the people have not, enough of them, readjusted themselves to the new conditions. There is wonderfully fine land in this immediate vicinity that is certainly going to be worth a great deal, and the land is here, money is here, and the market is here for a class of products that the Westerners can not grow.

As to the decline in the productive condition of the soil, I touched upon that this morning. The surface of the soil of the South and of the whole Eastern country, the South particularly, has been skinned over and over again, and it is a desolate-looking land. Down deep it is rich in the mineral elements that are needed for plant production. It is a country where the grasses do not naturally grow, and it has been left bare a great deal of the time after the crop has been taken off, and the nitrogenous matter and the organic matter has grown out of that soil. There is no question about that—that it is lacking in nitrogenous matter. But by deep plowing and starting a new condition of the soil you are going to favor it by furnishing everything in the way of potash and phosphoric acid that seems to be needed for a great many years, and by growing the green crops and leguminous crops that have the ability to gather nitrogen from the air; all the nitrogen that is needed may be gathered.

Q. What leguminous crop do you grow in Georgia?—A. The cowpea is the best, and the Japanese soy bean; and there is another, the velvet bean, that is said to be the best of all, but I have not tested it.

Q. Is the reproduction rapid under that treatment?—A. Oh, yes; you can build up land wonderfully, to my notion.

Q. (By Mr. PHILLIPS.) How do you build up the land in that way—by plowing it under?—A. By plowing under those green crops and those sorts of plants that have tubercles on the roots and have the ability to absorb the nitrogen from the air. And when they have got their growth, by plowing them up they have put their nitrogen in the soil, which is the most costly element of plant food. The potash and the kainite cost 5 cents a pound; phosphoric acid costs 7 cents; the nitrogen costs from 16 to 20 cents; and yet they need not buy a dollar's worth of it. That most expensive of all elements of the raw material is in the air. In a moderate way they do grow these plants there, and they get some seed. They rarely plow them under, and they save some seed to sow next year; and by plowing under the plants, stubble, and roots, the next year they get some wonderful crops. I have seen some cornfields in Georgia which, I am told by old planters, by planting the corn 5 feet apart and then ripping out the middle and sowing peas and letting them grow until the frost killed them in the fall, and then plowing under, and the following year bedding up over there, and planting a row of corn there, and having the cowpeas in the middle where the corn row was before—that for 50 years there have been corn crops taken off that land without the application of any other fertilizer.

Q. In a moderate way?—A. Only in a moderate way, yes; but instead of planting such a moderate acreage as they did, and leaving the land bear year after year, and letting the sun burn the nitrogen out of it—if by deeper plowing and better tilling they cultivate the land and by using more fertilizers, and have the balance growing with a leguminous crop, to build up the rest of the land, why, there are wonderful possibilities. On account, I say, of the cheap labor it is easily done.

Q. (By Mr. FARQUHAR.) Is there any plant food returned at all from the cotton plant?—A. No.

Q. Takes everything out practically?—A. Takes everything out. It is only this type of plants that have the tubercles on the roots. The cowpeas, the

vetches, and the soy beans and the clovers are about the only class of plants that collect nitrogen from the air. The clovers do not ordinarily grow very well in the South.

Q. Ordinarily how long does the pasturage last in the South?—A. What do you call pasturage? There is not any pasturage; scarcely none at all. We are below the limit of the English grasses; none of our best English grasses grow there. In our bottom lands in certain places the Bermuda grass grows, but it is killed by the first frost in the fall.

Q. Then there is not much use for dairying down there as to the growing of grasses?—A. Not as the Northern man dairies; but it is good for a class of feed.

Q. What class of feed do you supply in place of our grasses?—A. Corn fodder and pasturage—the Bermuda grass and the cowpeas, and plants of that kind. We make our hay—I will touch that a little later on another line.

Q. (By Mr. C. J. HARRIS.) Can you raise any hay there?—A. Oh, yes.

As to the increase in the acreage under cultivation, I think there is practically little advantage in the increased acreage. There is too much under cultivation anyway, but there is a change going on from cotton to fruits and vegetables of various kinds. There is considerable change in Georgia and the change is all for the better, and the more of it that is going on the better.

Now, question 34, "Its effect on production, on prices, and on profits." This change increased the value of production from 200 to 1,000 per cent; it increased the cost of production also, and so there comes the question of profits that the chairman was touching on a little while ago. While the profits are all the way from nothing up to 10 times the cotton profit in different years, it is uncertain. The average is good, but some years it is nothing and other years they are moderate, and other years they are excessive. It is uncertain, but uses more labor per acre and requires more skilled labor, which makes higher wages.

Q. (By Mr. PHILLIPS.) You are pretty well supplied in that climate with rain, are you?—A. Yes; the rainfall is somewhat greater than it is here, but it is a little precarious. We have some severe droughts. Here is a point in the changing from cotton to the finer fruits: An acre of melons or fruits gives the railroads 15 times the tonnage an acre of cotton does; 15 times the tonnage per acre over cotton to the railroads; and while I do not know what cotton freights are, they also give the railroads a higher price per ton besides giving them 15 times as much freight per acre. We pay them a higher price per ton for the fruit; so it is certainly a decided advantage to the railroads to have a change in the crops. Of course, they make various rates on the different fruits. Watermelons they bring at a very low rate because they have had to do it or they could not do any business at all. On our higher grade fruits, fine fruits, they charge us a very heavy rate; as I told you, \$265 a car to New York City, and \$90 more to Boston.

Q. (By Mr. A. L. HARRIS.) About how many tons do you ship in a car?—A. Well, about a 24,000-pound car.

The question of bonanza farming here—that has not got hold down there to any extent, in fact not at all. There are of course some large cotton planters and some very large fruit and vegetable farms.

Q. (By Mr. PHILLIPS.) Is that proportionate to the rate charged from California for California fruit?—A. No, we pay far more than California does proportionately.

Q. (By Mr. C. J. HARRIS.) Speaking of bonanza farming, can a man run several farms, or let them out to renters, and make interest on the money invested in those farms, do you think?—A. I could not do it myself. If I were to attempt to do it I should want to take the management and hire the labor and pay for it, and have absolute control, rather than to risk it with renters. I think a man can go South with capital, manage it himself and hire his labor, and can make splendid dividends on his capital. I think there are a number of opportunities in various lines which I will speak of in a few moments where I believe a man can make from 10 to 20 per cent in the South if he manages them himself and if he would apply himself closely to details.

Q. You mean apply the same business methods?—A. The same methods; the same brains, that must go into any other business to be successful.

"Organization of the farmers." There are no permanent organizations of the farmers covering the whole State. There are local organizations there. At one time the Grange and the Farmers' Alliance were both there, but both tumbled into politics, and thought they were going to benefit agriculture entirely by legislation. They began at the wrong end. If they had made them educational institutions for the farmer and taught them to mind their own business and become better business men they would have succeeded better, but where they

tumbled into politics as they did, particularly in the South, they all went down. I do not believe that either the Alliance or the Grange has a subordinate organization in that State. They have a State agricultural society and a State horticultural society. The horticultural society particularly is a live, practical institution, with a membership of 300 or 300 in different sections of the State.

Q. (By Mr. A. L. HARRIS.) On a nonpartisan basis?—A. Certainly. You can not do business on a partisan basis. The Grange as an organization is doing splendid work in some States where it is working as an educational organization. It is doing splendid work in many States of this Union; there is no question about it. It is the best farmers' organization that there is in America, and it is a useful organization and it is doing a great deal of good. But in some States where it was thought the only way it was going to improve agriculture was to be in the statehouse there and the Capitol here, it did not do the farmers any good or help them very much; but taking the organization as a whole it is a good thing. In Michigan, New York, California, Pennsylvania, Ohio, New Jersey, and all the New England States the Grange is doing grand work for agriculture. You may help or hinder it in a moderate way, but most of it we make ourselves. I do not believe you can ever legislate prosperity into any particular class of individuals entirely.

Q. You think the farmer can not help himself by going to the corner grocery and whittling on a box?—A. Well, he may have a little fun out of it, but I do not want to do business that way.

On the question of organization, I believe there should be organizations of farmers for educational purposes and they should be in every community.

As to cooperation the farmers can cooperate in a moderate degree in production—not very much; but they can in finding markets and distributing their crops. There is the most important chance for farmers to cooperate in a business way; in the even distribution of their crops. Cotton, of course, is a little different from some of them, because that finds certain markets anyway; goes through certain channels.

"Present production in relation to consumption and existing markets." I do not think there is enough study among the agriculturists of the South as to the market conditions of America and what they demand in the home markets particularly. Now, Georgia is buying hay; Georgia is buying corn and meat and canned goods and dried fruit and so on, and mules—that she profitably can produce at home every one of them. I do not know about mules; how she can produce them; I question whether Kentucky and Tennessee can not produce them cheaper, because it is a natural grazing country there; but Georgia is buying train loads of these things, and she ought to produce herself all the hay she wants, all the corn and all the meat and canned goods, dried goods and all those things. Atlanta, Macon, Savannah, and all the small towns over the State are buying baled hay from the North, and I have never known any home-grown hay to be sold there. I do not say it has not sold, because I have never watched the market, and I have not had to buy it; but I have never known outside hay to be below \$16 a ton; and corn at about the same price as in the high-priced northeastern markets where no corn is grown.

Q. (By Mr. PHILLIPS.) What do you chiefly raise for hay?—A. I raise the natural crab grass hay, with cowpeas. For instance, I take out a crop of hay and leave that land to itself; the next summer it will be bare; nothing green growing on the land; then plow it in midsummer; midsummer down there is June or the 1st of July; and the crab grass will grow up as thick as weeds, and by sowing one-half bushel of cowpeas per acre at time of plowing, I will have a splendid crop of hay.

Q. Is that as good as the Northern hay, baled hay?—A. I never have analyzed it, but I know that from the way it puts a glossy coat on horses and the way the Jersey cow gives down rich milk, it is as good as the timothy and clover hay we have at the North.

Q. Are your cows bothered much with ticks in that climate?—A. No. I only keep enough for my family so I can have milk and cream.

Q. (By Mr. A. L. HARRIS.) Is the hay as cheap as it is in the North, that we feed cattle?—A. Of course, in the North it can be grown cheaper, without the expense of delivering it; but down there you must set that down and add it to the cost of the hay.

Q. How deep do you plow?—A. I plow about 8 inches. I do not know of many of my neighbors around there, with a few exceptions, that plow more than 3 or 4.

Q. (By Mr. CLARKE.) You plow about as deeply there as they do anywhere in the country?—A. Yes. Not all of my land is plowed 8 inches; with some soil it is not well to turn up as much as that; it is a light brown loam on the surface

and red clay subsoil. Sometimes it is not well to turn up so much of the subsoil at one plowing. It is better to plow a little deeper each year.

Q. Do you you plow your orchards?—A. Oh, yes; do not plow them as deeply, but the orchards are kept thoroughly cultivated every year; every inch of the land.

Q. Thoroughly fertilized?—A. No, only moderately fertilized. I went there with the plan of using many thousand tons a year, but I found that there is fertility enough in the land to grow beautiful trees and beautiful fruit if I only stirred it up and got it out.

Q. But such a thing is necessary in that line?—A. In the course of time; but it would be unwise, it seems to me, for a business man to buy phosphoric acid and potash to put on that land when there is enough in there to last 100 years; so I would stir up the land and bring the particles together to get this chemical action which comes from those minerals. Have any of you ever been up to General Bidwell's place in Chico, up near Sacramento? He was a candidate for President of the United States. He is one of the nicest men in America, and he owns 40,000 acres of land in the Sacramento Valley. He does business on a tremendous scale, gang plows running by steam and turning over 8 furrows at a time, and when it is done the wheat is broadcasted and hurriedly harrowed in. And on a little corner taken out of this farm there is 500 acres owned by a woman, and this land is plowed by a single team of mules and a good stiff plow, and turned over well and then it is harrowed well and cross-plowed, and then she harrows it again and smooths it down. For a number of years General Bidwell's average yield of wheat has been 15 bushels to the acre, and Mrs. Jones's has been 35. There is a tremendous lesson to the farmer on the fertility of the soil. She has more than doubled its productive capacity by better cultivation, and they have not even thought of nominating her for President yet.

Q. (By Mr. C. J. HARRIS.) Does she use any fertilizer?—A. They do not either one of them use any fertilizer; it lies wholly in the deep and more thorough stirring of the land over and over again.

Q. You do not think that could be kept up for years without the use of fertilizers?—A. Yes, I do. I believe that a large majority of the land in America to-day has mineral elements enough in it to last for centuries, and by supplying nitrogen in any way you like, but most cheaply by taking it freely from the air, I believe the fertility of much of our so-called worn out land in the Atlantic coast States can be made to increase; the productive value of our lands may be made to increase through intelligent practical agriculture.

Q. (By Mr. A. L. HARRIS.) Would that apply in New England as well?—A. That applies in New England.

Q. (By Mr. FARQUHAR.) Is not the character of the crops which have been uniformly grown in this section, through Maryland and elsewhere—the cotton and tobacco—such that they have exhausted the soil thoroughly?—A. Well, certain crops, of course. Both of those crops would take a good deal of potash.

Q. Continuous cropping has been the custom there; no diversity or variation in cropping at all?—A. Rotation of crops will strengthen the land; there is no question about that. I say still I believe I could take any man who wants to go at it right, and get good tobacco and cotton continuously out of the same land, and at the same time maintain the fertility of the soil.

Q. You have that in Connecticut?—A. Yes.

Q. You find that among the Connecticut growers of tobacco?—A. No, not many; not very many of them. It is easier to buy a little more fertilizer; but in the Connecticut Valley, where they have been growing tobacco all my life and before, the land is more fertile to-day than it was 30 or 40 years ago.

Q. By artificial means?—A. By artificial means. I do not want you to think that the lands in the Connecticut Valley are going back; they are more fertile than ever; and that is done by buying outside fertilizers. The tobacco has not exhausted the Connecticut Valley; it is richer than it ever was.

Q. (By Mr. PHILLIPS.) Do you mean that the soil would be richer by growing crop after crop of tobacco every year without fertilizing?—A. No.

Q. There is no way of keeping it up but by using the fertilizer?—A. I mean to say that it has grown richer there by using fertilizers. But here I say we could maintain the fertility, and much of the land in Virginia and much in the South could be made over and improved from its present condition, by plowing under these leguminous crops.

Q. (By Mr. CLARKE.) Do you grow any tobacco in Connecticut?—A. I do not; I did for a good many years.

Q. You are familiar with the tobacco culture?—A. Yes, born right in it.

Q. Do you think some of the crops can be substituted for tobacco to advantage?—A. What do you mean by advantage?

Q. Well, would something else pay as well, all things considered?—A. Well, that depends on the man, what his taste is, what his training is. No, I think for the average planter of tobacco in the Connecticut Valley, it is probably the best crop he can get; probably the best money crop he can get. He has been educated to grow it, and it is about all he knows; and he can not learn, because it is what he has been brought up in.

Q. Well, all those farmers carry on some diversified agriculture?—A. Very many of them do, and have a cow or two. They have hay enough to feed their own animals. The most prosperous are those who have tobacco in connection with dairying and market gardening; but after all, most of the farmers that grow tobacco grow that as the one staple crop.

On the question of overproduction, there is no question. There is an overproduction of cotton. Possibly there would have been an overproduction of peaches if it had not been for the freeze. The high prices tempted too many to go into it, but the freeze balanced up things. There is an underproduction in most everything else in the South.

Q. (By Mr. C. J. HARRIS.) Would not the market for peaches be much greater if the freight were cheaper?—A. Probably; and yet freight that would make a nice profit to the carrier would not make enough difference in the price to affect the consumer scarcely one way or the other. I hardly think it would affect the consumption at all. What would affect the consumption would be a better and a more even distribution. There are markets which are overloaded, like Philadelphia, Chicago, and New York, while there are towns of 50,000 inhabitants that have not a crate. A better distribution would double the production and consumption, probably.

Q. (By Mr. CLARKE.) Is there not improvement from year to year in distribution?—A. Yes, moderately so. I have had no trouble myself; but there are a great many who have.

The question of diversification of agriculture—we touched on that. Certainly the only hope of agricultural salvation in the South is diversity of agriculture. That is the only hope. The things to be raised I have touched upon in part; hay for sale as a commercial crop in the State, to our own people. I will not talk about shipping any out until they have supplied their own market. Then corn and dairy products. There are thousands of dollars worth of dairy products brought into the South from the North, which probably can be produced a little cheaper at the North; but when you add the freight on them, the producer in the South can produce them as cheaply as the man at the North, with the freight added. It is done by artificial growth, instead of trusting to native pasturage.

Q. (By Mr. PHILLIPS.) What is the reason timothy, red top, and such rich grasses do not grow in the South?—A. The reason is that the long, hot summer seasons burn them out. I presume the time will come when we shall discover from some place in the world grasses that are adapted to that climate that will grow naturally all over that land. There is a grass which many of them have down there and do not like, because they say when it once gets in your land you can not get shut of it. It is Johnson grass, a species of sorghum, but cut early in its growth it will make excellent crops of hay, two or three in a year. I wish I could give you the name of a gentleman just below Augusta, on the Savannah River, who is making a splendid living on nothing but hay, Johnson grass, living on 100 acres of land and making a splendid living off those three crops a year, a profit of about \$7,000 annually.

Q. Does not have to replant it?—A. Does not have to replant it and has the best home market.

Q. (By Mr. CLARKE.) That is not true the whole year round?—A. Oh, yes, practically; but they object to it, because they can not get shut of it. It persists in staying in your land, but it also gives you a good bank account.

Q. (By Mr. C. J. HARRIS.) What do you say this grass looks like?—A. The name is Johnson grass. It is a coarse grass. Well, you know what we call water grass?

Q. Yes.—A. A coarse grass like that. I think its botanical name is *Sorghum halepense*.

Q. Would that grow on upland, or does it require river bottom?—A. It wants rather a moderate bottom land, I think. I should say on very dry lands it would not succeed.

Corn is grown in moderate quantity but not enough to supply the cities and towns and hardly enough to supply the plantations. Some planters, with the low price of cotton, have been raising corn to help them out.

Q. (By Mr. A. L. HARRIS.) If good cultivation is required in raising corn, what would be the success?—A. Doubling the crop. I have produced on an 80 acre tract 8,300 bushels at one crop.

Q. That is not bad.—A. That is about 40 bushels to the acre. I sold it at 70 cents a bushel to my neighbors who were selling 7 cent cotton.

Q. (By Mr. CLARKE.) Are there silos in the South?—A. Very few silos; they will come with dairying.

Q. (By Mr. FARQUHAR.) Evidently you do not raise all the product you consume in Georgia?—A. No. There is lots brought in; it ought all to be grown there.

Q. (By Mr. A. L. HARRIS.) You have no idea of the amount paid out for products grown outside?—A. No; but it is enormous. At every little town you see railroads unloading the product the whole year through.

Q. (By Mr. FARQUHAR.) Cotton pays for it?—A. Cotton pays for it, and yet the cotton lands could produce all these supplies, and they could be sold right there at home at a high price.

Q. You have been there 10 years; during the whole time that you have been acquainted with Georgia agriculture, has there been any persistent conscientious agitation of this diversification of crops, attempting to raise their own truck and their own corn, and other things that take Georgia money into other States? Has there been systematic and intelligent discussion of these questions among farmers, in the Grange, or in the newspapers?—A. Through the State agricultural societies; and it has been impressed upon the people by the agricultural department of the State. They have a commissioner of agriculture, and for 6 or 8 years that has been strongly impressed upon the people by the monthly bulletin or letter from the department of agriculture, which has been printed by most of the newspapers in the State; but it seems to need a practical demonstration to carry it right to the people. It is working. It is being done in sections of the State; a steady improvement all the time. No question about that.

Georgia is a wonderful State for grape growing, but not particularly fine for marketing, because, for some reason at present unknown to horticulturists, grapes shipped from the South at the time they mature in the summer, after being off the vine for a day or so, the berries drop from the bunch, and there are no perfect bunches of grapes. It seriously interferes with the marketing, but there is certainly a fine opportunity for growing grapes in the South for wine making. They grow grapes of high quality, rich in sugar, and make some of the finest wine made anywhere in America, and if the wine industry is of profit anywhere in America, it certainly can be made so there.

Fine tobacco is another industry. The southern part of the State can grow a very fine grade of tobacco, and it is being done in a moderate way, and is an industry that can be developed very largely there.

The production of nuts: We are importing a great many hundreds of thousands of dollars' worth of nuts from foreign countries. The pecan can be grown to advantage in many sections of the State; it is grown in a moderate way, and its extended planting is being agitated. I am growing chestnuts down there. I have taken some of the Japanese chestnuts, by taking our native American chestnuts and planting and grafting them. There are some [showing chestnuts] grown from the graft, and I have 10 acres of these started, and they are as sweet as our native American chestnuts, yet as large as horse chestnuts.

Q. (By Mr. KENNEDY.) These are the Japanese chestnuts?—A. Yes; they were grown in Georgia two years from the graft.

Q. (By Mr. PHILLIPS.) How large do these trees grow?—A. They do not grow as tall as our American variety here at the North; they are broad and spreading, and grow as large as an apple tree ordinarily. I was offered 40 cents a pound for these chestnuts in New York at wholesale at the time they were ripe.

Q. (By Mr. A. L. HARRIS.) How many pounds could you grow on an acre of the ordinary orchard?—A. I would have to estimate a little. I should judge from about 80 to 75 bushels to the acre. Of course that price is a fictitious price at the present time—a high price; but they would be worth on the market and you could sell a train load at 10 cents a pound.

Q. How many pounds in the bushel?—A. About 50; \$5 a bushel. They have never been troubled by the weevil, as are our native American chestnuts, so far. They have not been troubled with it, and the scientists are trying to find out why. I simply speak of that as one of the new industries. People want the product.

Q. (By Mr. PHILLIPS.) They have the same flavor?—A. Oh, yes. There are some large varieties grown in France and Spain which are woody, tasteless, and not good at all; they are used in making soups, stuffing turkeys etc.; but these are sweet like our little American chestnuts.

Q. (By Mr. A. L. HARRIS.) The possibilities of the South, if employed, would be wonderful?—A. I think so.

Q. (By Mr. PHILLIPS.) Do prunes grow there?—A. We can grow the prune plum there, but I doubt if we can compete with California, because it has such a wonderful climate for drying in the open air. But we are growing Japanese plums there with wonderful success, and they are furnishing a very fine product. The European plums, which we grow all over the United States, will not thrive in the South, but this race of plums from Japan will. They have a thicker skin, and they cover a season of three months, and they are better than the European plums in many ways. That is a new industry just springing up, and because of their tough skins they can be shipped all over the United States while in their green state, and they are far preferable to anything that can be produced in California.

Q. How do they compare with the ordinary plum in flavor?—A. Much the same, with the difference in variety.

Q. (By Representative GARDNER.) Does that thicker skin result in their withstanding the attacks of insects?—A. You find the insect stings on them, but rarely find a worm inside. I will give this as a scientific chap made the statement, who has studied them for the past two years. I find Japanese plums with from one to nine marks of the crescent the curculio makes—its sign is a little crescent cut in the skin. I have found from one to nine stings on Japanese plums, different specimens on the tree, and not a single worm in any of them, and have followed it up for a number of years. A Cornell University scientist, who studied the thing, claims that the skin is so thick and tough and grows so rapidly, it crushes the egg before it hatches.

Q. (By Mr. PHILLIPS.) Will these plums grow in a Northern climate? Can you grow them in Connecticut?—A. Oh, yes; all over the United States. It is a wonderful new race of fruit which has come to this country and is particularly suited to the South. You can grow it as cheaply as apples.

Q. (By Mr. A. L. HARRIS.) Are you troubled with black knot in the fruit business?—A. Black knot does not trouble that kind of plums; it troubles all the European plums and the English Morello cherries; and some other of that class.

Another line of industry which will thrive down there on account of cheap labor is nursery stock, which is sold, of course, and planted most largely through the North, and which is expensive to produce in the North on account of high-priced labor. Georgia can grow as fine a tree, peach, plum, pear, or apple, in one year as the nursery regions of the North can produce in two years. That is a decided advantage, and then, of course, being a younger tree, it is more thrifty looking, slicker, and more attractive to the customer.

Q. (By Representative GARDNER.) Due to your longer summer?—A. Yes.

Q. How do they thrive in the North?—A. It does not matter where a tree of a known variety is produced as to its harvest. Take the Baldwin apple or the Concord grape or the Bartlett pear—they are adapted to a wide region of country, and whether propagated in Florida, Virginia, New Jersey, or Canada, it will not make any difference in its transplanting into another section of the country.

Q. How about its ripening its fruit?—A. Now there is not anything in that at all, after the first year.

Q. You say trees grown in the South of a given variety thrive equally well in almost any part of the country?—A. Yes.

Q. Does the place where the stock is grown have any influence over the period at which it ripens its fruit when transplanted to another section of a different climate?—A. No; not if it is a standard variety that is known in that country. Now I name these varieties, the Baldwin apple, the Concord grape, and the Bartlett pear, which will thrive equally well all over the United States, no matter where they were born. If I were taking seedlings I would not dare to take a seedling which originated in Georgia and plant it in New Jersey or northern Vermont with any hope of success, because it is of Southern origin, and properly belongs to that climate.

Now as to this question of bringing from the South to the North or from the North to the South, there has a little error crept in there which people do not seem to quite understand. It takes trees a little while to accustom themselves to the habits of the country. I may take four peach pits from one common source, and I will plant two in Connecticut and two in Georgia. I will come here to Washington, just midway, and take the old Crawford peach, get buds from it and send two to Connecticut and two to Georgia, and propagate four Crawford peaches, two in Connecticut and two in Georgia. I will grow them there until 1 year old, and then take one from Connecticut to Georgia and one from Georgia to Connecticut. The first warm day that comes in Georgia—in January or the 1st of February, the tree that was propagated in Connecticut will begin to grow and throw out buds, while the one raised there in Georgia will lay perfectly dormant

and think to itself if it does not say, "You Yankee fool, you had better keep quiet." And finally one day the frost will come and get him, and the Georgia Cracker will say, "I told you so." About the middle of February, say, or the first of March, when conditions are ripe, that Georgia baby will begin to grow, and the Connecticut baby will grow again if not killed outright; and the next year the Yankee will not do as before, but will sprout at the same time and do the same as the Cracker.

Q. And ripen the fruit the same?—A. Yes. On the other hand in Connecticut, the one raised in Georgia will lie dormant until the middle of May, being distrustful and not thinking that the warm weather has come to stay, and let the Connecticut tree get a start; it will lay back six weeks the first year, but after the first year they will both start in April. They have gotten into the habits of the country in one year.

Now take plants which are annual like sweet corn: You get your seed from just as far north as you can, if you want them to ripen early, and you will get early sweet corn, and vegetables of all kinds; on the other hand, if you want them to drag along late, get your seed from the South; but after one year they will accustom themselves to the habits of the country.

Q. Would what you have said about the trees be equally true if, instead of sending the buds to both places from the latitude of Washington, the tree which was transplanted from Georgia to Connecticut had been first budded there from the Georgia tree, and the tree that went to Georgia had been first budded in Connecticut?—A. If they were the same varieties they would get into the habits of the country after the first year. There are habits of plants all over the country.

Another point: An apple tree in Virginia will come out in bloom and open up slowly, and develop slowly, and finally begin to drop its petals, but it will be a week in the process of blooming; the same variety in New Jersey will be about five days; the same variety in Connecticut will be about four days; the same variety up there with Dr. Hoskins in Vermont will be about two days. The season is short and they have to hustle.

On this production of nursery stock, we found one great difficulty down there, and that was excessive freight rates on nursery stock to the North. There were a number of wholesale nurseries started in Georgia on a large scale, but had to give it up because the freight rates were excessive; we could not compete with the North on account of the excessive freight rates on nursery stock. It costs me at one time 95 cents per hundred to send nursery stock to Virginia from Georgia, and the same to New Jersey.

Q. (By Mr. FARQUHAR.) Does it contain two elements, bulk and weight?—A. No, when it is tightly packed. It is bulky but it is also very heavy. There is no difficulty in getting the maximum weight into a car.

Q. How do you account for the discrimination, if it be a discrimination?—A. I do not think the railroad people, perhaps, have ever got it through their heads. I think their tariff on nursery stock was made for local business, and they have never revised it to through business; they did not seem to see that it was an industry that could be built up, because it was an entirely new business. We have been importing from France, during all the history of this country, all our stocks which plums and apricots have been grafted on, and we commenced in a small way in Georgia to grow plum stocks, which we found we could grow there. It was a new industry, but there was hardly a profit in it with the low prices until the so-called McKinley tariff bill put a charge upon stocks coming in from France, which made it a nice industry; but the revision in the Wilson bill knocked that out, and it has gone down; but there is a chance to maintain that in this country.

Q. It was not reincorporated into the Dingley bill?—A. No; I think not; but it had died out under the other, and has not got to going again. I know it was nicely started under the McKinley tariff. Of course there are the fruits of various kinds. Blackberries grow wonderfully. Then the business of canned fruits, evaporated fruits—Georgia can make better and higher quality canned fruit than California ever could.

Q. Do blackberries grow naturally—wild?—A. They grow wild in great abundance, and cultivated they are superb.

Question 40, "Effect of improved agricultural machinery on production and prices." Of course there is no question that where used it has increased the production and reduced the cost of production, and will result in the using of less land, more intensive cultivation, and better results.

Extension of foreign markets: I do not know much about that, only, of course, cotton is always going to be an export, and that will take care of itself; but the further exports are particularly in the lines of canned and evaporated fruits, and the ones, I think, of tobacco and other things, that will naturally develop them-

selves. I can see plainly there is plenty of chance in these things on account of the low cost of production.

Q. (By Mr. A. L. HARRIS.) Can you raise as good tobacco in Georgia as the Connecticut leaf tobacco?—A. Probably not for the purpose for which the Connecticut leaf is used, but they can grow a fine-flavored tobacco for the filler. The Connecticut leaf is only a wrapper, and you know some sections of Florida and Georgia, by using Cuban seed, are producing the so-called Havana tobacco, and while not as good as the Cuban, it is much better than much that is sold for that. They make a very fine cigar, indeed, with it as a filler and with the Connecticut or Sumatra leaf for a wrapper.

Q. (By Mr. CLARKE.) Do you think they can afford to grow it there if tobacco from Puerto Rico and Cuba is brought in free of duty?—A. Probably not; but I suppose that is another question. It is an agricultural question. As a farmer, it seems to me that the opening of all these different countries to free importation of their products means a clean cut to the farmers; they may not want it, but they will have to take their medicine. Our tobacco farmers are very much stirred up about it, and the farmers generally that I talk with say that they are willing to stand with the rest of the people but they do not believe in all cutting being on the farmers. If we have a tariff for one we should have a tariff for all. We are willing to stand equally with the rest of Americans. I am frank to say to you, as an American farmer, that I believe that in all our tariff laws in the past, with the exception of the McKinley tariff, the farmer got the wrong end of it, and he did not get a fair show. Regardless of all politics, and as an American farmer, I say that he has not had fair representation. It has been given to everybody else at the expense of the farmer. Under the McKinley law we had a more equal protection.

Q. (By Mr. FARQUHAR.) You mean they were careful about the manufacturer and the farmer was forgotten?—A. Yes; perhaps it was largely his own fault, in that he did not come to the front and look out for his own interests, but he was not organized and they did not pull together. We are willing to stand on a fair basis with the rest of them. If the rest of them are going to have protection, we want it; if you have free trade for the rest of them, we will have it, too.

On cost of production: It is rather a difficult question, but my superintendent has kept some account of the cost of corn production, and we can produce corn in Georgia at from 20 cents to 25 cents a bushel; he produced it one year at 17 cents and a fraction. Hay can be produced in my section of the country at from \$6 to \$8 a ton, and it is worth from \$15 to \$20 in the home market. Canned and evaporated fruits can be produced cheaper than anywhere else in America.

Dairy products: While it is not a dairy country, lacking the natural grasses, yet the dairy products that the State itself needs can be produced as cheaply as they can be brought in, counting cost of production and railroad freights.

Cost of production of fruits varies a great deal, from about \$15 an acre on a large scale to from \$25 to \$30 on a small scale. Peaches, which I have talked about the most, will average about 500 crates to the car; that is, 24-quart crates holding 6 4-quart baskets. It will cost to pick and pack and handle, including package, about 30 cents a crate; and the freight of \$265 to New York—higher to Boston and other New England points, and less to Baltimore, Washington, and Chicago—is about 50 cents per crate; and the cartage, commissions and all, make a crate cost in our Northern markets all the way from \$1 to \$1.25, and they sell all the way from 50 cents to \$3, according as they are put on the market; on the whole, a nice business profit if rightly handled.

Within the past 2 years we have copied after that section of Colorado which made itself famous by producing cantaloupes—the Rocky Ford district. We would only see them in different sections of the United States while the home product was in the market, but they were never transported to any extent any distance before Colorado proved that they could grow a fine melon and ship to the far East, covering a period of 2 months, August and September. So Georgia has attempted to follow along that line, and has found that with railroad facilities, refrigerator cars, etc., it can produce equally good melons with Colorado and get them 3 months earlier. So that is a new industry built up in the last 2 years and likely to grow, and very much appreciated by the consumers of the United States.

Q. (By Mr. PHILLIPS.) Do you know why the cantaloupes are better flavored in Canada than in this country?—A. I question whether it is a fact. They do grow in the vicinity of Montreal one special variety of melon that is very well grown. There is this to be said: The northernmost limit of the United States, or the American continent, that you can produce anything to any purity in the vegetable line the finer it is in quality.

Q. (By Representative GARDNER.) Is that so of any of the vegetables, or only those that carry a large proportion of sugar?—A. I think it is with any of the vegetables. The northernmost limit that they will grow to full maturity will cause them to be very rich and luscious.

Q. (By Mr. PHILLIPS.) They claim the Canadian melon is better.—A. They grow them very fine there; a few skilled growers do produce some very fine melons in the vicinity of Montreal.

Q. (By Mr. RATCHFORD.) With reference to the melons, you spoke of Rocky Ford, Colo. Is not the shipment of the melons into the far East made possible by some new devices of transportation?—A. The refrigerator car; that is all.

Q. Is there not still something new for the purpose of shipping these melons?—A. Nothing that I know of.

Q. Have you not known of the cold-air funnel?—A. I know of experimental work, but no practical or daily use of these things. They are being experimented with, but I think none of them are in regular use.

Q. You do not know whether the experiment is a success?—A. I do not think it is a commercial success yet. They are working along that line, and in a short time I believe we are going to do away with the heavy refrigerator car and save the hauling of tons of ice. I made an experiment a few years ago with one of these cars, but it was poorly handled at this end of the line and proved a failure. It was claimed the railroad parties did not handle it properly because they had an interest in having the refrigerator lines maintained.

Another point: These Rocky Ford melons got a fame on the market. They simply came from the town of Rocky Ford. It was a melon that had been grown in the East, the Nettie Gem, an old variety; but they grew it exceedingly well, and it took the name of Rocky Ford on the market. It is a small melon, about 6 inches longest diameter and 3½ to 4 inches cross diameter; an oblong melon; green flesh. There were a good many planted in Florida and Georgia in 1898, and more in 1899. To sail under the other fellow's colors, instead of standing up like men and sailing under the name of Georgia and Florida melons they printed their labels "finest melons, grown from Rocky Ford seed," "Rocky Ford" in large type and "seed" in very small type, so that it could hardly be seen, and giving the impression that they were Rocky Ford cantaloupe melons, and they went on the market under the Colorado name. I am no more honest than the rest of mankind, but I know it pays to be honest. So I went to work and grew my cantaloupe melons and labeled them "Finest Georgia melons, grown by the same fellow that grows Hale's peaches," and stuck the label on the end. It rather made me smile when I sold mine in the New York market at \$4 per crate of about 50 melons, while the so-called Rocky Ford sold at \$1.50 and \$2. Maybe mine were better, or the people liked the honesty of it. They missed the opportunity of sailing under their own colors and making a profit at the same time.

Q. (By Mr. CLARKE.) Suppose you had left off the words "Hale's peaches?"—A. I wanted to connect the two.

Q. Suppose you had left it off?—A. It might have made a difference, but we had no crop of peaches, and I wanted to let them know I was not dead. I labeled the baskets and the ends of the crates and the cars. We put this on the crate like this [indicating]—"Hale's peaches"—below, and when it is melons we put this melon label right above it this way [indicating]. Then we put a label in every basket of peaches, so that every consumer will know. I believe it is the business of the farmer to apply all legitimate business methods to his business, and if he does not I do not think he has any right to complain that every man's hand is against him and that there is no chance for the farmer.

As to the increase or decrease in transportation rates, there is a general improvement in transportation in the South. The two roads that I have come in contact with most, the Central of Georgia and the Southern, are paying very strict business attention to these new industries, and are more than willing to do anything they can within reason to foster them. I do not pretend to ask favors, because I do not believe in that, but I talk as one business man would with another—a partner—and they do everything in their power and give us excellent service. But when we go North and strike the Pennsylvania, and especially the New York, New Haven and Hartford, we are crowded excessively on the rate. On the car that costs \$265 to bring it the thousand miles from Fort Valley to New York, the New York, New Haven and Hartford puts \$90 on it to take it to Boston over night, and \$70 to take it to Hartford, 110 miles.

Q. You could not afford to send by boat?—A. No; it would take too long; they must go quickly. They give us passenger time, practically; not quite as much as that, but they give us 48 to 50 hours to New York, which is good time and good service, and they very rarely drop down on it.

The question of good roads, which is certainly one of very great importance, has not had very much attention paid to it in Georgia, but it is the poverty of the country. There is certainly great need of good roads there, as they are great civilizers and great aids to the handling of crops.

Q. Does rock abound?—A. No; there is very little rock of any kind in central Georgia, and gravel is not overabundant. It would be very costly making as fine roads as they are making in some sections of the United States.

As to combinations to control prices, there is very little of that, and there is very little opportunity for it in agricultural production; it is almost an impossibility. But there might be, as I have said, in distribution. There is need for it, not so much among the larger growers as among the smaller growers. To get the best service they must be able to load full cars promptly and ship promptly. The small grower is at a disadvantage. Such a combination would bring pressure to bear on the railroads, probably.

Q. (By Representative GARDNER.) Have you such combinations in the South?—A. They have had a combination of growers in the State of Georgia, where it has not accomplished very much. It only takes in a part of the growers. Many of them seem to lack the confidence in it, and it has not been of very great assistance to the growers, except to bring them together and get them acquainted; and whenever men come together it does them some good.

Q. Do you happen to know anything of the fruit growers' associations of New Jersey?—A. Not very intimately. I did know of the one you have at Hammonton at one time. Farmers, for one reason or another, do not seem to trust themselves enough to get together. They have a peach-growers' organization at Deckertown, Sussex County, that has marketed the crop to fairly good advantage. There is a general distrust among farmers of one another. Farming is such a good business that every man can live independently of everybody else on a farm; he becomes so independent that he leans over backwards. If farming were not so good a business they would have to unite and pull together.

Q. As a matter of fact the combinations suggested by you were of great benefit to the growers in that section of the country. They made railroad rates; they made arrangements with commission men; but it has happened in most of the cases that the membership were not satisfied with selling to a better advantage, but also determined to buy to a better advantage, and the associations have therefore been compelled to first go into the fertilizer business, and from that they got into general merchandise; and as associations they make money for the farmers, but as merchants the associations fail.—A. Every time. That has been the history of them the country over. In the first place, they made an attempt to help the farmer in the sale of his products, and made a fair success. They then attempted to buy his supplies, his fertilizers; have gone into the store business, and have been miserable failures everywhere. I do not know of one of these cooperative organizations that is a success anywhere in America.

This question No. 46, "Effect of so-called grain and cotton gambling"—that is too deep a question for me; only I think, in a general way, it is an injury to the producer—the grain and cotton speculations—making fictitious prices and prices on things that are not produced.

On this question of trusts—that is too big for me. I expect you will find it is too big for you before you get through with it. It is a great, big question, with some good sides to it and some bad ones; and how you are going to handle the bad ones without throttling the good ones I do not know.

Q. (By Mr. FARQUHAR.) Something like the parable of the tares and the wheat?—A. Yes. Possibly general publicity of their accounts, of their business, might come somewhere near it; but it must be uniform legislation. You must encourage all the States to have one uniform law. Whether you can do that through Congressional legislation I do not know. This thing of removing the tariff tax from all who become a monopoly might do some good and some harm; while doing some good to one it might do harm to others. I am a believer in American citizenship and individuality to that extent that I do not quite fear these trusts as permanent institutions for injury. When you take the personal element out of business you have taken the life and soul out of a great many organizations; and I would not wonder if these great big machines went to pieces of their own weight. The life of trade is the individual back of a good many small concerns, and you are not going forever to stifle that man. If he is going to be a live, living, working force, he is not going to be satisfied forever to take his dividends out of a trust and lose his identity. Trusts are a hindrance to trade, and I have a kind of notion they will some of them break their own backs. I do not want any stock in any of them; I would rather have it in a good farm, myself and I would rather loan money on a good American farm than on trust certificates.

Q. (By Mr. CLARKE.) You do not believe they can gain any permanent monopoly?—A. No; I do not think so. I somehow have a notion that there is somebody in America smart enough to do business in spite of them. Every remedy that seems good also cuts the other way.

On question 49, pure-food laws, etc., you want either national legislation or uniform State legislation.

On question 50, in relation to preventing the spreading of diseases among domestic animals, etc.—it is a very important question at the present time. The different States have been legislating about the San Jose scale, which the entomologists have got up an unnecessary scare about. It is a dangerous pest, but no more dangerous, to my mind, than some others we have had in the country. The different States have enacted various laws which are a very great hindrance to the trade of the nurseryman and a disadvantage to the small planter generally. There is before Congress now a bill, introduced, I think, by Representative Wadsworth, of New York, which puts that matter entirely in charge of the Secretary of Agriculture, and requires an inspection of all stock coming from foreign countries and the certificate of that Department. It also requires the inspection of all the nurseries in this country and the issuing of a certificate by him which will allow them to go into all the States. There should be a law of that kind. It seems necessary to have some regulation, because I do not think it is possible to compel uniform State legislation, and the present legislation in some of the States is a very serious hamper to agricultural industry. The law now before Congress is generally praised by the more intelligent horticulturists. The entomologists, some of them, would want it more strict, but it is a simple law, and would be quite inexpensive and probably serve the purpose. The main purpose of that is education more than anything else.

Q. About the education of the negro race in the South: it was testified to before us a few days ago by a very intelligent gentleman, who has had great opportunities for studying the subject, that in his opinion one-third of the negroes in the South have deteriorated since the civil war, one-third have remained stationary, and one-third have been improved. In your opinion, is that a correct diagnosis of the existing condition?—A. Well, I have known so much less of the South than probably this man has that I would not be qualified to make the statement. It is only within 20 years that I have known very much of these conditions, and only within 10 years that I have been doing business there and have come closely to understand it. I think around the large cities and towns perhaps the negro has deteriorated; he has come too close in contact with white folks, and if he has learned anything bad he has learned a good deal of it from bad whites. I can see, in 10 years of agricultural work in my section of Georgia, a very marked improvement in the negro—in his intelligence, in his general appearance, and in his efficiency in that section of Georgia—and we are right in the Black Belt, among the plantation darkies. Of course we are close to a little town of 2,500 inhabitants; but I can see a general improvement there. The old-time darky shows more politeness than the younger ones do. The old-time darky is very courteous to everybody; the present-day young darky is a good deal like us white folks.

Q. (By Mr. PHILLIPS.) Is that not partially to be accounted for in that section by the conditions of agricultural work?—A. Possibly so. Of course where there is new life and new ideas they are bound to absorb some of it.

Q. Are there quite a number from the North engaged in your business?—A. Some. The original plantations, however, were developed by native men there, and one of the largest places there is owned and managed by a native man. The majority of the orchards are owned by the natives there. There are a number of Northern people there—quite a number from Ohio—but these are mostly stock companies owned by a large number of people in Ohio, who come down there for a sort of picnic in the winter, and another picnic in the harvest season.

Q. Do you think they are improving in the cotton belt as rapidly as they are where they have diversified interests?—A. The negro is as simple almost as a child in his habits, and under the old plantation conditions he was closely under the care of his master and his family. He took care of them much in a general way as he did his own children, looked after them in their little ways, their sickness; cared for them; now, being turned loose by himself, he probably lacks some of the training, some of the care which was good for him in the old-time days, and, which he is lacking now, and which has helped deteriorate him to some extent.

Q. (By Mr. KENNEDY.) Here is a picture which compels me to ask a question: (Referring to picture described below.) What proportion of your labor is white, and what black?—A. Throughout the whole year, in the tillage of the plantation,

it is black; throughout the 2 or 3 months of harvest season it is two-thirds black and one-third white. That picture which you have of the interior of the packing shed shows 260 white young men and women from the best families of Georgia, South Carolina, and Alabama.

Q. That is native labor?—A. Native white labor; some of them came from the State University; some of them from schools—school-teachers; others from the smaller white schools and colleges of the State; but they are mostly a high class of well-bred Southern people.

Q. I should judge, if one could judge by this picture, that they are a very intelligent class of labor?—A. They are more intelligent laborers than we get at the North to do the same work.

Q. (By Mr. FARQUHAR.) I think you said that 90 per cent of the blacks there were engaged in agriculture?—A. Oh, no; I did not intend to. I thought I said that 90 per cent of the agricultural laborers were black.

Q. Do the white men of the South own small farms and go into agriculture as readily as the black man does?—A. Yes.

Q. More than half are black men?—A. I think about two-thirds.

Q. With one-third white, what are the occupations the remaining two-thirds get a living by?—A. Well, many of them get a living by small farming, but I did not include them as farmers; they are working for themselves. There are many small farmers working for themselves—working daily on their own lands in competition with this cheaper negro labor. Of course there are a great many others in mercantile business, in all professions, and all branches of work.

Q. Considering the cheapness of labor there—and the cheapness of it is the competitive element, of course, against this small farmer—are those whites able to support themselves in decency? Are they out of debt?—A. No, sir; the white man with a very small capital in the South, in agriculture, is seriously at a disadvantage. I have had this question come to me from white men all over the United States, in letters, from the West, about moving South—men who say they can scrape together \$500 or \$1,000, and would like to go down there and do farming—and they ask me what opportunity there is for their working out and earning some money when not engaged in their own work. I tell them that their opportunity is very limited, because they must put themselves in competition with 50 or 60 cent negro labor, which will work 12 or 14 hours a day.

Q. So the outlook really for the Southern white is not as good as it is for the black?—A. For the Southern white, of moderate intelligence and moderate capital, the poor white has not any better chance than the black man that I can see, and perhaps not as good.

Q. In agricultural labor do they work together—the whites and blacks?—A. Yes.

Q. Is there any class prejudice apparent?—A. Very little. Occasionally you will find it, but very little. Of course they do not come in contact very much on the same lines of work, but there is no general objection.

Q. Is it the tendency of the whites to go to the villages and smaller towns more than the black race?—A. No; I do not think any more so, because he can go to the town or village and starve, and he can stay on the farm and live.

Q. In the ordinary mechanical occupations down there—for instance, in the small carpenter work, and everything of that kind, in your smaller towns—does the white predominate?—A. No; I think the negro rather predominates in the small towns in that class of work; in bricklaying, carpentering, and blacksmithing.

Q. Do these blacks acquire any land at all, after they get through with the store liens and crop liens?—A. Yes. They are steadily getting small holdings, and building small houses of their own; but some of them work to save, acquire property, and some of them lose it after they get along a little while; but still there is a general gathering in of homes.

Q. Now, have you ever come in contact with any of these colored people that were educated in Hampton and Tuskegee?—A. Yes; we have had a number.

Q. What was your experience with them?—A. Well, it has been simply that they are satisfactory, and in some instances disappointing; but upon the whole they have been intelligent fellows, and I have had a number, especially from Tuskegee, of very bright young men, and they were there for knowledge. They came as tramp laborers, looking for a job, and we employed them, and in a little while we found them inquiring into this, that, and the other, and asking questions; and we found that they came there to get a practical knowledge of a well-managed fruit farm; they were there for the schooling itself rather than for the wages earned. I think Booker Washington is doing wonderful work in the South.

Q. You think it is worthy of encouragement, do you?—A. I think it is worthy of every encouragement they can have; but I believe Booker Washington is doing far more good than the Hampton school is.

(Testimony closed.)

WASHINGTON, D. C., February 14, 1900.

TESTIMONY OF MR. VICTOR I. SPEAR,*Farmer, Randolph, Vt.*

The commission met at 11 a. m., Vice-Chairman Phillips presiding. Mr. Victor I. Spear, farmer, was introduced as a witness, and, being duly sworn, testified as follows, the topical plan of inquiry on agriculture being followed:

Q. (By Mr. PHILLIPS.) What is your name, and where is your residence?—A. Victor I. Spear, Randolph, Vt.

Q. What is your occupation?—A. Farmer.

Q. Have you occupied any official position in regard to the agricultural industry, and if so, what?—A. During 8 years I have been a member of the board of agriculture, and 6 years was secretary and statistical secretary of the board.

Q. What is your position now?—A. No official position at the present time.

Q. We would be pleased to have you state any information you have in your own way.—A. There has been a gradual falling off in the number of persons employed on farms in Vermont during the past 50 years. The conditions of those now so employed are very much improved over former conditions; the day's labor buys more of the necessities of life than in former years. The effect of the introduction of machinery has been to require less men. It is not certain whether it has had any marked effect on the quality of this help. In the matter of quality, I mean intelligence and capability of the men employed. I do not think that average farm help to-day is more intelligent and more capable than they were in former years.

Q. (By Mr. CLARKE.) Do the sons of farmers hire out to their neighbors to the same extent that they did 40 or 50 years ago?—A. I am inclined to think not.

Q. But they do it considerably now, I suppose?—A. Considerably, a good deal now; but as far back as I can recall, I would say there is less of that class of labor than there was 30 or 35 years ago.

Q. Is there any more employment of Canadian French, who come in for the haying and harvesting season, than there was 35 or 40 years ago?—A. I do not think there is. The help that has come in for special seasons of late years has been more Norwegian help and Polanders, and that class, than Canadians.

Q. They come to reside, do they not, as a general thing?—A. Generally. They stay through the year, and in quite a good many cases they become landholders and make permanent homes.

The employment of labor on Vermont farms is quite constant. There is but little transient labor employed. The hours of labor on the farm average about 10; on dairy farms, where there are many chores to do, it would probably average 12 hours. Farm labor averages about 10 months employment per year; that is, a portion of it will be employed through the year, and the balance for 7 or 8 months, making, in my estimate, an average of about 10 months.

There is no marked tendency at the present time to seek employment in vocations other than agriculture. I mean by that that the great drift of people from the State and from the farm that has characterized the Eastern States, and Vermont with them, in the past, has largely passed away. I think the reason for that is that the opportunities in other lines of industry are not as great as they were 30 or 40 years ago, and that the condition of things is quite well established in Vermont at the present time.

Q. There is more tendency then for the young men who are reared on farms to follow farming as an occupation?—A. Yes.

Q. And to stay on the home farm or in the neighborhood than to go West?—A. I think there is a very decided improvement or change in that direction in the past 10 years.

Q. Do you not think that has been helped also by the very general introduction of agricultural machinery?—A. Yes; farming has become less drudgery and more of a business in consequence of improved machinery and improved methods, and there is a better understanding of what is necessary.

Q. Do you not think it will be further encouraged by the building of better roads, so as to make social opportunities on farms and also the business opportunities better than they are now?—A. Without any doubt, and I expect the building of our country roads and of electric roads through Vermont is going to be an important consideration in the next 20 years. That does away with much of the isolation of farm life.

In the matter of wages, there is no pay day agreed upon or practiced with farm help. Those employed usually contract for a specific time. They are paid money as it is needed, and the final settlement is made at the expiration of the contract.

The maximum price paid is about \$375 per year, with board and washing and room, and their living really. From this amount it falls to a very small sum, according to the ability of the laborer, some not being able to earn much besides their board and care, but I should say for fairly competent labor that \$150 would be a minimum price.

Q. Is this compensation almost always made in money?—A. Yes.

Q. There is no store-order system or anything of that kind prevalent on Vermont farms, is there?—A. Not to any extent. Labor is usually paid for in cash. Considerable work is exchanged by farmers during the busy season, during the season of corn harvesting. The filling of silos is usually done by exchange of help very largely through a neighborhood. Except at these times the matter of exchange of work is not very important.

There are but few farmers that provide tenant houses. On such as are supplied the rent is usually reckoned cash rent of \$2 to \$4 a month.

There is considerable renting of farms on shares, but the practice of renting for the fixed rental is on the increase. There is no regulation in regard to loans to tenants. Usually the tenant and the landlord are quite independent of each other.

Q. When farms are rented on shares about what are the usual terms?—A. The usual requirement in share renting is for the tenant to supply the labor necessary to conduct the business. The farmer supplies the farm and stock, and the tools and machinery; and outside expenses, like grain bills and necessary repairs, are shared equally between the tenant and the landlord; and then the income from the farm is divided equally.

Q. How about fertilizers and seeds?—A. Those are shared equally between the tenant and landlord.

The immigrants coming to Vermont as farm laborers are principally Canadians and Norwegians.

Q. (By Representative OTJEN.) Where do these Norwegians come from? Are they from abroad or some locality in this country?—A. They usually come from Sweden and Norway direct. They are secured through the immigration bureau at Boston or New York, or some port where they have their agents. A farmer sends there and orders his help, and they are shipped to him.

Q. Are any of them locating there permanently?—A. Yes. It is not uncommon for these men to work several years for a farmer, commencing at a low price, as they are strange to our language, to our customs, and are not very valuable the first year, and continuing in this service until they command better wages, and then, by becoming land owners, they settle there as permanent residents.

Q. They make good help, do they?—A. Very good help.

Q. (By Mr. CLARKE.) Good citizens?—A. Good citizens.

Q. (By Mr. FARQUHAR.) How long is it since the Norwegian immigrants came into Vermont?—A. Well, I should say about 10 years since they commenced to come that way. There has been more of it in the past 4 or 5 years.

Q. Do they come in sufficient numbers to colonize, in a measure, or are they isolated?—A. They are isolated. They come there now altogether through the application of farmers to these agencies for farm help in the spring time, and they will come several in a town, usually. Farmers will get together, perhaps a half dozen neighbors, or three or four, and correspond with the agency and get these men sent to them; but there is no colonization, no disposition among these men to colonize, so far as I have noticed.

Q. What proportion of those immigrants have families?—A. Not very many. They are mostly young men when they come here, and some of them have families that follow later.

Q. How are they divided as to sex?—A. Well, in Vermont, more men than women come.

Q. But there are quite a number of domestics in the Scandinavians?—A. Yes. They are getting Scandinavian help in the house more than formerly. They are pretty well liked as help.

Q. Do they show any desire to migrate farther West where Norwegian and Scandinavian colonies are, or are they satisfied with the conditions where they are?—A. Usually they have been pretty well satisfied with the conditions as they found them. Occasionally they will move off, but they have been pretty steady help, so far as I have noticed.

Q. What advantages are held out to these people to acquire land; that is, the prices of land, or rentals?—A. The price of farm lands in Vermont in many localities is very low, and these people are not particular about their social advantages and the other considerations that would influence the Vermonter—the American—and they sacrifice those and take some of the remote farms that

are several miles, perhaps, from school or post-office or railroad, and those farms are obtained for a very small price.

Q. Have you any means of knowing whether the conditions and advantages in Vermont are about equal to those in the West, say in Minnesota, the Dakotas, and elsewhere?—A. I am inclined to think that they are better.

Q. In the Eastern States?—A. Yes.

Q. (By Mr. CLARKE.) Particularly in Vermont, which is more fertile than some other States?—A. This does not, perhaps, apply to Vermont particularly, but I would say that from a recent trip through the West, with an eye open to this condition of things and the prices of land in that section, I am fully satisfied that there is no farm land as productive and cheap as the lands that can be bought in the East, and particularly in Vermont.

Q. (By Mr. PHILLIPS.) You speak of young men coming chiefly as farm help. Now, do these young men marry American girls, or those of their own nationality, as a rule?—A. I do not know as I could give the rule. I have seen it both ways, and for the State I should not know where to put it. I am inclined to think that more of them marry their own nationality.

Q. Then you have spoken of the Poles. Now, would you care to make a comparison between the nationalities as to efficiency in the help on the farm?—A. My judgment is that the Swedes and Norwegians, as a class, are the best help that we have to-day. Poles have been very satisfactory, too; and in the past 3 or 4 years they have been on the increase, but they are not quite as desirable a class of people as the Norwegians and Swedes.

Q. (By Mr. CLARKE.) Do you know about the relative proportions of the foreign element and the native element in Vermont at the present time, in farm districts?—A. I think the native help is several times more than foreign help. I should not know just where to place the proportion.

In regard to illiteracy of these immigrants: Quite a good many of them are unable to read and write; a good many more than there would be of our native people.

Q. (By Mr. PHILLIPS.) That is, to read and write their own language?—A. Yes.

Q. (By Mr. FARQUHAR.) How many Poles do you have there in your section as farmers, or on farm lands?—A. Well, I can not tell for the State how many there are, but I know they bring in quite a good many invoices of them every spring. I find them scattered around.

Q. Are they usually of the farm laboring class of Europe, those Poles, or just simply laborers that adopt farming?—A. I have an idea they are from the farms in their own country.

There is no marked tendency to colonize, to preserve foreign customs, with our farm laborers, and I am unable to note any marked influence on our agriculture by reason of this immigration.

There is no colored labor of any importance.

The school age of children is from 5 to 18 years.

The present system of education provides for the education of all children, and it is fairly sufficient for the people. They ought to have it a good deal better, and hope it will be, but every pupil in the State is provided for at public expense if they can reach our schools.

The curriculum of our public schools is not arranged with any particular reference to agriculture, or to any other branch of business. Our technical agricultural education is supplied at our agricultural college and experiment station. That is all of the agricultural education that we have provided for.

Q. How thorough is that education at your agricultural college and experiment station?—A. Well, it is a very thorough course, and they have a special course that has been in operation for the last 4 or 5 years, known as a dairy school, that runs 1 month or 6 weeks each winter, and gives special instruction in the matter of dairy work, handling of milk, making butter, and testing of milk. It has been technical education in the line of dairying. Their agricultural college proper is slowly gaining in students and in effectiveness, and, I think, in popular favor, and is regarded with good favor, I think, by the people of the State as a rule to-day.

Q. Have you any farmers' institutes in Vermont?—A. Yes; we have a good system of farmers' institutes, covering 3 months of each winter. From 30 to 40 farmers' meetings are held in different localities and special instruction is given in various lines.

Q. Has your State board of agriculture any official contract with these farmers' institutes, or with the agricultural college?—A. No contract with the agricultural college, but the board of agriculture has full control of the institute work. It is all managed under their direction.

Q. (By Mr. CLARKE.) Is there a State grange in Vermont, or local granges?—
A. Yes.

Q. Do they discuss agricultural topics, practical agriculture, considerably?—A. Well, to some extent. The grange, so far as I know it, and I am a member of the order, is more of a social business organization than it is strictly educational. The farmers' institutes are held very largely under the auspices of the grange. They help to get out items of interest to the farmers.

Q. Is there a Vermont Dairymen's Association?—A. Yes.

Q. And that holds meetings?—A. Once a year it has an annual meeting, about a 10 days' session. It has a very large exhibit of dairy products, and has as good talent as can be secured anywhere for instruction in dairy matters.

Q. Is there a Vermont Merino Sheep Breeders' Association?—A. There is.

Q. And they give special attention to all points of interest and instruction concerning that industry?—A. Yes; nearly every branch of industry has its organization in Vermont.

Q. Is there a Horse Breeders' Association?—A. There is—Bee Keepers' Association; Poultrymen's Association; Maple Sugar Association.

Q. Members of those associations usually study the subjects profoundly, do they not, and expound their views at their meetings?—A. Yes; and they ordinarily bring together findings of the particular class of work that they are engaged in and get the best talent that is to be secured for instruction; and we have, in addition to that, in agricultural lines, a system of State fairs that covers the State—probably 15 or 20, I do not remember the exact number—and a State fair; and most of the counties and localities have their fairs.

Q. Is scientific agriculture studied in these associations a good deal—the matter of the particular selection of breeds and of food crops, forage crops, and fertilizers, chemical analyses, and all that?—A. Perhaps it would not cover all of that. Each association studies with great care the questions that concern their particular line of business. The horse breeders, for example, would make a very thorough investigation and study of the matter of breeding horses and their care. The same would apply to the dairymen, and they would not only take the dairy but would take the product of the dairy; and these organizations may all be considered as lines of specialty in the work that they have taken up.

Q. Are you at present manager of the Vermont Maple Sugar Association?—A. I am.

Q. Give us a little description of that industry, the extent of it, and the season of it, and markets for the products.—A. The maple-sugar industry of Vermont is of considerable proportions. Out of 50,000,000 pounds that is produced in the United States, our census reports 15,000,000 to Vermont. It is an industry that means an income to the Vermont farmers of from \$1,000,000 to \$1,500,000 a year, according to the year.

Maple sugar is produced, as I suppose all here know, from the sap of the maple tree, and in the months of March and April the peculiar conditions of the Vermont climate make it possible to get a very fine product of maple sugar through the time of making it. The nights are cold and days are crisp, and this peculiar weather is a necessity to fine goods. The maple-sugar industry has undergone great changes in the past 40 or 50 years, and to-day it is made with as much exactness and with as much skill as is employed in the production of any article of commerce that I can call to mind. It used to be boiled out of doors, in the woods, in a caldron kettle, where everything could get mixed with the sap—the charcoal and leaves of the forest—and make a dark, rather strong preparation, that we would hardly recognize as maple sugar to-day. With our best operators the maple sugar is handled with as much care as the milk from a dairy cow from the time that it is drawn until it is put on the market as butter. Maple sap is almost as susceptible to contamination as milk is, and the finest goods can not be made without great care. From this I mean that this sap must be gathered immediately after it has come from the trees and must be evaporated immediately, and put into condition for market. If any length of time is allowed, if it is exposed to the air, it loses its delicate fine flavor and loses its light, bright color.

Q. Of what materials are buckets and evaporators composed?—A. The buckets are metal, usually, to-day.

Q. That is, tin plate?—A. Tin. A great many use wooden buckets. They are equally good if they are well painted. The evaporators used are made of tin, and our gathering tanks are made of galvanized iron very largely, and the sap is strained every time that it is touched, from the time it is taken from the buckets until it is put up in cans for market, excluding every outside influence.

Q. Is the evaporating done in sugarhouses or out of doors?—A. It is done in sugarhouses, protected from any bad conditions of the weather or storms.

Q. Are the evaporators arranged with compartments, so that the sap enters at one end and comes out sirup at the other end?—A. Yes. The time that sap should be in the evaporator from the time it enters until it comes out in sirup is about 10 to 15 minutes; it takes about that time for the sap to flow from one end of the evaporator to the other; and it should be boiled rapidly enough so by the time it reaches the back side of the evaporator it should be drawn as sirup.

Q. Then what is done with the sirup?—A. The sirup is put into cans, sealed tightly to exclude the air, and put upon the market in that condition.

Q. Is all of it treated that way?—A. A great deal of it is cooked into sugar. The sugar is put up in cakes or in wooden or tin pails, and the sugar that has not been sent to special customers has largely gone to the big sirup houses of the West and East, to be mixed with glucose and cane sugar for the use of the general public.

Q. (By Mr. PHILLIPS.) And sold as— A. (Interrupting.) Vermont maple sirup.

Q. Now, is there much of that done in Vermont? Is there much mixing and adulteration?—A. I do not know of any mixing in Vermont. We have a very strict law against doing it, and if a person was suspected of it or known to do it he would be prosecuted in 15 minutes.

Q. Well, in quantity, is there more sold as sirup or as sugar?—A. About 9 pounds is sold as sugar to 1 sold as sirup.

Q. Now, the census report of which you speak, showing the production to be so many pounds. Did that include sirup and sugar both?—A. Yes; reduced to pounds as sugar.

Q. (By Mr. FARQUHAR.) What is the extent of the sugar maple in the State of Vermont?—A. It covers the entire State, practically.

Q. Is your sugar making all over the State of Vermont?—A. Yes.

Q. Does it extend to any other State near by you?—A. Yes. New York produces the second largest amount of maple sugar. Ohio produces about 6,000,000 pounds. New Hampshire produces some. In fact, I think some 22 or 25 States produce more or less maple sugar.

Q. Do you plant sugar groves for the purpose of producing sap from the trees, or are they natives?—A. They are natives.

Q. You have not yet got to planting new orchards?—A. Not to any extent. It has been done in a few sections, and ought to be done more. A great many have been planted by the roadside. Those serve a double purpose—for shade and for sugar purposes.

Q. (By Mr. PHILLIPS.) In the planting of sugar orchards how long is it before they mature sufficiently to be utilized?—A. Well, 35 to 40 years. They would not be large trees then, but they could be used to some extent.

Q. (By Mr. FARQUHAR.) How much revenue could be brought from an acre of sugar maple, or have you any figures in respect to the product that would give a relative idea of the difference between the profitableness of sugar maple and any other crops?—A. The average product of a maple tree in sugar is about 3 pounds a year, varying from 1 pound to 5 or 6; 3 is a fair average. And on an acre it would not be advisable to have more than 30 or 40 trees. Thirty trees would be plenty. When they get to be 50 years old you could figure that an acre of land that is well devoted to sugar maples should produce in the vicinity of 100 pounds of sugar a year.

Q. (By Mr. PHILLIPS.) And about what is the average price of that?—A. That is a hard matter to determine. It varies from 5 cents a pound to 15, according to the skill with which it is made and the skill in marketing. Maple sugar is quite varied in its character and its appearance. I have spoken of the better methods of making. We still have a large amount of sugar that is made carelessly. It is exposed to bad atmospheric conditions; it is made with poor utensils, and it produces a black and rather an unsightly product for market. We have from that up through to our fine product, which we are very proud of. These coarse goods—the dark, unmarketable goods—are the ones that are sold at 5 or 6 cents a pound in ordinary years, and go to the sirup houses. Too large a proportion of the sugar made to-day is of that quality.

Q. Are there many farms given up solely to the product of sugar?—A. Not any; it is a side issue. The sugar season only lasts about 3 to 6 weeks, and it is really to Vermont farmers as important as any line of industry that they are engaged in, with the exception of dairying. The income of the Vermont farmer from the sugar works is practically so much added revenue. He does not have to pay out \$ a dollar for materials to operate with; his wood is on his farm, and it comes at a season when there is not very much else he can do that will bring a cash return; so, for that reason, it becomes very important and more of an object to the Vermont farmer than the amount of revenue received would indicate at first.

In the production of our butter we pay out so much money for Western grain that sometimes we do not know whether the mill or the commission house returns are the largest.

Q. (By Mr. CLARKE.) Sugar making is usually regarded as a very pleasant occupation for the season that it lasts, is it not, and much enjoyed socially by the people?—A. Yes; it is a season of considerable social interest. Every sugar camp, nearly, has its sugar parties. Young people and old meet there for a little visiting, eating new sugar. There is a little interest in it.

Q. (By Representative LORIMER.) Are the maple groves used for pasturage?—A. To quite an extent. A great many are in the pasture; some are in the forests. The growth of maple trees on land does not prevent the production of considerable feed for stock.

The matter of taxation of agricultural property—I will simply say that all the property of the agriculturist is taxed where they can find it. There is no particular suggestion I have to make in this connection.

Q. (By Mr. FARQUHAR.) Is there any complaint among the farmers of Vermont that they are taxed more than other classes?—A. Oh, yes; it would be unnatural if every class did not complain on taxation.

Q. Are these things discussed at your institute or your meetings of farmers?—A. They are. There has been a great deal of discussion for the past 10 years in Vermont; a great deal of dissatisfaction—nobody has solved the question for them, the Vermont farmers especially—over the taxation of the mortgage and the real estate both. They call it up there a system of double taxation, and they are trying to find out a way to avoid it; but we have not got out of it yet. That method of taxation brings a very great burden upon the farmers, and especially the farmers that are in debt for their holdings.

The prices of agricultural products: This is mainly due to the development of the Western country and the largely increased and cheapened production. The decline in the value of farm lands has followed as a natural result of the cause above stated. The productions of the farms have become so cheap that in some cases it has not been profitable to operate them.

Q. (By Mr. CLARKE.) What are the nearest large markets for Vermont farm products?—A. The main market for Vermont farm products is Boston.

Q. Do you know how railroad rates compare between Vermont and Boston and Iowa and Boston?—A. I can not tell you definitely. I think they are somewhat less, but not very much.

The decline of value of farm lands has followed as a result of this development of the West, and I am of the opinion that the value has gone so low at the present time that the cheapest lands in the country are here in the East, have gotten below their normal value as compared with these Western lands.

Q. About what is the average per acre of Vermont farm lands at the present time?—A. That would be a very hard question to answer, because the value varies so much. The value of our farm lands would range from \$5 an acre up to \$50. Fifty dollars would be about the limit for our best farms.

Q. What would be the price of good meadow farms near some of the large towns, say in the Otter Creek Valley, Lake Champlain Valley, and Winoski Valley, in the neighborhood of Richmond?—A. Probably \$30 or \$40 an acre.

Q. Can you buy some of those farms for \$200 an acre?—A. I have a farm for sale, 3 or 4 miles from St. Albans, formerly owned by J. A. Bedard. That was put in my hands a short time ago to sell at \$30 an acre.

Mr. CLARKE. I personally know of farms near Richmond which probably can not be bought for \$200 an acre.

The WITNESS. Undoubtedly there are such farms, but it might be a question if a man could get \$200 an acre if he wanted to sell it.

Q. (By Mr. PHILLIPS.) Will you state about what farms were usually worth 30 or 40 years ago?—A. I can not state that.

Q. Would you suppose there has been a decline of a third or one-half in Vermont, on the average, in the last 25 years, in farm land?—A. Yes; one-half.

Q. A decline of about one-half?—A. I think so.

Q. (By Mr. FARQUHAR.) What is the character of your \$5 farms?—A. Those are usually some distance from town and from school, and have social disadvantages. Some of them are rather rough and not very well adapted to the use of farm machinery, and a great many of them are quite fertile and productive farms. In fact, I know of farms that can be bought for \$5 an acre which, from the simple matter of production, would rate very high; but it is their situation and the fact that they have not been smoothed up and adapted to the use of farm machinery which has come into use in the last 20 years.

Q. (By Mr. PHILLIPS.) Somewhat away from railroads and markets, I suppose?—A. Yes; that has had a great influence.

As to increase in acreage, I would say that the acreage in Vermont has been on the decrease. There are not as many acres tilled to-day as there were 40 years ago. A great many of those farms that were located some distance from town and school are used to-day as pastures; they are used in connection with the farm where the home was more favorably located. Some of them are being devoted principally to the growth of timber, but the acres tilled have declined to quite an extent. There is no bonanza farming in Vermont properly so-called. We have quite a good many stock farms, wealthy men that have come there for the purpose of developing some line of farm animals; but the bonanza farm as it is known in the West does not exist in Vermont.

The matter of production: Vermont produces a surplus of nearly all agricultural products except grain. The low cost of grains in the Western States has led to buying instead of raising wheat, corn, and oats.

Q. (By Mr. FARQUHAR.) Do you find it cheaper to buy the Western corn than to raise it? Does it come to that analysis at last.—A. There is a difference of opinion among us. I think it is cheaper to raise it. It depends a good deal on a man's situation. The same rule will not hold for every farmer and under all conditions; but I am inclined to think that our farmers are coming to the belief that it is better to till more and to raise more themselves and buy a little less. There is no State, as I contend and believe, that can produce corn any more cheaply than Vermont can in our best localities to-day. I believe the cheap lands that we have there and the present methods of cultivation and tillage make the cost of a bushel of corn but little more in Vermont than it is in Iowa, and we can not afford to freight it from Iowa and pay for it besides.

Q. (By Mr. CLARKE.) Do you think that is equally true of oats and barley?—A. No; it would be about true of barley. The raising of oats—there have been peculiar conditions in the past 10 years attending that crop that have made it very unsatisfactory. I do not know but some element of the soil has been removed that is necessary in perfecting the oat crop; the oat crop has not been very profitable as a rule.

Q. Is Vermont a good potato State?—A. Very good potato State. We do not go into the commercial potatoes to a very great extent. We have had so many difficulties—rust, potato bugs, and one difficulty and another—that farmers have largely cultivated what they have needed for their own use, though in the western portion of the State there is quite a territory that sends potatoes to the market.

Q. (By Mr. FARQUHAR.) Are you planting the same class of potatoes, same varieties of potatoes, that you planted 20 years ago?—A. No; they change.

Q. How much variety do you make in the usual table potatoes?—A. Well, I saw at one of our fairs a year or two ago 170 kinds that one man was producing. We have every kind of potato that is produced on the market in different sections.

The matter of transportation cost has been reduced in the past 40 years over the railroads. The cost of transportation from the farm to the market has been reduced largely by improving the highways—capable of very much more being done in that direction.

There is no effort in Vermont to control prices by means of combinations, and we have no futures that are selling there.

As to the Federal pure-food law. In Vermont, among all the farmers and producers, there is no matter of legislation that we regard with as much solicitude and interest as we do the matter of Congress passing some measure that shall be effective for giving a pure food to the people of this country. We consider that it is just as much a counterfeit to put a label of Vermont butter or Vermont maple sugar upon a combination of glucose and sugar or lard and something else as it is to stamp a piece of paper with the die of the Treasury and call it money. It is a counterfeit, it is an imposition, and legitimate industry has to pay all the bills. The consumer does not get very much benefit from it. He pays pretty nearly the price of pure goods. The man that puts up these substitutes is the one that gets the benefit, and the producer of honest goods—the original producer—is the man that has to suffer the consequences. We see this very plainly in our product of maple sugar. The maple sirup that is found in all the markets of this country is a combination of about 20 per cent of our poorest grade of maple sugar with glucose and some of the better grades of cane sugar. Now, every gallon of that stuff that comes onto the market is in competition with the maker of maple sugar that is putting up an honest product and something that is a luxury to anyone that uses it. It not only lowers the price of these goods, but it

discredits the product with the consumer. The consumer who has used this glucose and small per cent of maple sugar for flavoring becomes dissatisfied with it and ceases to be a customer for maple sugar, because, he says, he has used Vermont maple sugar and he does not like it. We do not know just how this thing is going to be done, but it does seem to us that it is not unreasonable and it is not beyond the possibilities and the reasonable requirements of legislation to ask the sugar manufacturers to put upon every package that they send out of goods that is going into consumption as human food a statement as to its purity or to its being adulterated. There is no reason that I know of why a person should not be able to buy a mixture of maple sugar and glucose and use it on his table, but the objection is in the man selling it to him for a pure article at a low price and injuring industry and disgusting the consumer.

Q. (By Mr. PHILLIPS.) Is not the flavoring sometimes done chemically and perhaps with chemical preparations that may be injurious to health?—A. I do not know to what extent there is any danger to the public health in that matter. I do know that every villainous compound, pretty nearly, that could be imagined goes onto the market. The distillation of corncobs is used to quite an extent; hickory bark, and all these things they put into the mixture to give a little bit of a tang to it, that they tell people is maple. Now, I hope your commission, in the prosecution of this matter, will make some recommendations in the matter of securing a pure-food law that shall be a protection to producers and consumers if you do not think it is unreasonable; and we believe there is nothing that will do more for legitimate industry than this will do.

There is one other topic here that I will just touch upon—the law for the prevention of the spread of contagious diseases. In my official relations with the board of agriculture I had charge of the cattle commission during 4 years. Vermont has a very effective law in the matter of controlling the spread of contagious diseases among its cattle. I am inclined to think that Vermont has taken an advanced ground in that matter over any of our States. We have dealt quite extensively with the matter of tuberculosis during the past 4 or 5 years, and we feel as though we had that matter to-day under pretty good control. No animals for breeding purposes, or to be kept on our farms, are allowed to come into the State without having passed the test with the use of tuberculin, that finds them to be free from tuberculosis. We thoroughly believe that this is one of the most insidious contagious diseases, one of the most dangerous to the dairy industry, of any we have had to meet; more dangerous than some others, because it goes along for a good while before we discover what it is doing.

Q. Are there many authenticated cases where human beings have caught tuberculosis from the use of milk?—A. There have been several cases that have come up in our work, where the evidence was very convincing to me, and I think would be about sufficient to condemn a man to be hung, but I do not know whether it would be sufficient to condemn the cow or not. There have been several cases where we have found very bad herds, and we have found some member in the family that was suffering with tuberculosis, without any taint from any other source that could be discovered, where they had been large users of milk. I consider that it is possible to communicate it from the animal to the human. I do not think it is very common.

Q. Sometimes, even in the case of children, has it not been discovered, or have you any such cases?—A. We find them in that way. I could not say to you that I know that they come from that source; but we find them closely associated.

Q. (By Mr. FARQUHAR.) Probably they are simply coincident. You have no medical authority to show that the contagious disease was brought or contracted to that family?—A. We have a great many medical men that have cases the same as we have, where they traced so close that they can not account for it in any other way. But men are not disposed to be experimented on, to have the germs injected into them for the purpose of finding out whether it kills them or not. We have not any of that class of experiments; but we have a good many cases where the disease in the herd and family have come along so closely together that they seemed to be due to cause and effect.

Q. In the case of a herd being attacked with tuberculosis, what authority have you in Vermont for the destruction of the herd?—A. Whenever a farmer applies to the commission for a test of his herd the commission makes the test and they destroy all animals that are found to be tuberculous and pay the owner one-half the price or a fair valuation for the animals that they destroy.

Q. Does this come from the State treasury—this amount that is paid to the farmer?—A. Yes.

Q. (By Mr. CLARKE.) Do many farmers apply to have their herds tested?—A. Yes; over 80 per cent of the cattle of Vermont have been tested.

Q. If the farmer knew that his herd was infected with tuberculosis so that he would have to sustain a loss of one-half in value, would he be likely to apply?—A. Yes; those are the very men that do apply. If he does not apply he is liable to have the whole loss to bear.

Q. Would he not send them to some other State, perhaps, and sell them for nearly their full value?—A. Well, possibly, but other States are not looking for peril. They have their bars up. There is no place, only New York, that you can send them to.

Q. (By Mr. PHILLIPS.) He would be more likely to sell them within his own State if he were disposed to sell them, would he not?—A. Well, I am glad to say to the credit of the Vermont farmers that we have not seen much of that disposition. They regret, of course, to lose that part of their herd, but they recognize that it is a liberal proposition on the part of the State, and it is designed to help them out of a difficulty that perhaps they are not to blame for being in, and they have accepted it usually in that spirit.

Q. (By Mr. CLARKE.) What is the condition of the sheep industry in Vermont at the present time compared with what it was 30 or 40 years ago?—A. It is probably not over one-fourth as much at the present time as 40 years ago.

Q. Was there a large slaughter of sheep in Vermont during the free-wool tariff period?—A. There was. The flocks were very largely sacrificed during that period.

Q. Since the duty has been restored upon wool, has there been an increase in the flocks?—A. Something of an increase. The prices of wool for the past 2 years have been such as to encourage sheep growing to quite a considerable extent.

Q. Are not nearly all the farms in the State adapted to sheep industry?—A. They are, and better than to any other industry that has ever been practiced by our farmers.

Q. Would they not be greatly improved by the pasturage of large flocks?—A. Sheep, as a rule, are preservers of pastures, and if our sheep industry had remained to us we would not have the \$5-an-acre farms that I have mentioned to such an extent as we have to-day. Many of these farms that were well adapted to sheep husbandry were not adapted to dairying; the pastures were too remote, and, as a consequence of leaving the sheep industry, there was no good use to put these farms to.

Q. Has the breeding of Merinos in Vermont been a considerable industry; breeding, I mean, for markets outside of the State?—A. It has been a great industry in the past and it is of some importance to-day.

Q. Where are these sheep marketed at the present time?—A. Most of them are marketed to-day in Australia and southern Africa; that is, before the Boers got dangerous down there they used to be.

Q. Do buyers from these countries come to Vermont and select their sheep?—A. I would add that the markets at the present time of South America are quite good in the Argentine Republic. Yes; buyers have come from these countries to a certain extent, but more of the stock has gone out in charge of Vermonters, who have explored with their stock and looked up their customers.

Q. From about what period does this Merino industry in Vermont date?—A. When was it first undertaken?

Q. Yes.—A. About 75 years ago.

Q. Say about 1810?—A. Yes, perhaps it is as far back as that.

Q. Consul William Jarvis, of Weathersfield, Vt., who was United States consul to Portugal or Spain, was the first, was he not, to introduce Merino sheep into Vermont?—A. I do not know; but Mr. Atwood took them to Connecticut earlier.

Q. Has there been a very great improvement in the Merino sheep, by the culture that has been practiced in Vermont?—A. Very great, indeed.

Q. Do you know whether the sheep imported by Mr. Jarvis had wool growing all over the body or not?—A. It had not. The legs were comparatively bare, and the head was comparatively bare. There were but very few wrinkles. The wool was not very heavy, but was all of nice quality and fine. The farmer from that time developed the American Merino of to-day.

Q. How many pounds of unwashed wool does a Merino ram, of Vermont, to-day shear?—A. Well, that varies. We have had records up to 40 pounds, but the Merino ram that shears 20 to 25 pounds is considered a good ram.

Q. What was the maximum of those imported by Consul Jarvis?—A. I think about 10 or 12 pounds.

Q. Do you know the number of fibers per square inch on the sheep that he imported and on the sheep of to-day?—A. I haven't it in my mind at this minute.

Q. Was it, say, about 42,000 fibers to the square inch in 1812 and about 248,000 fibers now?—A. I presume in about that proportion.

Q. Do you think of any legislation, either national or State, that would help any one of the industries in Vermont?—A. We feel as though a Federal pure-food law would be of great interest and of great benefit to the agriculture of Vermont, more so than any other matter that comes to mind. The present condition of the tariff legislation is pretty fairly satisfactory, as far as I know. I think under it Vermont can get back, in a degree, to its former position as a sheep-growing State. (Testimony closed.)

WASHINGTON, D. C., February 14, 1900.

TESTIMONY OF MR. HOMER W. VAIL,

Farmer, North Pomfret, Vt.

The commission met at 11 a. m., Vice-Chairman Phillips presiding. At 12.27 Mr. Phillips introduced the witness, Mr. Homer W. Vail, who, being duly sworn, testified as follows, the topical plan of inquiry on agriculture being followed:

Q. (By Mr. CLARKE.) Please give the commission your name, residence, and occupation.—A. Homer W. Vail, North Pomfret, Vt.; my occupation, a farmer.

Q. Have you given particular attention to the subject of dairying?—A. I have been compelled to do that, somewhat; I am a dairyman myself.

Q. Are you president of the Vermont Dairymen's Association?—A. I am not. I am not an officer at all now of that institution. I have been an officer. I have been the treasurer of the Vermont Dairymen's Association for something like 16 years.

Q. And have attended most of its meetings?—A. I think I have attended all the meetings, with one exception, when I was West at the time.

Q. I would like to have you give the commission, in your own way, or in any order that you prefer, a general knowledge of the subject of dairying in Vermont, its progress and development, the introduction of high-blooded cattle, and the improved methods in the production of dairy goods?—A. I would say to the commission that I might have placed this in a systematic way if I had had a little bit of preparation. The dairy industry of Vermont has increased very rapidly for a number of years—I might put it 20 or 30 years—and to-day all of the improved utensils and methods of dairying are adopted by the dairymen of Vermont.

Q. What are these improvements, in brief?—A. The dairy districts of Vermont have very largely adopted butter as the leading product, and have very largely adopted the Jersey cow. There are a good many herds of the thoroughbred in the State.

Q. What about the methods of setting milk, churning, and separating milk, churning cream, etc.?—A. The method of setting milk has been quite largely abandoned for the more modern and better method of the separator.

Q. Is this separation made on the farms generally, or in butter factories?—A. We have the creamery, as we call it. The butter factory is distributed very largely over the State covering the dairy section, and the bulk of the butter of the State is made in these creameries. The system first adopted was the gathering of the whole milk and returning it. That is apparently giving place now to a more economical new one, of separating the milk on the farm and carrying the cream only; but there is a great deal of private dairying done yet.

Q. (By Mr. FARQUHAR.) What do you do with your skimmed milk?—A. The skimmed milk is fed to swine and young calves.

Q. (By Mr. CLARKE.) What was the method employed by Vermont dairy farmers?—A. The old method was usually a shallow setting in small pans, and from that we had what was called the large pan setting, in which were pans as wide, nearly, as this table—3 feet wide and 10 or 12 feet long, according to the herd; and there was some system of cooling that was used in connection with that by the use of cold water. Then the next development was the deep setting in cans, and it was found that by suddenly cooling the milk the cream was forced to the top. Each of these was an advance upon the other method. This cooling process by the deep cans was an economy in space and gave more complete separation to the butter globules from the milk. The next stage was the separator, which has been in general use something like 6 or 8 years, actually working, and there have been little or no improvements over that.

Q. What are these separators?—A. These separators force the cream out by centrifugal motion. It is on the principle that in revolving the milk in a small space it is compressed and the heaviest portion of the milk will come to the outside and the lighter will go upon the inside.

Q. And the cream runs out of one tube— A. (Interrupting.) And the milk out of another. It is revolved very rapidly, something like 7,000 revolutions a minute, spinning like a top, so that it makes a noise.

Q. Are those used on farms as well as in the creameries?—A. They are used very largely upon the farms where any number of cows are kept.

Q. That is comparatively a recent practice, is it not?—A. That is comparatively recent; that is the latest thing.

Q. (By Mr. PHILLIPS.) What power do they use on the farms?—A. For these separations they have on the small farms hand power. For a small number of cows there is a very cheap animal power, in which a sheep or a large dog may be used, that will separate for quite sizeable dairies—separate from 800 to 500 pounds of milk in an hour's time. This leaves the milker an opportunity to go on with his milking while this separation is going on in a little room adjacent to the stable. For larger dairies they have larger animal powers; the horse, or quite frequently the bull of the herd is utilized for that purpose, with the additional advantage of giving him exercise; or the heifer, or something about the barn; and when we come to the creameries, to the associated manufacture of butter, steam or water power, or any of these modern engines, are used.

Q. When the cream has been separated from the milk is it allowed to set a while, or is it immediately churned?—A. There is a very small amount of it churned fresh, that makes what is termed fresh butter. It is butter without much flavor, and there is a limited sale for it. Cream passes through a process of what is termed ripening. It is cooled down immediately and placed under the ripening process. This ripening process is supposed to be the development of germs, and, in fact, they are using what is termed a "starter" to some extent, and the expert man knows at what stage—it is ripened under a certain temperature—and he knows at what stage to churn his cream to make the best quality of butter.

Q. What kind of churns are used?—A. They are using now entirely churns without any interior arrangement, paddles, or floats. They are using churns that produce butter—either a rotary barrel or box or swing churn. It strikes the cream from one end of the box to the other.

Q. What was the original churn?—A. The original churn was the up-and-down dash churn, and then from that the various devices of floats and paddles.

Q. Crank churns?—A. Crank churns.

Q. Is butter, when taken out of the churn, washed or not?—A. It is usually washed. That is the regular system, the system that is practiced in our dairy schools—washed with clear cold water until the buttermilk is washed out.

Q. Then is it worked or manipulated by hand or by some implement that is devised for that purpose?—A. There are various kinds of butter workers. They are used where there is any amount of butter made.

Q. What is the object in working it?—A. It is usually practiced, in the first place, by workers to eliminate the superabundance of water which comes from washing; and then the salt is applied, and the main object in working is to distribute the salt evenly through the mass. If it is not distributed evenly it leaves these little streaks of white. The salt heightens the color of butter a trifle.

Q. Is butter artificially colored?—A. During the winter time it is quite general, the artificial coloring of butter.

Q. What is the coloring matter most generally used in Vermont?—A. I suppose that the basis of the coloring matter is annatto. It is now put up in various forms mixed with oil that combines readily with butter.

Q. Is it perfectly harmless?—A. I understand it is perfectly harmless where it is properly made. Some of the articles put upon the market have been analyzed and condemned, but I suppose that the general butter coloring, in the quantities that it is used, at least, is perfectly harmless.

Q. How is butter put up for market?—A. The butter goes to market from the creameries and, in fact, from private dairies. It is prepared for the same market in several ways. There are the family prints, which come in small cases with a return box—the small boxes of 5 pounds which are supposed to be sold for family use; and it is put up sometimes in tubs and firkins.

Q. Do most of the creameries put on their own brands?—A. Always.

Q. Do many of the dairymen?—A. Always; always label their own goods with their own names.

Q. Has there been an increasing effort among the Vermont dairymen to find special customers in the cities and large towns?—A. Yes, there is; and at the same time the creameries make so choice an article that they usurp the market a good deal for choice goods. They make a very nice article of butter, and even the choice dairies now have difficulty in getting a price that is a great ways in advance of the general market. Formerly it used to be double. There used to be certain

dairies that would get a dollar, for instance, for their name and reputation, choice dairies; but that extremely high-priced fancy butter has been taken away, very largely taken away, by the choice qualities which the creameries now make; they supply a very even choice product.

Q. Does the average dairyman—I mean those who are not large farmers and specialists in the production of a fine quality—find that it is more profitable to sell his milk or cream to the creameries than it is to manufacture butter himself?—A. We have had this question under discussion at the dairymen's meeting this winter. There are no means of knowing how large a per cent patronize the creamery and how large a per cent are still in private dairying, or whether the creamery is on the increase or not; whether it is absorbing or whether there is a falling away. Some claim that there is a withdrawing from the creameries; that if a man understands the processes of making he can make a good uniform article and can do better to make up his own article and put it on the market himself. I think that is true, probably, but the question of labor comes in, and conveniences and skilled marketing. It is a very easy thing to take the cream and carry it right off and get rid of the labor about the household—the labor indoors and out.

Q. Are all the processes of dairying, and breeding for the dairy, and growing of crops for dairy animals discussed thoroughly, exhaustively, and scientifically in the Vermont Dairymen's Association?—A. I would say yes. I think everything that is known, every fact that comes out at the experiment stations in this country or any other country, is brought to this dairymen's association in a form to be reached and made popular.

Q. Has the influence of the instruction in these dairymen's meetings been to cause the farmers to observe great cleanliness in all the processes of production, even to the cleaning up of the pastures and the exclusion of everything that might contaminate the milk?—A. The tendency all along from the beginning of dairying has been in that direction, discovering what will injure milk and eradicating it both in the pastures and at the barn and through the house.

Q. In Vermont have you any weed that grows in the pasture that sometimes gives an odor or flavor to the milk?—A. I have heard of rare instances of that kind when the season was very dry and compelled the cows to eat things that they otherwise would not; and sometimes in the early spring, when they are first turned out, if they get at a locality where they can get the wild leak you get a flavor of that.

Q. (By Mr. CLARKE.) How many cows do you keep?—A. We usually run a dairy of about 20 cows.

Q. About what is the average Vermont dairy, or how do they range in number?—A. Of course they run down very small sometimes, but the average dairyman that makes a business of it has from 8 to 10, up to some larger dairies in the vicinity of 200 cows.

Q. How often are the cows milked?—A. Twice a day.

Q. Morning and evening?—A. Morning and evening.

Q. And is that milk strained?—A. Strained immediately and should be separated immediately, before it becomes cold. They find that the separator, to do its best work, should have milk at about the temperature that it comes from the cow.

Q. When is it carried to the creamery?—A. It is usually carried to the creamery every morning.

Q. And who usually carries it?—A. There are various systems of carrying it. The owner or farmer sometimes carries his own milk; sometimes a neighborhood combines along a certain road and sends a team down; and in some instances the creameries have sent out teams to collect for the creamery.

Q. Very commonly the farmer's wife or daughter drives down?—A. Or children, quite commonly.

Q. Are the hill farms and the meadow farms alike adapted to dairying?—A. Do you mean by meadow farms the farms of the Champlain?

Q. Yes, and in the various river bottoms?—A. Yes. We have on the hill farms what we call upland meadows, small farms. My impression is that the best dairy work is done among the hills.

Q. What are the grasses most common there?—A. Our common pasture grass is closely allied with Kentucky blue grass. I think the scientific name is *Poa pratensis*; I think that is our variety.

Q. (By Mr. PHILLIPS.) It is the native grass there?—A. It is the native grass there for pasture; but of late years this feed has had to be supplemented with the principal forage crops.

Q. (By Mr. CLARKE.) What are the principal forage crops in use in Vermont?—A. Clover, corn, oats, and peas.

Q. How is the corn fed?—A. The corn is fed as a supplemental crop. It is fed from the field green. The silo has been adopted very largely by the dairymen as a method of preserving the corn crop.

Q. Please describe the silo and the method of preparing the corn to be placed in it, and the use that is made of it and the season when it is used.—A. The silo is simply the process of canning on a large scale. An air tight inclosure is made, or nearly air tight, and the corn cut and put immediately in.

Q. Is that silo usually a large wooden vat set in the ground?—A. A large wooden vat, not set in the ground.

Q. Not set in the ground?—A. No; usually on top of the ground. The best method, I think, now in use, is building them round and hooping them with iron, with a diameter, perhaps, of 16 to 20 feet, making a large tank. They run that up to any height that they desire, usually 25 or 30 feet. The corn ordinarily is brought to the silo and cut in a machine, and the carrier takes it up and deposits it into this silo.

Q. Into what length is this corn cut?—A. About an inch. There are various opinions about that, however.

Q. Are there any improvements in that direction?—A. The practice is, and is advocated and confirmed by science and experiment stations, to let that corn mature; heavily ear the corn; the heavier, the better it is.

Q. The ears are cut, then, as well as the stocks?—A. The ears are cut. Occasionally the farmer takes a portion of his crop to feed other stock than cows; for his horses and his hogs and poultry. Some ears are picked off and a few hundred bushels thrown aside for that purpose and cribbed. But for cows it is always put in the silo with the ears on.

Q. That is packed down in the silo in its green state?—A. That is packed in its green state. Being very heavy it settles down very compactly, pressing the atmosphere all out, and then the top of it rots a little, a few inches, making a complete sealing, and it will keep any length of time.

Q. Does there have to be any artificial sealing or weighting?—A. Formerly it was weighted, but it is found unnecessary. They fill it, level it off, and go off and leave it.

Q. How is that taken out?—A. It is made adjacent to the stable with doors that can be taken out from the inside. It is usually thrown out with a fork into a car or carrier, in some convenient way, to run along—sufficient for the animals in the stable.

Q. Has there been any chemical action in that so that the nature of it has been changed?—A. It has turned sour. A portion of the starch has changed to vin egar, and is good ensilage, I believe; that is all. The loss is said to be less than in the process of drying.

Q. Are the cows fed exclusively from that?—A. No; they are not fed exclusively from that; that is used in connection with the hay.

Q. About what is the ration of a Jersey dairy cow?—A. A half bushel at a feed, I would presume, would be an average ration for a cow. Some feed it much heavier than that.

Q. Some hay or grass?—A. Well, clover feed and grain feed ordinarily, where there is a winter dairy.

Q. What grain?—A. The grain feed, as recommended by our experiment stations, is something that shall have a large portion of protein, and this is found in the cotton-seed meal, and the gluten meal and bran. Of course, it is found in oats. But when it is purchased protein can be found cheaper; these are by-products from manufactures.

Q. Is cheese as well as butter a considerable product of the Vermont dairies?—A. There are portions of the State that have their cheese factory, and it is quite an industry in the State.

Q. Where is the market for that?—A. There is one large manufacturer that sends all his cheese to one section of Ohio. The local markets of the State take a great deal of it, and I should state that some of it goes to Canada and is sold as Canadian cheese, getting a better price than American cheese would bring, because the American cheese has had the reputation of being filled; that is, skimmed of its cream and filled with certain oil to take its place.

Q. Boston and New York are also large markets for it, I suppose?—A. Boston and New York are the regular markets for everything that we have to sell in our section.

Q. Is every dairy farmer in Vermont also a mixed farmer?—A. Yes; he is, to a certain extent.

Q. That is to say, you keep other stock?—A. They keep other stock to some extent. The dairy and the poultry business apparently have been joined together, and more or less of them raise horses, and some of them keep a few sheep.

Q. Is sheep husbandry depressed in Vermont?—A. I think that the sheep industry at the present time is feeling a good deal encouraged; a good deal better feeling in the market for mutton. There is a better price for wool.

Q. Did the farmers slaughter their sheep during the free-wool tariff period?—A. There has been a great decrease in the number of sheep in Vermont.

In speaking of the conditions that seem to lighten up the monotony of farm life, along with better roads, I should mention the telephone. That is introduced in some sections of our State—local telephone. They are very cheaply put in, and the neighborhood owns them. I think of one neighborhood now that has a farm system of telephones in which there is 10 or 12 miles of local telephones, and it costs the owners only about \$20 apiece.

Q. To put it in and equip it?—A. To put it in and equip it and own the whole plant. The women of the neighborhood visit over them. They arrange their little sociables and church matters, and it does in a wonderful way what the village would do. In case of sickness a physician is called at a moment's notice, and I do not think of any one thing that has done so much for that particular neighborhood as the introduction of that local telephone to put them in touch with the whole community.

Q. (By Mr. PHILLIPS.) Do they keep a general superintendent to keep them in order?—A. No; it is wonderful how little repairs that telephone requires; that is, in my own neighborhood. Some young man in the community will take an interest in it, and he will soon become quite an expert in the little things that require attention. There are a few things that will get out of repair in a telephone, disconnection about the instrument, or a battery will get weak; and some young man will get to understand that very quick, and if he can not remedy it, he knows of a man right near by that he will go and get with his buggy; and there will be an assessment of a few cents on the people in the neighborhood for repairs. But that is usually covered by the delivery of dispatches from some other telephone and telegraph lines. They have a small rate for the delivery of messages from outside.

Q. (By Mr. KENNEDY.) Have you wire fences in Vermont?—A. We have.

Q. Do they utilize the wire fences in neighborhood telephones?—A. They never have in Vermont. I have heard that it is being done elsewhere.

Q. (By Mr. FARQUHAR.) You spoke of your Vermont cheese being taken to Canada and sold as Canadian cheese in the Canadian market. Is there any way of getting Illinois-made butter in Vermont?—A. Not in Vermont. The Elgin butter has a very high reputation, but I do not know of any sold in the State of Vermont.

Q. Who is the man that makes the filled cheese—the farmer or the middleman, or who?—A. The cheese business is something that I am not familiar with, and I am not certain that there is any made now; but that is something that has come into our dairymen's meetings as a reason for the low prices of American cheese.

Q. The question is, Who is responsible for the American filled cheese? What class of people are they; are they the commission merchants or the farmers?—A. It would have to be the cheese manufacturer, who is usually the man that buys the milk of the farmer. I would relieve the farmer of that.

Q. You mean, not the creameries, but the cheese factories are responsible for the filled cheese?—A. The cheese factories, yes; I should say so.

Q. And they are also responsible for the oleo mixtures of butter?—A. Not the cheese factories.

Q. Do you think any creameries use oleo?—A. No; I do not think they do.

Q. Are you sure?—A. Well, I could not swear to something that I did not know for certain. I could not, of course, tell what they do in all the creameries; but I never have heard of a case against the creameries.

Q. (By Mr. PHILLIPS.) Your law is very strict in your State in that regard?—A. In that regard. We should know it at once. I was thinking then of the Western creameries, where all the oleo comes from.

(Testimony closed.)

WASHINGTON, D. C., *Thursday, February 8, 1900.*

TESTIMONY OF HON. GEORGE HENRY WHITE,

Representative in Congress from the Second district of North Carolina.

The commission met at 2.55 p. m., Vice-Chairman Phillips presiding. At that time Hon. George Henry White, Representative in Congress from the Second district of the State of North Carolina, was introduced as a witness, and, being duly affirmed, testified as follows, the topical plan of inquiry on agriculture being followed:

Mr. PHILLIPS. The commission will now please be in order. Mr. Gardner is a member of the sub-Commission on Agriculture, and I will ask him to take the lead in asking questions.

Q. (By Representative GARDNER.) Please give your name, address, and present occupation.—A. My name is George Henry White; my present home address is Tarboro, Edgecombe County, N. C.; my occupation is that of an attorney at law; I am at present a member of Congress, from the Second district of North Carolina.

Q. You are the only colored man in Congress now?—A. Yes.

Q. And you appear before this commission to speak for your race?—A. Yes.

Q. Are you acquainted with agricultural interests generally in North Carolina, so that you desire to give testimony upon them, or is there some special feature, either as to agriculture or agricultural labor, to which you would prefer to confine yourself?—A. I had in mind a subject pertaining to agriculture; that is the landlord-and-tenant act in North Carolina and its application.

Q. Please state that in your own way.—A. Since the war we have had in North Carolina a homestead exemption of \$1,000 worth of real estate and \$500 worth of personal property, not liable to execution for debt on any judgment acquired, except judgment on mortgage given on that specific property; and since the adoption of the homestead law in the State nearly all debts that could be collected in the absence of the homestead are now reduced to criminal offenses. To illustrate, if a man has a store or a warehouse in which he keeps supplies for his tenants, and has tenants who rent his land either on shares or for a certain percentage of the product, those supplies constitute a lien on the crop of the tenant, and the removal of the crop without satisfying that lien is a criminal offense for which he may be convicted and imprisoned. A man rents land from the landlord; should he fail to pay his rent the landlord has a lien upon the crop, and if the tenant were to remove a peck of potatoes or a bushel of corn without satisfying the landlord's claim for rent, he would be indictable; and so on. I just mention those two or three instances.

Q. How is that lien created? By the landlord-and-tenant act?—A. It is a lien created under the landlord-and-tenant act.

Q. (By Mr. PHILLIPS.) That does not affect his own supplies for his own house, does it?—A. No; it does not affect the household goods. It only affects the crops.

Q. (By Representative GARDNER.) You misunderstood me—

Q. (By Mr. PHILLIPS, interrupting.) Could he keep his potatoes and corn in his house and not sell them?—A. No; he could not sell a peck of potatoes for his family, without permission of the landlord first had and obtained, without making himself liable to the criminal law. He could not use a peck of potatoes or meal.

Q. Are the tenants generally granted the privilege of using garden vegetables and potatoes?—A. That is ordinarily so to-day. But you rent some land to me now, and then in the fall we have a disagreement and I desire to make a change. Then you look around to find some way in which I can be held. I have gathered some stuff that I am not entitled to, and you will compromise with me, and I will stay until next year. It is very frequently used as a lever to hold the tenants when they are disposed to get out where they might be able to better their condition. But this is not the general rule. There are a great many landlords in North Carolina who will not invoke the exact letter of the law, and who give their tenants a great deal of fruit; and when permission is asked they will grant this permission to gather vegetables and something to eat in the closing out of the crop year before satisfying the lien which the rent constitutes on the crop.

Q. (By Mr. PHILLIPS.) Do you know any cases where persons cropping a farm have not had a right to those vegetables during the whole season? Where do they obtain those vegetables?—A. I was 8 years solicitor, commonwealth attorney, for the eastern district of North Carolina—prosecuting attorney, solicitor, as we say in North Carolina—and I speak from knowledge of actual experience as prosecuting attorney in the courts of 6 of the largest counties in North Carolina. There is, as a general thing, a little garden patch exempted where the landlord furnishes

the house as well as the ground. Sometimes I live on a little plat of ground of my own and rent land on your farm. I gather my vegetables and my own corn. That is not the case where a man lives in your house as well as on your land, but then as a rule there is a garden for the renter to take care of.

Q. That is exempt?—A. Which he gets without rent; that goes with the house, and then of course you are allowed to do just as you please with it.

Q. Is that exempted by law?—A. No; there is no law in reference to that at all. It is simply the will of the landlord.

Q. Then do you know of cases where persons were living on the ground in which they had to purchase their vegetables elsewhere, when they had been growing there?—A. No; I do not know cases of that kind. I know plenty of cases where there were no vegetables at all grown and they had to purchase them, but I can not state to you a case where they grew the vegetables. Where he furnishes the house, this house is on the land, and they live in the landlord's house as well as cultivate the ground. And with that a garden spot is usually given to grow such vegetables as you may need on the table. And when I spoke a while ago I did not speak as to that which is grown around the house, but as to that which is grown on the farm, such as potatoes, pease, and things of that kind cultivated on the farm. But even in the case that you stated, if I went on the place and went to carrying this garden stuff away without having an understanding with the landlord, either verbal or written, I could not remove it without making myself amenable to the law. But there is not one landlord in a thousand that would do that.

Q. (By Mr. FARQUHAR.) Now, to make it perfectly clear, is there under the law there any lien on this garden spot attached to the little tenant house?—A. There is no exemption; there is no reference made to the garden spot; that is purely a matter of agreement.

Q. Where it is silent has it ever, in cases that you have ever known, been invoked?—A. Yes; I have had cases in court where some fellow has indicted persons for gathering even out of the little garden spot. I have had cases in court when I was solicitor.

Q. What has been the decision in the court in cases of that kind?—A. Well, it was left to the jury, and if the evidence showed that he removed it from the ground, it showed an offense within the letter of the law. Our judges ride circuits, and we have judicial districts in North Carolina. We have 96 counties and 12 judges, and each judge has about 8 counties, and sits about 6 months, and it takes them about 2 years to get around. The solicitor does not travel with the judge outside of his own county; but I traveled with one judge who positively refused to notice any stealing of a watermelon or a little chicken, as too trivial a matter for a court of justice to take up. That was only one; that was Judge Whittaker. He directed me invariably in these trivial matters to enter a nolle prosequi; but in the State, I might add further in connection with the same feature, of criminal law being invoked to recover in respect to debt, since the adoption of the homestead law the distinction between grand larceny and petit larceny is abolished and all larceny is grand larceny. I have prosecuted a good many men who were sent to the penitentiary for stealing a chicken worth 25 cents.

Q. What length of time?—A. Up to recently that was purely in the discretion of the judge. He could send them from 1 year, which I believe is the minimum—maybe it is 6 months; when I was solicitor it was 1 year—to 10 years; purely a matter in the discretion of the judge. But by a recent act of the legislature that law has been modified so that if the article stolen does not exceed in value the sum of \$30, the sentence can not exceed 13 months unless it is the second offense. If it is the second offense, then it is left wholly in the discretion of the judge. In other words, if an offender has been convicted of stealing before, and that can be shown to the court, then this limit does not apply. But if that is not so, by a recent statute—I think possibly the statute of 1895, or very recently at any rate—if the value of the article stolen does not exceed \$30, the maximum penalty that can be pronounced by the judge is 13 months in the penitentiary. Of course, it disfranchises the offender.

Q. (By Representative GARDNER.) That limit of \$30 practically restores the ancient distinction between grand larceny and petit larceny?—A. Between petit larceny and grand larceny, except in a very few States petit larceny is not a felony. It is a felony in North Carolina, and the offender is disfranchised. The disgrace is the same as if he had stolen a horse or a hundred thousand dollars; it is only the length of time in the penitentiary. The distinction is abolished. I mention those two or three instances in connection with the landlord-and-tenant act, and that is true, if I might continue the list, indefinitely almost, by statute;

the people being poor, the masses of them. And I would add especially is that true of the colored people, of necessity, for they are very poor as a rule. There are some doing very well; there are exceptions; but they are few. We have some worth from five thousand to seventy-five or a hundred thousand dollars. The landowners, of course, have sought to invoke legislation to protect land in the collection of debts on the criminal side of the docket in lieu of the civil law, as I indicated a few moments ago. This application of the homestead act makes the records of our penal institutions rather black. They are very plethoric, possibly more so than they ever have been, and therefore misleading to those not familiar with the facts as to the criminal capacities of the people within the State.

Q. Suppose that with an exemption as large as \$1,500, there was no peculiar provision in the law protecting the landlord; what would be the result?—A. The result would be that each man would be forced to paddle his own canoe, or take the chances upon his honesty.

Q. True; but that only raises the same question. To state it differently, then, what would be the probability of his recovering his rent?—A. Well, he would be left—

Q. (Interrupting.) Would there be a probability that the result would be such that the landlord would find it not worth while to rent his farm, and that it would lead to the system of cultivation by the landlord on his own account, and stop the colored men from the possibility of becoming tenants?—A. I think that the homestead law is a decided drawback in North Carolina. In what I am saying, understand me, it is of North Carolina; I do not pretend to be familiar with the criminal laws of other States, that is, in detail; all that I am stating has reference to my own native State. But my own opinion is that while the homestead law was intended as a benefit to the poor man, to prevent the seizure of his small estate and the loss of his all, it works a real harm to him, because the landlords, the landowners, are almost forced for their own protection to invoke this criminal law to collect what otherwise they could collect under the civil procedure.

Q. Suppose that by the repeal of that provision of your landlord-and-tenant act, the landowner was driven to the northern method of farming on shares, would not the same effect result? Would not the appropriation by the tenant of the landlord's share constitute a criminal offense?—A. It does now under the law.

Q. Would it not at common law in any State?—A. Oh, I think not. It might come under the head of embezzlement as his agent under the common law, and in that respect become a common-law offense. But nearly everything that was prohibited under the common law in North Carolina has been reduced to statute. We practice very little under the common law.

Q. How far does the statute of North Carolina really change the matter from what it would be under the common law, if the landowner simply changed the system from a renting to a share system?—A. I think that he possibly would be amenable under the criminal law—common law, of course, covers that—for embezzlement of property. It could not be larceny, though larceny of growing crops is made a statutory offense in North Carolina now. Under the law, whenever anything is a part of, rooted to, attached to, and growing in the soil, it is a subject of larceny. Logs in the woods, trees in the forests, and bushes, and crops growing, potatoes in the ground, are subject of larceny now; statutory larceny.

Q. All States that I know anything about have covered it in some way; there may be technical differences. Some States, for instance, make it larceny; some malicious mischief; but the indictment is procured in the same way, and the prosecution is the same and the penalty is the same; the only difference is the name by which they call it.—A. I think that if these criminal statutes were removed, which are intended to be a substitute for collection under the civil law, then the tenant would have to resort to the croppers' lien and mortgage system. I suppose you can, in your State, mortgage a growing crop before it is even planted; we can mortgage it in North Carolina.

Q. And the removal of mortgaged personal property is and has become a criminal offense in most of the States?—A. So that the effect in the end would be about the same. My reason for making reference to this is that I believe that the homestead law in our section of the country is really a hindrance and trouble rather than a benefit to the poor man, whom it was intended to benefit. These technical violations of the criminal law, however, are not, as I should like to emphasize, invoked by the better element of our landlords. They are, as a rule, liberal; it is only by some shyster fellow who wants to stop me when I am disposed to go elsewhere with a view of bettering my condition. He finds that I have technically violated some of these laws. It is difficult for a man to live on premises for a time without violating any law—if not the spirit, some part of the letter. He uses that as a lever to hold them over, under a promise of immunity from prosecution in the courts. Frequently that is true.

Q. Is not the fact that the law can be used for a purpose like that, or any other purpose foreign to its pretended object, one of the severest indictments that could be brought against it?—A. Yes.

Q. (By Mr. FARQUHAR.) Are these liens acquired under contract?—A. No.

Q. I am speaking of acquiring the lien itself; that is, whether the contract is complete before you reach the lien?—A. That will depend upon the character of the tenant.

Q. Is it written or verbal?—A. Verbal. The law itself makes the furnishing of supplies and the rent of the landlord a lien upon the crop without any further procedure whatever.

Q. No limitation of time?—A. No; I can run a store account—and that is very frequently the case—run some account with a man and say I am going to farm on Mr. Smith's land. I want \$75 worth of supplies to run my crop. I make that bare statement. I go there and get whatever I may there that year; and my running that account constitutes a lien on my crop without any aye or no whatever—without any written agreement.

Q. (By Representative GARDNER.) Is that a provision of the landlord-and-tenant law or some other statute?—A. That comes under the general provisions of the landlord-and-tenant act.

Q. (By Mr. FARQUHAR.) At the end of the cropping year, suppose the tenant is not able to satisfy that lien; then what?—A. As a rule, he has to mortgage himself again and stand over.

Q. So that on account of bad crops, sickness, or anything else that might happen to him, there is an accumulation of debt?—A. An accumulation of debt; and in a great many instances (I do not want to impress you that this is the rule, but in a great many instances) it goes over the next year, and the man is never able to get out.

Q. And the man is mortgaged to the land himself?—A. Mortgaged to the land himself, and he goes on from bad to worse; they maybe have taken advantage of him, and he lives on and on in that condition.

Q. (By Mr. CLARKE.) Well, now, while this reduces to a condition of serfdom some unfortunate and thriftless tenant, is it not a convenience to the general average of farm tenants?—A. I can not say that it is a convenience. A great many thrive notwithstanding the facts or the law, a great many persons, but I can not say that is the rule. I should say not exceeding probably half are of that class. I know a great many who will rent for a while. They are thrifty; they have business capacity; they keep their own accounts. There is a great deal of fraud perpetrated on the ignorant; they keep no books, and in the fall the account is what the landlord and the store man choose to make it. They can not dispute it; they have kept no account. But, in response to your inquiry, there are many who thrive, and some of our people have purchased their own land, and sometimes I have known them to purchase of the landlord. In a great many instances their farms are cut up and parceled out to tenants, but I can not say exactly that it is the rule. That is not the rule; possibly an exception to the rule.

Q. (By Representative GARDNER.) What part of North Carolina are you speaking of?—A. I am speaking of the eastern part of the State.

Q. What are the prevailing crops there?—A. We grow in North Carolina cotton, corn, peanuts, and tobacco as staple crops. We grow very largely in the spring early truck to ship to the Northern people—pease, beans, and asparagus.

Q. To starve us out?—A. Yes. Especially is that true in the vicinity of Newbern, where I have lived ever since I have been a man up to the time I was elected to Congress.

Q. You strike for the Northern market and supplement that with table truck?—A. Yes. Cotton and tobacco are the principal crops. In the vicinity of Wilmington and the Cape Fear River we grow rice and peanuts and so on, which we supply and sell.

Q. (By Mr. FARQUHAR.) Do you sell immediately to the purchasers or do you sell through the store?—A. We sell to the store and warehouse.

Q. And you take whatever price the store offers?—A. Have to of necessity, except some man who has a crop of tobacco and has it in hogsheads so he can ship when he pleases and send it to Richmond and Danville. A man in that condition does not sell it for his immediate wants or necessities; he can hold his tobacco, as a great many do their cotton, and did last fall. Last fall cotton was 6 cents a pound and this fall it is up to 8, and a great many held it for the rise. But a great many can not do that, but have to sell as fast as they can get it out, to satisfy obligations incurred in the growing of it.

Q. What do you think the average would be there in respect to the small croppers and the large ones who are able to hold, in proportion to the amount of production?—A. I do not quite understand.

Q. That is, do the small croppers preponderate in the amount of production of tobacco, for instance?—A. Well, yes.

Q. They do?—A. Yes; in the Durham district and east of the center of North Carolina down to Wilmington and the Atlantic coast line, on each side of that possibly for 20 or 30 miles. We grow an abundance of tobacco in the Lenoir vicinity. Some of the finest tobacco in the world, I guess, grows in that region, and they grow this tobacco, tenants and all, and the landlord sells it for them or somebody sells it for them. A great many of these tenants are landlords. They take the crop on shares; they rent the ground and furnish their own teams and their own supplies, and give a third or a fourth of the crop for the rental of the land.

Q. (By Representative GARDNER.) Is not that the equivalent of the share system?—A. Yes; it is in the Northern sense. But what we understand by shares is for the landlord to furnish the house, team, seed, and implements, and the other party furnishes the labor, and they divide equally.

Q. (By Mr. CLARKE.) Divide equally?—A. That is what we usually do.

Q. (By Mr. FARQUHAR.) Have you generally found that this is about fair, that proposition that you make?—A. I can not say as to that; I have not been on a farm since I have been a man.

Q. But men have done well at that?—A. Often; yes.

Q. (By Mr. RATCHFORD.) What is the general social condition of the farm tenants?—A. I can not speak in very high terms of it as a rule. Poverty always begets degradation, immorality, and other vices, and possibly the masses of our farmers, I mean over half of them, are poor. A few grow to easy circumstances and do well; but I should say over half of them are poor people; very poor. We have them huddled in small houses, one, two, and not exceeding three rooms, sometimes eight or ten in the family, and their company and their eating and all is done in these little rooms; and the social standing can not be very elevated under those circumstances, as a rule.

Q. Are they mostly colored people?—A. Colored and white; in the eastern part the majority largely colored; in the west largely white.

Q. (By Representative GARDNER.) Mr. White, I am afraid I have totally misunderstood you. We have been talking about the renting of farms?—A. Yes.

Q. And the landlord-and-tenant act making the rent a lien on the crop?—A. Yes.

Q. I assumed while we were talking about that that the rent was a money rent, from a remark you have just made—A. (Interrupting.) Not necessarily a money rent; any rent.

Q. From a remark you have just made it would appear that it is rather a portion of the crop?—A. Yes; the money rent is not the rule. That is the exception to the rule.

Q. If the thing called rent consists of a portion of the crop—A. (Interrupting.) That is what I meant to say.

Q. The landlord is entitled to nothing by way of rent but that portion of the crop?—A. No.

Q. Well, then, the criminal statute of which you have spoken could not apply until the tenant had consumed something of the landlord's portion, could it?—A. Or any of it. I dare not move a peck of potatoes. Suppose I am occupying your land and you were to have one-half and I the other of the crop grown. I can not remove a bushel of potatoes on my part until your lien for rent is satisfied.

Q. (By Mr. FARQUHAR.) The lien that you have explained?—A. His rent as a whole.

Q. The law gives the share for the whole?—A. The whole machinery is on the side of the landlord.

Q. (By Mr. CLARKE.) Who makes the division of the crop?—A. Usually the landlord comes around after it is gathered and you have notified him that it is ready for a division—after it is hauled up by carloads, if it is corn, and they pile up yours here and mine there and I take one and you the other.

Q. The division is made by agreement as to time?—A. Yes; it is understood. Sometimes you gather yours and I gather mine. In that case I gather mine and you leave yours in every other row, and I take one row or two rows and you take what you choose. That is not the rule. The tenant gathers the crop generally.

Q. (By Representative GARDNER.) Both kinds of farming which you mention are called farming on shares in the North, the only difference being that the landlord gets one-third where the tenant furnishes everything, and he gets one-half where he furnishes the stock.

Mr. FARQUHAR. And seed.

Q. (By Representative GARDNER.) And stock. The farmer is very generally supposed to furnish the seed. When it comes to those things that require the out-

paying of cash, as in the dairy farms, for instance, where some grains must be bought in addition to those which the farm produces, there is some special agreement about that.—A. For a money rent we give so much cotton per acre. In lieu of giving cotton we give so much money for an acre of land. That is hardly ever the case.

Q. Would there be any difficulty about making a provision in making leases generally that as much ground as was necessary for the raising of vegetables and things required by the tenant should be exempted from the lien law?—A. He has not very much trouble in catching him whenever he wants to under the existing law. As I said in the outset, there is no provision for this garden spot under the existing law, except under the will of the landlord. There is no provision in it it at all for that, and wherever I am accorded a garden spot it is simply the will of the landlord, and the contract is a verbal one. I have only known of it two or three times in my experience at the bar of nearly 20 years, where some man of very small caliber wanted to press some man, and when he left him he invoked that provision of the law.

Q. (By Mr. PHILLIPS.) Even when he agreed to let him have it?—A. Yes; I know where a man was brought up for using some turnips growing out in front of his log cabin chimney. But I do not want to impress you and I do not want to impress the country that that is the average landlord.

Q. (By Representative GARDNER.) All I wanted to get at, as I have already stated, is as to whether that thing was intended to be fair or whether it was intended to be only a trap. I ask that.—A. I had rather not state my opinion as to that. The law is in favor of the landlord, and, if need be, he can use it to the detriment of the tenant. That is the general trend of the law through North Carolina, without the expression of it.

Q. (By Mr. FARQUHAR.) What is the difference in condition between those who own their own lands there and those who take the croplien system; the difference between the two classes of people?—A. It is a very broad difference. One is of an independent character, while the other is wholly dependent. One is naturally, as a rule, more responsible and more respectable, and of a different grade of people, as a rule, from that class of people who—I mean the masses of the class, I do not mean all—there are some very respectable, good men that crop all the while; they do not undertake to buy. They say, we take into consideration taxes, purchase price, interest, and all those things, and they had rather do that. They are very few and far between. The aggregate wealth of our country down there—especially is that true among the colored people—consists in small possessions, little farms, little homes, and little city property. There is no big wealth; that is the exception. I can not say there is big wealth anywhere, but there are a great many, a large number—you would be surprised to know the number who have purchased a little plot of ground somewhere, and are getting something to stand on; a large percentage of the people. And I think that is true—I am not so familiar with the western part of the State—I think that is true of our western people, who are very largely white. The bulk of the negroes in North Carolina are east of the center of the State; and up among the mountains, near Georgia and Tennessee, the western part of the State and the northwestern part, they are largely white. These mountaineers, as a rule, most of them are poor people; possibly they are not as poor as our eastern colored people.

Q. (By Representative GARDNER.) Some of your farmers, as stated, sell their crops through the storekeepers or warehouses because they have to; some buy lands and some do not. It is true, is it not, that those who sell their crops to take the greatest advantage of the market, and those who buy lands and own them, are more comfortable than those who do not?—A. Certainly.

Q. Is there any other cause for that than the difference in the individuals? Are not their chances about equal?—A. The chances between those who own their homes and those who do not?

Q. The chances primarily of each to get into a condition to hold his crop or buy land?—A. It is best for those who have some degree of intelligence and culture, and ability to calculate, or, in a word, to think for themselves; and the class who have not those things and are not in their nature capacitated to think for themselves—prior to the war the colored man, as you know, in the South was not expected to think. He was to use his muscle. Some of them unfortunately have never learned to think yet; they simply exercise their muscle, and others get the benefit. There are those who have learned to think for themselves; they plan for themselves and calculate, as any other business men do, and the result is that they soon acquire some property and get a foothold, and become somewhat independent. It is between the thinking class and the nonthinking class; between the educated and the noneducated.

Q. Then it is true in North Carolina, is it, that the educated, bright, peaceable colored men—A. (Interrupting) Industrious; put that in.

Q. Yes?—A. Because some of them are.

Q. Colored men or white men—I do not mean to make any distinction in color—succeed in agriculture?—A. Yes; they can succeed in agriculture.

Q. And probably become the owners of farms from their own accumulations?—A. Yes. I have in mind quite a number who are comparatively independent. The father of my private secretary died some short time ago and left an estate to two sons of possibly \$40,000. He was a farmer; started with nothing. He was a colored man, and he was worth easily \$40,000; and that in North Carolina is a right decent competency for either white or colored men.

Q. Did he make that farming?—A. He made that farming, and he made that entirely alone. His farm was four miles from Tarboro.

Q. (By Mr. CLARKE.) Since the civil war?—A. Since the civil war.

Q. (By Mr. RATCHFORD.) Did he make it by his own efforts or by the help of his sons?—A. He had two sons, but they were in school nearly up to the time of his death, and one of them graduated about the time he died; the one that is with me.

Q. (By Mr. FARQUHAR.) Did he hire the labor?—A. Yes; the sons never made anything to offset their education. In that sense they were a burden rather than a help. I do not mean to say that they did not work, but what I mean to say is that he expended more in clothing and refining and educating those boys than he ever accumulated by their work.

Q. (By Representative GARDNER.) He had no exceptional advantages?—A. No; he was a thoughtful man; he was a thinker.

Q. (By Mr. PHILLIPS.) Did he buy any large farms?—A. Those two boys have as good farming lands as any in the county, in several plantations.

Q. (By Mr. FARQUHAR.) What does good farming land sell for in these sections you are speaking about now?—A. That will depend very largely on the location and condition of the land. Land that has been made arable and brought up to a state of cultivation will sell for anywhere from \$5 to \$30. There is plenty of land there that you can buy for from 50 cents to \$3.

Q. Your finest arable land is worth from \$25 to \$30?—A. Twenty-five dollars generally is called a very good price for land, a very good price.

Q. You spoke of cash rentals; what is the annual cash rental for your best farms?—A. Per acre?

Q. Per acre.—A. I could not say. Here is a plat of ground; it may be anywhere from 30 to 40 acres. You say to me you could make 300, 500, or 1,500 pounds, bales of lint cotton, and you have for yourself a certain number of bales of lint cotton. I should say that the average of farm land will produce somewhere between \$3 and \$4 per acre per annum.

Q. (By Mr. RATCHFORD.) Three or four dollars per acre per annum?—A. Yes.

Q. (By Mr. FARQUHAR.) Six years rental would buy the land?—A. Oh, yes, the arable land; and woodland, that can be bought for what an acre would rent for.

Q. And your cropper lives all his life on it and he is never able to buy one acre?—A. I would not say that, but he does not buy very much land.

Q. I mean, under that system of landlord and tenant and under that law, a man that is under that system and then produces the rental out of the property (\$3 or \$3 an acre), does not acquire that?—A. He is very frequently a hard-working man; he has muscle, but he is not a thinker; he is not educated, and he goes on from year to year accumulating debt.

Q. (By Representative GARDNER.) I do not want any conflict with the major's idea, but what I was just going to ask you to emphasize, if it be true, is this: If a good business man, a farmer, white or colored, can accumulate a competence in agriculture in the eastern part of North Carolina?—A. Yes; in the eastern, middle, or western—anywhere in North Carolina that I am acquainted with. In the western part of the State it is mountainous, and the lands there are almost waste land, even in the foothills there, but on the steep slopes of the mountains there is splendid farming land. I should say anywhere in North Carolina. The State is rich in resources, and has an abundance of nearly everything. In the western part minerals are abundant.

Q. (By Mr. RATCHFORD.) You say, Mr. White, that \$10 is a good price for farm land?—A. Yes; the average farmer will bring that out per acre.

Q. Will that farm land that you speak of net a rental of \$3 or \$4 a year?—A. I should think so. Good farm land ought to bring a bale wherever land is worth that price, but not right straight through. You hardly ever buy cleared land without some wood. You fill it all in. You buy a plat or tract of land, you take it all; you buy so much right straight through. Now, that that is cleared or arable is

worth more, possibly, than the woodland, where there is no money expenses, and that, I will say, will be up to \$20 or \$30. But you take a plat of ground, \$10 would be a very high price for the average plantation down there. Now, on that plat of ground, the arable land, you can grow on fairly good land a bale of cotton to the acre, and a bale of cotton is usually from 450 to 500 pounds of lint cotton. That cotton now is selling at 8 cents a pound. You can make your own calculation.

Q. Is not that an exceptionally high rate of interest for the landowner?—A. Yes.

Q. Rental?—A. Yes, pretty high, but it is only the best land that you can get that out of.

Q. (By Representative GARDNER.) What outlay for fertilizers is required to produce that crop on average cotton land in North Carolina?—A. I do not know that I can answer that intelligently. I know that we use a great deal of fertilizers on the farms near the cities and towns, but remote in the country we produce our fertilizers from the stock, composts, and a few barrels of lime. We have the cuttings and droppings of the stock mixed in with, maybe, the leaves and refuse on the edge of the swamp. They mix that in to kill the sourness and to cause decomposition, and the mixture makes a very excellent fertilizer.

Q. (By Mr. PHILLIPS.) Composts?—A. Yes; composts. Now, as to how much fertilizer—guano, or whatever it is composed of, or anything of that kind—I can not answer that. I do not know how much per acre. I could not say. I have seen it going on, but I have never made myself familiar with it.

Q. Is not land worth more than \$10 per acre? Before the war, in the eastern part of North Carolina, was it not much more valuable than it is now?—A. I can't say. Before the war I was a baby. I was born, but I was very young.

Q. I did not know but you knew the history. In many parts of the South the land was very valuable.—A. You take a great many of these large plantations with the old English method of farming, a great manor. Here is a wealthy man, having anywhere from ten to one thousand slaves, and a great many men did not know their slaves when they met them on the road. They had a large plat of ground. You could not tell anything about the value, because the owner did not need any money and he would not sell it for any price. Since his death the family have moved to cities and towns or to some other country; the land has been cut up and sold off. It would be difficult to make a comparison between the prices to-day and the prices before the war, because the lands were not for sale unless a man made up his mind to move from one State to another, and sold the whole thing. But it is my supposition that lands would bring proportionately a greater price in money then as compared with now; somewhat more than they do now.

Q. Is there much employment of labor by the day or by the week or month; and if so, what wages is it usual to pay on the farm?—A. Yes; there are a great many persons who do not undertake to farm at all, but just hire themselves out either by the day or by the month. It is very unusual to hire by the week. They hire themselves out on a farm for the day or for the month. Some of them wait until the fall and the crop is sold, outside of the actual consumption for food, and others are paid daily as they go along; very largely paid off in provisions for their families and paid from the storehouse. And I may say that these storehouse profits—the tenant or the purchaser pays for everything, and they are very high prices—double what he would have to pay in the city. The day laborer usually has from 25 to 50 or 60 cents a day. By the month it is from \$6 to \$10 a month.

Q. (By Mr. CLARKE.) And board?—A. Sir?

Q. And board?—A. No.

Q. Without board?—A. Yes; without board.

Q. (By Mr. PHILLIPS.) Do you mean to say that a man could live on \$6 a month and keep a family and pay his board?—A. A great many men are keeping families with a wife and four, five, six, or eight children, and they do not get over \$10. But remember that the man is hired out, the wife is hired out, and every child is hired out, and the wife takes the babies along with her. A great many families live on less than \$10 a month. The provision is very coarse, but it is common food. It is usually corn, a little molasses, and Western side meat. They live on the coarsest food, wear the coarsest-textured clothing. They can not do otherwise.

Q. (By Mr. RATCHFORD.) Are you speaking of a class of men who work by the day or by the month and are employed by the tenants on the farms?—A. By the landlord, or it may be by a very well-to-do tenant. He runs a good deal of land—runs a four or five horse crop, and he hires these men.

Q. Will the same wages apply to those who are employed by the land owner on the month or day plan?—A. Yes; no difference. If I am a landlord or a tenant, the wages paid to these hirelings are about the same. One pays about the same as the other.

Q. (By Mr. PHILLIPS.) Is there any prejudice against colored people accumulating land in that country?—A. I think there is very, very little against the colored man for accumulating property, except in the way that I have indicated; obstacles thrown in his way by these loopholes in the law and by his ignorance and incapacity in some instances. Some of them have an incapacity to make their own calculations and to think and plan for themselves. I can not say that I know of any prejudice against the colored man's accumulating property. There is that fact and the fact that there is very little prejudice against his getting an education. True, you have not asked me about any educational matters.

Q. (By Mr. FARQUHAR.) You seem to me to indicate that the intelligent farmer would be a more independent man to do his own thinking, have a little tact about his own business. What is the condition in this rising generation? Are the facilities for education good down there?—A. No; they are poor; and I want to say that without meaning to cast any disparagement on our State legislature.

Q. Is there an insufficiency of schools?—A. There is an insufficiency of funds to run the schools. The average school term in the State is about 62 days in each year. The average schooling given the child is 62 days.

Q. (By Representative GARDNER.) Is the time fairly distributed over the State?—A. In a good many cities down there we have graded schools. They have a special tax on all the taxable property and polls to raise an extra fund; and these run from 6 to 9 months in the year, these graded schools, whereas in a great many rural districts they run maybe only 30 or 40 days in the year.

Q. (By Mr. PHILLIPS.) Are the schools separate—colored and white?—A. Oh, yes.

Q. Do they have about the same time?—A. As to that, it is a matter of exact knowledge, and I can not say. There is more money paid to the white school for a given number of pupils than for the like number of colored people, notwithstanding the constitution. The teachers are paid more, in the first place. Though their education may be the same, they may be examined by the same board and get the same certificate, the whites are paid more wages; and as a general thing, I guess, the whites' terms run a little longer than the colored.

Q. (By Mr. CLARKE.) Are all the teachers of the colored schools colored?—A. Yes, mostly. I do not know of a white school-teacher teaching a colored public school in the State.

Q. Are they men or women?—A. Both.

Q. Are there any societies for the improvement of the farm tenants or farmers generally, such as agricultural societies, granges and the like?—A. We have granges and agricultural societies and farmers' alliances. The colored man is not admitted to them; they are for white people only—unless he forms one separate and distinct to himself.

Q. (By Representative GARDNER.) Has he joined that?—A. Yes; we have had a good many colored alliances, until recently it came into disrepute. I do not know of one now.

Q. Why did it come into disrepute?—A. They got into politics. The Farmers' Alliance of North Carolina drifted into the Populists, and the Populists made an alliance with the Republicans, and that brought the organization, both white and colored, into disrepute.

Q. What I want to get from you is something that, coming from such a source, ought to be valuable. Has the colored man in North Carolina, in alliances or other organizations for the benefit of those engaged in any business or trade, showed a capacity for organizing and maintaining the organization in good standing?—A. I do not know that we have had an organization among colored men, either the Knights of Labor or the Farmers' Alliance, separate and distinct in itself, that was sufficient to make such a test as would warrant me in giving you a positive or negative answer. When I spoke of the colored alliances, I did not speak of the Knights of Labor, but will now. We had both organizations there, but they were branch organizations of the white. They had separate lodges, and did not meet together, but it was understood that they were branches, a part of the general labor organization. But the agricultural societies and Farmers' Alliance, as it is known to-day, is a white man's institution entirely, and the colored man can not join these white organizations. He is not permitted in them. He is shut out.

Q. (By Mr. PHILLIPS.) Do you keep up the Knights of Labor organization in the South?—A. I do not think so. I am ineligible to membership under the law. Lawyers are not allowed to join.

Q. (By Mr. KENNEDY.) Lawyers and saloon-keepers are ineligible.—A. Yes; and a good many other good men.

Q. (By Mr. CLARKE.) Practically there is little or no organization or meeting for the discussion of agricultural methods among the tenant farmers of North Carolina, especially if colored?—A. That is right. Now the mere fact that these organizations drifted into politics brought them into disrepute and precluded their meetings, because their meetings are secret, and there is a statute prohibiting any political organizations of a secret character, so that they do not keep it up. They would have been indicted if they had kept it up after they carried it into politics.

Q. Is there an agricultural college in North Carolina?—A. Yes; two. There is an agricultural and mechanical college at Raleigh for the whites, and there is one, on a much smaller scale, to be sure, for the colored at Greensboro.

Q. What kind of an idea would it be for these colleges to adopt the university-extension plan, and send lecturers among the tenant farmers and instruct them in improved agriculture?—A. There have been lecturers and institutes—that is, farmers' institutes—held in various parts of the State every year under the auspices of the Department of Agriculture, but that is for the whites.

Q. (By Mr. FARQUHAR.) The colored man is not precluded?—A. He is not expected to be there. I do not know that he would be driven away if he was to go, but it is understood that he is not expected to be there.

Q. Are they not of the character of mass meetings?—A. No. There are certain places where the colored man does not go when he understands that he is not expected to go there. He would be very easily got rid of.

Q. Have you any private schools in your section supported by yourselves that are independent of the common schools?—A. Yes; there are a great many private schools in the cities and towns. I have never sent one of my children to a public school in North Carolina in my life.

Q. Have you any in the rural districts?—A. Not in the country. You will find cases where a teacher may teach a school for two months, and the people will feel that they have not done justice to their children, and they may have a little money, and they will run it on as a subscription school for a month or two. In the cities there are parochial or other private schools under the auspices of some church that run constantly. The Episcopal, Methodist, Presbyterian, and Baptist churches have these, independent of the public schools.

Q. (By Mr. PHILLIPS.) For colored people?—A. Yes; whites, too, but the two are separate.

Q. Do the whites contribute to the colored schools?—A. Not to the private schools.

Q. (By Mr. FARQUHAR.) You have no lack of teachers, have you?—A. We have plenty of them—more than we can get places for. The reason for that is, we have in North Carolina a bill creating 4 additional normal schools, which we tacked on to the universal appropriation bill. We have now 6, 7, maybe 8 colored normal schools, and many institutions of different kinds among the whites as an offset for it; these are for the special purpose of training teachers. There is one of them in my own district at Goldsboro. We have a great many of the denominational institutions of higher grade. We have the Livingston College, the Bennett Seminary at Greensboro, and the Agricultural and Mechanical College at Greensboro. We have the Scotia Seminary at Concord, a Presbyterian school maintained and equipped by Northern people largely, President Satterfield. The president and a majority of the teachers are white. My daughter was educated there and is a teacher of music there now. We have another school, where my nephew graduated in June. That is officered entirely, outside of the board of trustees—I am on that board, too—by colored men, except one gentleman who teaches German; he is a white man. Then coming a little further down we have the Livingston College at Salisbury, and then at Raleigh we have the Shaw University, under the auspices of the Baptist Church. That is a college—has medical, law, and theological departments, and is on a very large scale. They have several hundred pupils. In the same town we have the St. Augustine Normal and Industrial Institute, under the auspices of the Episcopal Church. It is contributed to indiscriminately—not necessarily North or South. These schools are independent of the public schools. Then we have the Gregory Normal Institute in Wilmington, under the Congregational Church. These are all independent of the public schools and the regular normal schools. So the facilities for higher education of the colored people of North Carolina are very good, and that accounts for the surplus of teachers—the graduates of colleges.

Q. (By Representative GARDNER.) Your system is top-heavy, then?—A. Rather so. If you eliminate these private schools and eliminate the schools in the cities—

the graded schools in the cities are run from 6 to 9 months in the year, but the rural or country schools, that are so poorly attended and provided for, make an average of only about 62 days in the year.

Q. (By Mr. FARQUHAR.) In these colored schools and colleges are the students cared for under an endowment, or do they usually furnish their own means?—A. They have to use their own means. There is a small endowment to each, perhaps, but scarcely enough to pay all the professors. These students, as a rule, pay their own way. Now and then you get a scholarship through a philanthropic person in the North. Some lady or gentleman says, "I will furnish you \$40 or \$50," and the faculty or president has a right to designate such and such a pupil who will be supported out of that gift, and that is kept up until the pupil graduates possibly.

Q. None of them have a permanent endowment?—A. Not enough to pay the professors. They have to keep a financial person on the road begging all the time to keep them going. They require additional equipment; they are building or enlarging their laboratory and other things, so their funds for endowment of professors' chairs or aid of indigent pupils are not sufficient.

Q. Have you any method in your mind to suggest for the improvement of the colored race, the farming people?—A. I have not now, sir. We are in a bad way in North Carolina, the colored people are now.

Q. Have you any information that will cure any of these difficulties which you mention?—A. Yes.

Q. Do you think that the general condition of the colored people in your State is gradually improving or going back?—A. Up to a year or two ago our condition was decidedly on the upper trend. The best feeling that I have known anywhere in the Southland existed between the whites and colored in our State. Politics, though, has made things a little bad for us. It is difficult for an illiterate white or colored man to differ in politics without differing in church, business, and everything else. The colored man has adhered quite rigidly, whether wisely or not I will not say, to one political party, and that party has been recently overthrown, and in my opinion the most vicious element of the white race is now in possession of the State. A large majority of the whites are kindly disposed to the colored man, and it is evidenced by the fact that they have all these years paid without murmur the bulk of the school tax. They have shown in hundreds of instances the evidence of their good feeling toward the colored man, but unfortunately politicians have not only dragged the race into politics, but even on the farms and in domestic affairs. In the city of Wilmington, in the latter part of 1898 and the first of last year, domestic servants were discharged and driven hither and thither and did not know what was going to happen. That has subsided and the bad feeling has died down somewhat, but we have a bad state of affairs and the way looks dark for the future.

Q. (By Mr. PHILLIPS.) What led up to that state of affairs?—A. I had hoped not to refer to politics at all.

Mr. FARQUHAR. If it is politics, you must not.

The WITNESS. It is politics.

Q. (By Mr. RATCHFORD.) Before we pass the subject of education I want to ask another question. Are the public schools that you have so fully explained supported by the well-to-do and the most intelligent of the white and colored race in the South?—A. Yes; but you understand these schools are separate and distinct. Now and then you find a white man in the South who will say to a colored boy who has attracted his attention, "Here is \$10 or \$15 a year to help educate you." But the private schools of the lower grade—I was speaking of the colleges and seminaries—the private schools of lower grade are separated into colored schools for colored children and white schools for white children.

Q. And the interests which support them, are they composed of the best element of both races?—A. Yes. One of the reasons for the schools is that there are a great many white and colored people who do not care to have their children go into the public school and be mixed up with the kind of pupils that are there.

Q. The tax for the support of the schools, is it largely from the rich or the poorer class, the farm labor that you spoke of a while ago?—A. These schools do not apply to a very great extent in the rural districts; only a very short supplemental term.

Q. Does the fact that you have a system of private schools there, that is so generally maintained—does not that militate against the support of the public schools?—A. No.

Q. It does not?—A. No. The public school can not be interfered with. It is fixed by constitution in the first place, and then where it is not completed in the constitution, the minimum and maximum amount to be collected, it is generally by

statute. So that the private schools do not have anything to do with the tax collected for the public schools.

Q. It requires influence to have statutes enacted, and according to your testimony the better element are schooling their children in the private institutions, and their interest in the public schools would naturally not be so great.—A. Perhaps you may have got an impression that it is universal, but it is not. It is in cities and towns and in isolated cases in the rural districts, but that is an exception. I do not think that the private schools hurt the public schools at all. We had a statute making it discretionary with any precinct, on the application of a certain number of men to submit the question—I do not remember the percentage of men required to make the application for any precinct to levy the tax, but it was discretionary with the school district whether or not they would tax themselves for the extra tax to run the school a longer term, and very few took advantage of it.

Q. Do you or do you not think it possible that those who are obliged to send their children to the public schools where the terms are so short can possibly acquire any education whatever that will benefit them?—A. Yes; they acquire some education. It is a rare thing to find a young man or a young woman of 20 years of age who can not read and write and cipher rather intelligently.

Q. Even with that short school term?—A. Even with that short school term, yes. You understand me, when I speak of the whites and colored running these private schools, that is altogether in the cities, and the private school in the rural district is only supplemental to the public school. I do not remember a single instance where we have a private school separate and apart from the public school. It is a supplement to the public school, conducted in the same building and by the same teacher after the funds are exhausted.

Q. (By Mr. PARQUHAR.) What kind of sumptuary legislation or laws have you in North Carolina, temperance and other laws, local option or what?—A. We have the dispensary system, fashioned somewhat after South Carolina in certain counties. We have it in Cumberland County, where the town of Fayetteville is located, and some of it in western North Carolina. We have some counties where whisky is not allowed to be sold at all. It is prohibited entirely, and the discretion is left with the county commissioner; that is until recently. I am not familiar with the law passed last year. Prohibition is not a very pronounced quantity in North Carolina.

Q. Have you any positively dry counties?—A. Yes; some few counties where there is no whisky permitted to be sold at all. In these dispensary counties it is sold under the protection of the dispensary authorities. That is only in localities; not general.

Q. What is your observation with respect to these option counties that go entirely "no license?" Are they an advantage to society, both white and colored?—A. I think they tend to help society somewhat. If the law was rigidly enforced, I could answer that decidedly in the affirmative, but there is a laxness. Public sentiment, you know, is law, and there is a laxness on the part of the public authorities in enforcing it, and these blind tigers or illicit stills are in every corner of the community, and the drug stores take advantage of the law, and sell it under different names.

Q. Does that arise a good deal from the fact of the moonshine distilling?—A. I do not think that has much to do with it. The license saloons are run very largely by the moonshine distilleries.

Q. What is your own general view on the question of intemperance among your colored people?—A. I think it is the curse of our race—one of the greatest curses of the colored man. You can hardly blame him, or expect him with an emancipation of 35 years to get out of what has been taught him for two centuries. He is very much of a copyist, a plagiarist, very adjustable, as you doubtless have observed. You take a colored man as a servant in your house, and he may be crude and coarse, illiterate; keep him there one or two years and he will speak almost as accurately as your own children, and dress much as you dress and act as you act. In other words, he is a great imitator, and, unfortunately for him, he has imitated his white brother in these vices as well as his good qualities. Hence his propensity for drinking whisky, which is one of the curses of his race. It is his misfortune. I am not trying to shift the responsibility, but it is his misfortune.

Q. It is not entirely from inherited habit?—A. Not inherited, but from a cultivated appetite. He never had it until his emancipation. But he thought he had done without it so long that he has been making up for lost time.

Q. Does not intemperance account for a good deal of the shiftlessness of your tenant farmers?—A. It is particularly in the cities and towns. It is true some

farmers go to town once a month when they have been paid their wages, and have a raze while the money is flush, but it is not common. The intemperance is largely in the cities and towns.

Q. Is it very much the custom of your people to leave the country and go into the cities and earn a very uncertain livelihood?—A. Very much so; decidedly.

Q. Is it the lack of frugality or industry that takes them to the city?—A. It is the oppressiveness of the landlord-and-tenant act, as practiced by the landlord, reducing them to serfdom. There is absolutely nothing before them on the farm, and they lose hope and go to the cities. That is one of the reasons—possibly the leading reason.

Q. They try to escape the conditions that keep them continually in debt?—A. Working year in and year out, with little food or clothing, with no prospect before them but to continue until they die.

Q. Is there much migration among your agricultural help in the South?—A. Not so much as a few years ago. There is now a general unrest in the State because of pending matters.

Q. Is there to any extent an emigration to other States, like Texas and Mississippi and elsewhere, during these troubles?—A. Where the people have been left to themselves to emigrate it has been largely to the North and East, and somewhat to the West; but where the agents with oily tongues come about and offer flattering inducements they have gone from one Southern State to another. That is true of the Mississippi valleys, along the banks of the Mississippi River.

Q. What are your views on colonization generally, either within the United States or expatriation?—A. I am decidedly opposed to either; I think it is bad for us. We, as a race, so far as we are civilized, have the white man's civilization—have copied it from him—and if there must be migration I do not think it is wise for either the white or black that the migration be in bulk either within the United States or without. But I do believe that the stress of the great mass of colored people ought to be relieved by a gradual thinning out. Take them here, there, and anywhere; lose them as it were throughout the whole country, that they may have a new impetus by the changed habits, educational facilities, changed opportunities, and in that way I believe if the colored man—if homes could be found for him among the people East, West, and North, away from the South—not enough to depopulate the South, but to relieve the overcrowded agricultural communities, where the supply is far in advance of the demand for labor—if these communities could be relieved by taking and distributing them here and there in one State and another, I believe it would be the best way to solve what is now regarded as the race problem.

Q. Do you suppose, under the system proposed by Booker Washington and others—to take sections as large as counties, where the colored people could be aggregated, and where they would have no particular leaning on the white element as in the South, and have a very fair idea of agriculture and the mechanic arts—do you suppose they could equally with the poor whites of the South support themselves and be equally independent?—A. Perfect equality of the two races, either in education, industry, or politics, is next to the impossible. Even though the colored man should be admitted to equality, the white man's superior civilization from long years in advance of him, and his supremacy, wealth, and superior education, would tend to keep the colored man his inferior.

Q. So you still think, after all, that whatever plans or modifications may be made for the betterment of the condition of the black man, he has got to lean on the white?—A. Very largely. They are dependent on each other. I do not know whether you live North or South, but if you go, say, to Wilmington, where all that murder and carnage was, or any other Southern city, and undertake to induce the colored men to pack up and leave any particular community, it will not be healthy for you there 24 hours, and not from the colored man, either.

Q. (By Mr. KENNEDY.) Is not the proposition to colonize the colored man outside of the United States so impracticable and impossible as to be unworthy of serious consideration?—A. I do not see how any thoughtful man can attach any importance to it whatever. Yet there are men, for instance Bishop Turner, whom I know to be a very able man; but it is a hobby of his, and I think he has an underlying purpose to accomplish—another end in view. He knows his white neighbors do not care to have the negroes leave, and I see no other reason that he could have but to arouse them to mete out justice and equality to them in order to keep them there. I can see no other reason.

Q. Your theory would carry with it just the reverse of colonization? It carries with it a greater assimilation among the whites in all parts of the country?—A. Yes. Whatever civilization we have we have got from you. You have been our inspiration. Our aspirations have been from you; and wherever that has been

carried to the highest extent, and where there is a higher ideal and the colored man can grow up to it, he will advance and become a more useful citizen. But where everything is on the level, where his white neighbor is poor and illiterate, where there is no hope or sunshine, where he sees the horizon and it terminates before him, there is nothing to aspire to and he goes from bad to worse.

Q. That absence of hope and sunshine also reaches into the other race, does it not?—A. Yes; but I am speaking more particularly of the classes of people I know more about.

Q. The point I wish to bring out is this: That where the colored man of the South is in the majority, in districts or sections largely populated by the colored man, the absence of sunshine, the presence of degradation and poverty, reaches into the homes of his white neighbor and keeps him down on the same level with himself, does it not?—A. To a certain extent, yes; but eliminating South Carolina and Mississippi, there are very few communities in the South where the negro is in the majority. We have 96 counties in North Carolina, and only 8 or 9 in the whole State have a negro majority, and then only a small majority of 100 or 200.

Q. (By Mr. PHILLIPS.) How is it in your district?—A. In my district there are 5 counties out of the 9 that have a negro majority. Two have a margin of 200 or 300. The other 4 have an overwhelming white majority.

Q. Then you got a great number of white votes?—A. A great many. I am sent to Congress not on black votes alone.

Q. (By Mr. RATCHFORD.) We have testimony to the effect that as a result of the keeping down of the colored man he works for low wages, and the white man who is obliged to work for a living can not hope to get much more than the colored man obtains for his labor.—A. Under certain conditions that is true.

Q. They do not need to have a majority to bring about such a state of affairs?—A. We have in the South cotton and woolen factories here and there. With an isolated exception now and then the colored man is not allowed to work in them at all. The colored man does not compete in these instances with the white labor. Until recently they have had almost a monopoly of the skilled labor—mechanics, carpenters, blacksmiths.

Q. They compete on the farm?—A. They compete on the farm.

Q. And could not possibly compete more directly anywhere else?—A. They compete there, possibly, more largely than in any other place. It is rare to find a white farm hand. They either rent for themselves or have their own little plot of ground in eastern North Carolina. I do not know so much how it is in the western part, but there are very few colored families there; they have little negro competition.

Q. Then, if the plan advanced by you is a good plan, it would also advance his white brother?—A. It would relieve the strain—leave a better outlet for the white man and for the colored man, and better, in my opinion, for the one who is carried and lost in the civilization of you white people in some other section.

Q. (By Mr. PHILLIPS.) You spoke some time ago about having families move to various parts of the country—North, East, South, and West.—A. Not South.

Q. North, East, and West. Would the climate have any special effect on the colored man in the far North? Can he endure the northern climate as well as the white man?—A. The mortality immediately after the war among those that went North was very great. It is diminishing constantly. Their children are not affected by it. I was over in Canada in the summer time and also in December—in Halifax, Nova Scotia, and St. Johns—and never heard of pulmonary troubles. They went from North Carolina, largely, soon after the war. And I find a great many of them in Massachusetts and in Maine—healthy, strong apparently as the whites. But you take a grown colored man, past the middle age, reared in the South, and carry him North and he will, in all probability, contract some pulmonary trouble, though the younger class become acclimated. I was in Minnesota last spring, and in the intervening country up by way of Chicago, and I found out there some very thrifty, healthy colored people—strong, robust, with no indications of any pulmonary trouble.

Q. You do not find much effect of their inheriting these pulmonary troubles in the North?—A. No. True, it is an inheritable disease, but where it is contracted by reason of a change of climate by the adult, the child, usually born prior to that time, will not have it, because the germ did not exist in the parent at the time of the birth of the child, but was contracted afterwards.

Q. You do not find the disease of consumption following the colored more than the white in the North?—A. Except when the transfer is made when they have passed well along in life.

Q. Can you suggest any amendment to the landlord-and-tenant act which will make the condition of the tenant farmers better, or enable them to improve it,

without extending immunity for crime—that is, theft and embezzlement?—A. As I stated a while ago, in my opinion the abolition of the homestead law in North Carolina would tend to better their condition along the line of your inquiry.

Q. Are there not advantages in the law which you would desire to preserve?—A. Decidedly so, if it were possible.

Q. Could you not?—A. Unfortunately we have over 2 white men in our State to every colored man—2½ white to every colored man, woman, and child.

Q. (By Mr. KENNEDY.) If you were to repeal the statutory law on that subject, would not, as has been already suggested, the common law thoroughly cover the case?—A. Not all, no. A great many are new statutes. Most of our common law we got from England. It is not of our own creation, notwithstanding it may date back to a time when the memory of man runneth not to the contrary; it is not common law unless it came over from the English common law.

Q. In a case of this kind, where the owner was to have one-half the crop and the man who was cultivating it was taking from that crop, so that when the time for division came his share would be diminished just so much, would he not be liable under the common law?—A. No; because the crop is attached to the real estate, and real estate can not be stolen. It must be made so by statute, and whenever it comes to legislating it goes on and on and on.

Q. (By Mr. PHILLIPS.) Have you any suggestion for a State law for the benefit of the colored people in your State?—A. A State law? Yes; but wholly without hope.

Q. What would you suggest?—A. I think the landlord and tenant ought to be put on equal footing. I think the law ought to bear equally on all. I do not think the entire advantage ought to be placed in the hands of one to oppress the other without redress to the other. I think there should be some remedial steps, and that should be done without hurting the landlord's rights, but it has not been done. I was 4 years in the legislature myself, 2 in the senate and 2 in the house, when times were better with us than now.

Q. You say it could not be done without hurting the landlord's rights; do you mean that in absolute form?—A. Rather in a restricted form. I believe there could be plenty of laws enacted, if there is a willingness to do it, that will absolutely protect the landlord and at the same time lessen the oppression on the tenant; but there is not a disposition to do it. I am not familiar with the landlord-and-tenant act in other States, but I suppose it is about the same.

Q. Have you anything to suggest in the way of a law that might be of benefit to this commission or to other sections in the way of legislation?—A. I do not think that I have. If it is the desire of this commission I will think over the matter and at some time in the future formulate an answer to you. You understand a man of my race in Congress is necessarily a very busy man. I should not like to give an opinion where I have not an opinion. If it is the desire of the commission, I will at some time subsequently give you a written statement, if you desire it, or verbal, after I have had an opportunity to think it over.

Q. We should be very glad to have you make such a statement as you have designated.—A. I should be glad to do that at a subsequent time. There was one other matter I had in mind to speak of, and that was with reference to the convict system in our Southland. I guess you have had a good deal of testimony on that line.

Q. (By Mr. FARQUHAR.) We should like to hear you.—A. At some other time?

Q. Now, if you have the time.—A. In some of our States, especially the South—and I speak from information obtained not wholly in a second-hand way; I have traveled in some of the States, and in some the convict system was terrible. This homestead law in these Southern States has multiplied crimes. The punishment for the most of these crimes is severe. The result is the penitentiaries are filled with people, and a large number of them are colored people. In Georgia especially the system is said to be a very bad one, but it is not that which I have reference to. It is the free labor that is greatly hurt by the convict labor. In that State the most of the convicts are farmed out. You can farm them out and work them on the turpentine farms. My half-brother lives in Georgia, and I have talked with him about it. In Georgia they farm them out on the turpentine farms, where they scarify the trees and dip and haul and distill, and it is all very largely carried on by the convicts to the exclusion of free labor. They work on farms, on the public roads, on canals, and all classes of labor, where, as you doubtless know, the colored people constitute a large percentage of it. It takes the bread and butter out of their mouths, and they are left without a livelihood. This especially reduces the daily or monthly labor, because these convicts are hired out for a little more than enough to pay the ordinary expense of keeping them in the penitentiary.

Now there is another fact I have had my attention called to which is on the line of the landlord and tenant. A convict, during his stay with his lessee, at some time may have misappropriated a spoon, or a knife, or a frying pan, or something that was given him to eat with or cook with during his stay. At the expiration of the time the lessee says to him: "You have stolen a spoon, or a frying pan; you have misappropriated a tin plate. Now, I do not want to punish you; I do not want to prosecute and have you sent to the penitentiary again. If you will work for me here 12 months longer, I will not punish you." Rather than go to court and take his chances, he works on for another year. I speak of the fact to show the utilization of this serf labor, convict labor, to the exclusion of free labor. With us in North Carolina it has not got to that yet, and I trust will not. We have spent several hundred thousand dollars in the purchase of farms; we have built barracks and dwellings for the officers and guards and so on; we have experimented with it and like the system, and all the able-bodied men, not incarcerated for life, are sent to the farm to work out their sentences on the farm, so the penitentiary is about self-sustaining. Within the walls of the penitentiary, where we can not carry them out under the rules to the farms, we make brick; supply a whole county or community, or half the State with bricks that we make there. All the public buildings of Raleigh are made of public brick. And then we have a shoe factory; and while the convict shoes have been confined to the convict farms, now they are getting into the stores. I believe the interstate-commerce law contemplates the prevention of the importation of convict-made goods from one State to another. I believe in our own State it is a great disadvantage, but I have not a remedy, because these convicts must be cared for and the expense must be paid. But it is hard on a particular class. Here is the laboring class deprived of labor sufficient to pay the entire expense of the convict, while the wealthy people are not taxed at all under our present system. But it is one of the best I know of. In South Carolina, Georgia, and other States it is as I have indicated, where they farm them out.

Q. Is there not a system also by which the convicts of the county can be taken from the city prison—taken out and worked under the law?—A. Yes. A good many have workhouses, and wherever they have, instead of the judge sentencing the culprit to the penitentiary, he will sentence him to the workhouse, and he goes out and works on the farm. They work them on the public roads in Wake County, and they build highways and work them on the streets in Raleigh, to the exclusion of plenty of colored and white laborers who can not get the labor.

Q. (By Mr. KENNEDY.) When they are working on county roads, they are not interfering with free labor to any extent. Do you know of any cases in the South or anywhere else where the work on county roads is paid for?—A. In the county where I live they are paid. The men are hired under an overseer, and he hires them and pays them to do that work.

Q. Country roads?—A. Yes; and that is so in several of the counties in my own district.

Q. (By Mr. PHILLIPS.) How are they guarded and kept?—A. They are kept under a guard. Most of them are regarded as trustees where the term is short. They have two or three guards with guns and they march them to the barracks at night.

Q. Not chained in any way, as a rule—not shackled?—A. Not in North Carolina, as a rule, but in Georgia they are tied together like beasts. I have seen them in Atlanta.

Q. (By Mr. CLARKE.) Do you think the convict systems of these States are so framed and conducted as to make criminals and keep them criminals?—A. I might do them an injustice by answering that in the affirmative. I have a very strong opinion, but possibly have not enough data to answer it in the affirmative. I should prefer not to answer it. I could not conscientiously say no, and I should not like to say yes.

Q. (By Mr. KENNEDY.) I should like to say, as to paying wages for work on county roads, I never heard of it except in building toll roads.—A. That is recent legislation in North Carolina. There was a tax imposed for that purpose, and it is called the road tax, and that road tax is collected and kept separate and apart for each township of the county. Overseers are assigned to the roads, and they are to keep up the roads with so much money, and they go and hire labor where they please. The best system of roads we have ever had was under that plan. The law was modified by the last legislature, and I am not informed exactly as to the present law.

Q. Most of those who are in favor of employing convicts for State use only are, in favor of employing them on the State roads only, because there is little or no

competition with free labor.—A. That would have been of great benefit some time ago.

Q. (By Mr. RATCHFORD.) That is still generally true of the States?—A. I think so; but in Georgia and some of the other States it is not so. They put them on the turpentine farms, in the cotton fields, and everywhere else.

Q. (By Mr. KENNEDY.) Is there much of the turpentine industry in North Carolina now?—A. It is nearly a thing of the past. They have never been worked on the turpentine farms in North Carolina. I spoke of Georgia.

Q. (By Mr. CLARKE.) Would not the employment of convicts in the construction of permanent public roads, better roads than the country has ever had before, make them less competitive with free labor than if they were employed in private industry?—A. The least possible evil is work on the public roads, with reference to competition with free labor.

Q. (By Mr. RATCHFORD.) Measured by results?—A. Measured by results. Is there any further question you gentlemen would like to ask?

Q. You are going to submit a supplementary statement with reference to remedial legislation as between the landlord and tenant?—A. That is the only thing you suggested. If there is anything further you desire to examine me on, I should like to have an opportunity to think of it.

Q. You have not given any testimony with reference to general taxation?—A. No; do you care to examine me on that?

Q. That is a question that has been dealt with by other witnesses from the South, and I should like to hear you on that.—A. Just now?

Q. If it is not imposing on your time.—A. Our taxes in North Carolina—I can not say that they are very high considering all things, and yet in the cities we have to pay a pretty heavy tax. I have never found any fault with the taxes. I have regarded them as a necessity, and if they were high it was a necessary evil; and even with the taxes as they are our schools which have come through taxation are very poor. I can not say that I have anything derogatory to say with reference to taxes in North Carolina. I think they are fair and equitable. We have an income tax there on salaries and wages that some have grumbled about. It hits me and a great many others, but then I think that is nothing more than right. If I get \$10,000 as an income from my property, wages, or profession, or office, I do not think I should be exempt simply because that is not a vested property right—that I should be exempt, and that it should come out of some poor fellow that has only \$150 worth of property. I think, being able to do it, that I should be compelled to pay a portion of the taxes. I have got it, as a rule, not always through my own labor, but through the ability to manipulate some other man's earnings, and I should be forced to pay that tax.

Q. (By Mr. KENNEDY.) Does the State tax your Congressional salary?—A. Yes; I have to pay taxes on about \$5,000 a year; there is only \$5,000 a year exempt.

Q. (By Mr. PHILLIPS.) Do you think the agricultural industry pays too large a per cent in proportion to other property, or is it comparatively equal?—A. I think the taxation in North Carolina is pretty well equalized. I think our legislators have been, in the main, wise. I love North Carolina. I am not sufficiently informed as to other States to give you an intelligent answer.

Q. Will you deal later in your supplementary testimony with the question of education—the school question?—A. Limitedly, yes, I expect.

As to the question of interest. The maximum per cent of interest that can be charged in North Carolina, as you know, is 6 per cent. Until lately, by contract it might be made 8 per cent. In mortgages, instruments, liens of that kind, notes were always made by agreement 8 per cent—between grantor and grantee, whatever the instrument may be. The recent legislature has made it 6 per cent in all cases. That has kept a great deal of money out of the State. We are not a wealthy people, nor are we paupers. There is a normal condition existing in North Carolina. There are a few extremely wealthy people, and it is a rare thing to see a beggar. Nevertheless, there are a great many poor people there and as a result there is a great deal of surplus money, and a great deal of the floating money has been obtained without the State. This legislation, making the maximum interest that could be charged 6 per cent, has tended to keep a great deal of surplus money that has been thrown into our State flowing out of the State. You do not mind putting money out in your own State, where you know the men and securities, at 4 per cent; but when you send it down to North Carolina you want a larger per cent, as the risk is greater. The result is, a great deal of the money which would have been brought into this State by building and loan associations and otherwise has been kept out. Building and loan associations have been frequently driven out of the State. My opinion is that, while it may have helped some, it has hurt a great many. I do not think the legislation was wise.

Q. You spoke of interest; do you mean simply statutory interest, or the interest charged between man and man in their dealing?—A. In some cases 20 per cent is charged, as in these store accounts; 50 per cent in many instances.

Q. (By Mr. RATCHFORD.) There is no trouble in borrowing money on real estate security, is there?—A. Very few care to take real estate security. They prefer personal indorsement; but if they take real estate security, they want the personal indorsement of some man whose solvency is beyond doubt.

Q. Is it not sometimes secured by the crops in the ground?—A. Very small quantities. That is along the croppers' lien business, but as a rule that is not cash. There are very few tenants who get cash on a croppers' lien from the landlord or the storekeeper. I am the tenant, and you are the land owner [indicating]. You make your contract here with the storekeeper to get certain things, and you sell to me whatever you please. There is very little cash business. If I want something at the store I give security, and I go to the store and get whatever I want, and it is charged to the landlord and he puts it up against me.

Q. (By Mr. CLARKE.) When you state 20 to 50 per cent is charged in a store, that is not charged as interest, but as a profit on goods, is it not?—A. Yes; almost no money passes between.

Q. (By Mr. RATCHFORD.) Is that scrip you speak of negotiable?—A. It was until recently. We passed an act there prohibiting negotiations of the scrip of that character.

Q. Do you regard stores that you speak of, which I suppose may properly be called truck stores, as an evil to the common people?—A. They are absolutely necessary, stores of some kind.

Q. As conducted at present, do you regard them as evil?—A. If we had any other place where we could get our supplies; yes, sir; but usually it is getting them there or not at all.

Q. (By Mr. CLARKE.) Has the destruction of the negotiability of that scrip driven the scrip out of existence?—A. No, sir; it is largely the practice now, but it is unlawful.

Q. (By Mr. RATCHFORD.) It is very difficult to make a law that will reach it, is it not?—A. Yes.

(Testimony closed.)

CHARLOTTE, N. C., March 13, 1900.

TESTIMONY OF MR. WILLIAM A. GRAHAM,

Farmer, Machpelah, N. C.

The subcommission of the United States Industrial Commission met in the rooms of the Southern Manufacturers' Club at 10.40 a. m., Mr. E. A. Smyth presiding. Mr. William A. Graham, farmer, Machpelah, N. C., was introduced as a witness at 4.45 p. m., and, being duly sworn, testified as follows:

Q. (By Mr. SMYTH.) Will you give your name?—A. William A. Graham.

Q. Where do you live?—A. I live at Machpelah, Lincoln County, N. C.

Q. What is your occupation?—A. I am a farmer, sir.

Q. Will you tell us something about the conditions of farm labor?—A. I will state first that I am a member of the board of agriculture of the State.

Q. (By Mr. RATCHFORD.) State board?—A. Yes; and have served in the State Senate, and also president of the Farmers' Alliance of the State at the present time.

Q. (By Mr. SMYTH.) Now, make your statement in your own way. We should like to know something about the general condition of labor, both white and colored.

The WITNESS. Agriculture has not been remunerative with us. We have been keeping away from it on account of the low prices of our products, and it has not given us any money for several years past. The price of cotton is now at a very good figure, but unfortunately the farmers have nearly all sold, having sold out at the close of the crop. The farmers of our country here have come for the last few years to farm a good deal better; looking forward to permanent improvement for a good many years. There was no permanent improvement of the lands. But a few years ago they turned their attention to the pea as a renovator of the land, and large areas were sown in pease, not only for the forage they would yield, but for the improvement of the land for the cotton crop. We found by using the pea we reduced the amount of fertilizer we had to have next year. It will supply

the ammonia, and then it is a simple thing to supply the phosphoric acid and potash. There are sections of our State which have nearly altogether what we term croppers and renters. A cropper is a farmer who furnishes his labor, and the landlord does the rest; he furnishes the land and utensils. Then the landlord pays for the fertilizers which he gets, in proportion to his part of the crop, and the cropper his portion: With us the cropper receives from one-third to a half; sometimes two-fifths. That is the only way that we can farm in this country. A man who attempts to farm for wages goes into bankruptcy, sir. You may not see very well how that is. Cotton now is selling for 10 cents. If we should calculate our crop at 10 cents, and make our engagements with our laborers at that rate, and then it went to 6 or 5 cents, you can see just exactly what would happen. I speak for western North Carolina; I have not been in the eastern part, but I think this system prevails generally all over the State. Then there is another system, the tenant or renter.

Q. (By Mr. RATCHFORD.) Describe that system.—A. The renter furnishes the stock, and the landlord furnishes the land and the house in which he lives, and he pays him one-third of the grain, and one-fourth of the cotton in some places and in others a greater or less part of the crop.

Q. (By Mr. SMYTH.) In furnishing the land and house, that always includes the wood, does it not?—A. Yes; and fully an acre for garden purposes.

Q. (By Mr. RATCHFORD.) The wood and fuel is supplied?—A. Yes.

Q. (By Mr. SMYTH.) Which, of course, is a very important matter to a household?—A. There is no limit to the fuel, except to require him to cut the dead and damaged trees. They do not want them to cut the good timber for fuel.

Q. Now, are most of the croppers or renters in your section black or white?—A. In my county, sir, four-fifths of our population are white. In my end the negroes are about one-third, and at the other end of the county there are only two colored votes at one precinct. There is no difference in the prices paid; the colored cropper gets just the same proportion as the white man, and so does the colored renter. Some few negroes rent land.

Q. Do you find that the colored men make as good renters as the white men?—A. A good white man is better than a good negro, but a good negro is much better than a mean white man. If you can get an intelligent white man whom you can depend on, he is the best class of labor, but if you get an unreliable fellow, the negro is better.

Q. (By Mr. RATCHFORD.) Is it true that a larger percentage of the negroes are indolent than of the white men?—A. Yes.

Q. Farm laborers?—A. Yes; I think that is true; he is more usually satisfied when he is indolent.

Q. (By Mr. SMYTH.) Are they more unreliable in regard to a trust?—A. Well, I do not know. Some of our negroes are as reliable as anybody, but the larger proportion of negroes are more unreliable than white men. I do not think that the negro as a farmer has improved in the last 40 years, since freedom. If you give me one of our old slaves that used to belong to us, who was taught his farming under an overseer or owner, he is a better farmer to-day than the new crop. However, there are some exceptions.

Q. (By Mr. RATCHFORD.) Farmers have advanced in other lines?—A. Yes; they are more intelligent and they live better now. When we speak of the condition of the farmers, the demands of the farmer to-day are much greater than they were 30, 40, or 50 years ago. If they had coffee for Sunday or sugar two or three times a week it was all that was expected; the supplies of the family were not as good as they are these days.

Q. I understand you to say that the colored labor, farm labor, has not improved in the last 40 years?—A. I do not think so much as some classes of labor improve in other lines.

Q. (By Mr. SMYTH.) You mean the general laboring class in North Carolina?—A. No; I mean colored labor. Well, I do not know, sir. We had among the slaves blacksmiths and carpenters that were the equals of what we have now.

Q. Is education more in evidence among them now than then? They are improving in that direction?—A. Yes.

Q. (By Mr. C. J. HARRIS.) Do you think the farmers—by that I mean men who own the land, men who follow the business of farming—as a class have improved much in their methods since the war?—A. Well, yes, as a class they have. We had among us farmers before who were exceptionally fine farmers. I think now as a class they have improved, yes.

Q. (By Mr. SMYTH.) Do you not think the improvement dates back 8 or 10 years to the improvement of the soil?—A. Yes. As to the question of farm labor 40

years ago: Thirty years ago, almost, I think a larger per cent of the young men of this section as they grew up emigrated—went South or West about 1878; from that on, they ceased, and consequently our country has been filled up with laborers, so there is a much larger number engaged in agriculture than were formerly. Now it is very seldom you see a man emigrating. When the Georgia lands (Cherokee Indian) were opened, and after that Mississippi and Louisiana, a great many people of this section of western North Carolina sold their lands and went to these places, and then we had a large number of old fields, abandoned lands.

Q. The cotton mills have drawn very largely on agricultural labor, have they not?—A. They have.

Q. So if he is not satisfied with the present conditions, he has the cotton mills to fall back on?—A. Yes; he not only does that, but a man will buy a piece of land, contract for it, and rent that land to some other man, and he will go to the cotton factory and make the money to pay for it. I know of instances right among my own people. It is not that they prefer factory labor, but it is the long credit on farms, sir. That is where it is; wait until the crop is made before you can get anything, while in the factory every Saturday night you get cash pay.

Q. And that is the practice?—A. Yes; that is one reason.

Q. In other words, it is a rather new thing in Southern life to receive cash payments from week to week?—A. Yes; but the poor returns from the farm and the large families helped to induce moving to factories. A family of 10 to 14 is no unusual thing in this Piedmont section. Where they are only getting from 3 to 5 cents for cotton, it did not yield enough for his board; and such a man would take his family and go to the cotton mills.

Q. (By Mr. C. J. HARRIS.) What are you raising—tobacco?—A. I make tobacco; made a fortune on that. We have cotton, corn, etc.

Q. (By Mr. RATCHFORD.) Do you attribute any part of the general depression to the large care that the average man has on him in the way of a large family?—A. Yes; and more especially to the fact that he can not make enough to support them.

Q. That is generally true of the poor classes, is it not?—A. Yes. This coming to the factories has a bad effect in some instances. It has where the man puts his family in and he spends his time loafing. He is a very trifling citizen. He lives on what they make, and instead of being the mainstay of the family, he stays himself on the family; that is the exception, though.

Q. (By Mr. C. J. HARRIS.) Are you at all familiar with this movement of tobacco growers as against the Tobacco Trust?—A. Yes, sir; the price of tobacco has gone down, I think, if I am not mistaken, over 50 per cent in the last 8 or 10 years, while the crop has decreased. Cotton has gone up because the crop has decreased, but the crop of tobacco decreasing has put the price down in this country.

Q. To what do you attribute that?—A. The combination, the Trust. They agree what they will pay for it, and one will not bid against another.

Q. (By Mr. SMYTH.) A combination of buyers?—A. Yes, sir. When more than one wants it they say, "You take it to-day and I will take it to-morrow; or you buy it and I will take what I want from you."

Q. (By Mr. C. J. HARRIS.) So the tobacco grower really has no idea what he is going to receive for his crop when it is harvested and sent to the warehouse?—A. No, sir.

Q. (By Mr. SMYTH.) And the competition of demand and supply has been eliminated?—A. Yes, sir; entirely. It is agreed that you go to a certain market and all competition on that market is withheld from you.

Q. You think that is established without doubt?—A. I think so from the testimony. You understand what the Association means to do, Mr Harris?

Q. (By Mr. C. J. HARRIS.) Yes, I have followed that.—A. They intend to put the price in their own hands. We say we will fix the price; that they can have our tobacco at a certain price. I do not think there is any doubt but dealing in futures has a very great deal to do with the low prices we get for our products, and it really seems to me that the Government ought to treat that exactly as they did the lottery. These futures should not be allowed to go through the mails. The lottery robs you after you have made your dollar; it does not come in and say you have got to take 60 cents for that dollar, but you make your dollar, and if you are fool enough to put it in here I will get it. The future man robs you of the dollar by giving you 60 cents for it. If you can get Congress to see it in that light and treat it as a lottery that will break it up. If you stop it they will still have it in Liverpool; but so they have got the lottery in Habana and Paris.

Q. Now, if the farmer can hold his cotton crop?—A. I am president of the Cotton Growers' Association, and we are endeavoring to make arrangements to that end.

Q. Is there in the farming community any ready money to enable them to do

that sort of thing?—A. No, sir; there is very little of it. The farmers in our section here, a great many of them, have bought homes in the last 30 years, and consequently they are in debt, and they have to raise cotton for the credit. There is one thing I want to impress upon you: Cotton is the thing to get credit on in this country. Ten acres of cotton will give you more credit than 50 acres of corn.

Q. (By Mr. RATCHFORD.) Is cotton accepted as security before any other crop?—A. Decidedly.

Q. And sometimes accepted as security before land values?—A. Yes, sir; I do not know but it is. If you wanted to run a farm, and came to town here and gave a mortgage on your cotton crop there is no difficulty, but I have seldom known of any taken on the grains. You can always sell cotton. You leave home with a wagon load of cotton and you will go home that night with the money in your pocket; you load up your wagon with wheat or corn and come here with 100 bushels, and I doubt some days whether you could sell it.

Q. Sometimes your farmers find it necessary in buying homes to mortgage their holdings; have they any trouble in raising money on their land?—A. Recently they have had. There has been a scarcity of money in our country. Very few men have money to loan, and the national banks can not loan on land.

Q. What per cent do you pay?—A. Formerly 8 per cent; 6 now. Eight was allowed if specified in the contract, and 6 if no rate was specified.

Q. The law does not preclude the making of special contracts by the parties?—A. Yes, sir. We have the national banking law. We had a law here before that that a man forfeited his whole debt if he charged usury. They passed a law—I forget what the forfeiture was—but that would not apply to national banks. Then we made our law conform to the national banking law, a forfeiture of double the interest charged in excess.

Q. Under the law more than 6 per cent can not be charged without usury?—A. Whatever is charged in excess of 6 per cent, double that amount can be recovered. It may be a little in politics, but here is the trouble with the finances as I see it. A community ought to be able to raise the money it needs on the property of the community. Money is simply the vehicle of commerce furnished by the Government, and there ought to be some plan by which the money needed in the community could be raised on the property of that community. If you give to one community the right to issue money on its property, and refuse it to another, you simply give to the community to which you allow this right the power of taxation on the other to that extent. It may be a small amount, but it is that much. The effect is the same if you limit the right to issue to property held in certain sections.

Q. (By Mr. C. J. HARRIS.) In your experience, are those who mortgage their farms able to pay their interests and eventually the principal in this country?—

A. I can answer from my own experience. I have been an agent for 30 years selling property, and one year with another it pushed them to do it. A man will make a contract to pay out in 8 years, and you frequently have to carry him 10 years.

Q. Do not quite a number of them lose their homes and farms eventually?—

A. I think that public sentiment would condemn that. It has been done only in a few instances. They would have to do it if the men took advantage of what the law would allow them, but public sentiment is against it, and the poor returns from farming do not make the seller anxious to possess the land.

Q. What I was trying to get at is, do they ever get out at the end of 10 years?—

A. Oh yes. I have sold thousands of acres, 3 or 4 thousand acres in the last 15 years, and they have paid out in 10 years. Two men came in and surrendered out of about 40.

Q. (By Mr. RATCHFORD.) You were speaking of the comparatively small difficulty in selling cotton as compared with the other crops. Is the cotton sold usually by the man who raises it to the manufacturer, or is it sold to agents?—A. It is nearly always sold to the manufacturer. I could leave home this morning and have the choice of 32 mills and not travel over 40 miles, and put my horse in my own stable that night.

Q. (By Mr. SMYTH.) Can you telephone and find out what they will offer for cotton?—A. Yes; that is what I do. I telephone, "What is cotton worth to-day?" The last cotton I sold I made a half cent a pound by the use of the telephone.

Q. What is the market here as compared with New York?—A. Nearly always higher. Our market is nearly always higher when cotton is low. We can generally sell here during the first months of the fall; and frequently get a cent higher in Charlotte than in New York.

Q. That is caused by the local mills?—A. Yes.

Q. (By Mr. C. J. HARRIS.) That has been a good thing for the farmer?—A. Yes, sir.

You ask about the benefit of farmer's organizations. The Alliance, in its palmy days, was a great benefit in this State to the farmers. It nearly broke up the lien system. The Alliance would furnish these men who had to have supplies; it would borrow the money and buy the goods and sell to them at cash prices; and flour, which they had to pay about \$4 a 100 for, they could get for less than \$3; molasses and sugar the same way. The Alliance would not register its mortgages, because, while you might lose the debt, you had the criminal penalty on him, and a man could not afford to evade his debt without fear of being punished by the criminal law. Many farmers who could not pay these extra prices got to making money and got on their feet. I do not suppose the mortgaging of crops has even to-day got back to two-thirds what it was formerly.

Q. (By Mr. RATCHFORD.) Was it not of great advantage to the farmers to continue that organization?—A. Yes, sir; unfortunately politics got into it, and that nearly "busted us up." We are still holding on, though, and it will gradually come back. The tobacco men will all come to us. I look for a reorganization with politics eliminated.

Q. (By Mr. C. J. HARRIS.) What is your membership here now?—A. I suppose between 5,000 and 6,000 in the State of North Carolina. They always were irregular, sometimes a difference of 4,000 or 5,000 in a quarter when in full blast. Now there is one thing that you gentlemen can examine into, and that is the advance in the price of fertilizer; that can not be anything but a trust. The raw material is controlled wholly or in part by these companies who make the fertilizer. Take the phosphate rock; take the cotton-seed meal; the potash is imported 12 months ahead from Germany. They made fertilizers last fall and put them on the market at the old price up to the 1st of September. They began to sell at the same price in January, and suddenly they went from 15 to 25 per cent advance. There can not be any excuse for that except the power to do it. You could in your commission summon these witnesses before you and look into that fact. It certainly affects us very much. If we are trying to improve our farms we want to use the fertilizers, which are a great benefit.

Q. Would not the general advance in all values seem to justify an increased price for that product?—A. They are selling us fertilizers at the price of 10 cent cotton, while we may have to pay for it in 5-cent cotton. That is where the trouble comes in. We can not apply it to the cotton already made, but have to pay for it with the cotton next fall.

Q. The men that manufactured these things have to pay more for the wages and for the machinery—perhaps 40 per cent more than they did?—A. There is only one—cotton seed—those that use cotton-seed meal; but in the potash and phosphate and acid there is no reason. There is more phosphoric rock apparent in the world by 50 per cent than was ever known before.

Q. (By Mr. SMYTH.) But has not the farmer got a better price for cotton seed than he did last year?—A. It is 22 cents as against 14 cents last year; but take the acid phosphate, which is simply taken out of the rock.

Q. (By Mr. C. J. HARRIS.) The advance in the price of phosphate rock you think will not warrant it?—A. No, sir. The advance of phosphate rock is as if you owned a farm and a mill and you put up the price of wheat to yourself and the price of flour to me.

Q. (By Mr. SMYTH.) You think these companies own the phosphate rock?—A. Yes, sir.

Q. Are you sure of that?—A. I am on a committee looking into that. We have to make a report next month, and we think we are on the track to show it. There is another thing about it. In Wilmington, which is down on the seacoast, fertilizer is higher than it is 100 miles inland. They have distributed the State and put the prices as they strike competition.

Q. Are there fertilizer works in the State?—A. Yes, sir; here and at Nevassa, Wilmington; then at Raleigh there are phosphate works, and at Winston and Goldsboro. The Acme works at Wilmington are independent. Through the Alliance we endeavor to make arrangements for the whole body. We buy several thousands of tons at a time.

Q. You have no lien law in this State?—A. Yes, sir.

Q. Is it similar to the one in South Carolina?—A. To some extent. The landlord has the first lien, without any writing of any kind, for the supplies which he advances to the tenant, and he has a lien on the crop until all that is due him for rent and supplies is paid.

Q. Have you an agricultural contract law?—A. The bargain is the law. At one time we had a written law. The objection to the written law is that so far as your tenant is concerned it might as well be in Hebrew as in English. What does he know about what he is signing? He is the sufferer. The first thing was

to get a verbal law so that if he did not know a letter he could understand what the contract was. The verbal law is the very thing for the poor uneducated. If you have a written contract, the written contract is the law, but if you have a verbal contract the laborer has his oath as to what it was.

Q. You mean the written contract shows for itself, whereas the verbal contract can be explained?—A. Yes, sir.

Q. (By Mr. RATCHFORD.) Is that equally binding on both parties?—A. Yes, sir.

Q. Can the farmer dismiss the tenant without violation of the law?—A. No, sir.

Q. Can the tenants leave the farmer without a violation of the law?—A. If the tenant leaves, the farmer is in a bad way, but if he has hired him to make a crop and runs him off he can recover his wages out of the landlord because the landlord is worth it.

Q. (By Mr. SMYTH.) You favor the verbal law?—A. Yes; it is the only thing in the world for the ignorant man. He may honestly try to recollect the written contract and may forget what it is, but if you have a verbal contract his word is as good as that of the landlord.

Q. (By Mr. RATCHFORD.) Where the written law is in effect, is it always executed, so far as the signing of the contract is concerned, before the justice of the peace or other officer of the law?—A. It would have to be recorded to be of value.

Q. Is it usually agreed to and signed by both parties without witnesses?—A. They usually have witnesses, but no official witnesses—a neighbor or anybody else. Then it is proved and recorded.

Q. You think a verbal law is still better than that?—A. Decidedly, sir; because you know these verbal contracts are based on the general system, and if you know what wages are paid in the neighborhood, that will help one or the other in his testimony.

Q. Have you any suggestion to make for the improvement of this class of labor?—A. No, sir; we get on pretty peaceably in this State, I think. The only trouble has been the low price which our products have brought. We have all been in the same boat. If it has been a good price, all share the benefit; if it is low, all suffer.

You seem to be specially interested in the schools. In this State we take a census of the school every year. It is the duty of the committee in each school district to do that. So we know in this State how many children there are of each race of school age from 6 to 21 years. Our tax is divided between the two races according to number without regard to race. Sometimes there is a small district with only 25 children; here is another with 150. The larger district had a longer school than the smaller one. Now the educational board makes a special appropriation for the small district and our schools are run on for the same time in every district without regard to number of scholars.

Q. (By Mr. SMYTH.) How long a time?—A. From less than 3 months to over 4 months.

Q. (By Mr. RATCHFORD.) What is the proportion of colored in North Carolina compared with white?—A. I suppose about one-third colored and two-thirds white.

Q. What is the proportion of taxes paid by the two races?—A. My impression is the negroes own \$3,000,000 out of \$200,000,000. So you can see the part the negro pays, except the poll tax, which is the same, and two-thirds of which goes to the school and the other one-third goes to the poorhouses, or county homes as we call them now. You spoke of these 8 and 9 months schools. The laboring people among the farmers can not spare their children for such a time as that. The large families which they raise come in again in this very matter of schools. Before the boys are 21 a great many of them are married, and the girls before they are 18, and instead of staying at home and helping the old man out they have crops of children started of their own loaded on him. That looks as if we were going into the funny part of it, but it is the honest truth. Another thing is the price of school books. The State ought to regulate that. I reckon some of you gentlemen are engaged in the Sunday schools. You know what Sunday school literature costs. There you get for 8 cents what in the public schools costs \$1.50. If the Sunday schools can make big money publishing that, why can not it be published for the common schools at the same rate? You take a man that has 6 or 7 children to send to school, and the schoolbooks for the children will cost as much as the shoes.

Q. Do you think the State should publish text-books?—A. It should contract for them, and either furnish them free or at a lower rate.

Q. In other words, at cost?—A. Yes, sir. A few States, California among them, publish their own books. Whether that is advisable or not is a question of economy and cost. Missouri furnishes them by contract. One child has to have

a geography, another a grammar, and so on. I have lived among these people and my daughters have taught in the schools. If he gets the books, he can not get the shoes, and he must have both to go to school. Our schools begin in December and run through the winter. There should be a term in the summer time.

Q. (By Mr. C. J. HARRIS.) Would not the objection be that it would take the child away when you need his services?—A. We "lay by" our crops in July, and from July to the 1st of September there is 8 weeks when they could go.

Q. (By Mr. SMYTH.) They go barefoot in summer?—A. Yes, sir.

Q. (By Mr. RATCHFORD.) You spoke of the inability of the poorer class of people to spare their children for 8 or 9 months in the year for school purposes. Is it not a fact that children between 6 and 12 or 13 years of age are of little service to their parents, and that they constitute a large proportion of the total school population?—A. You see they begin at 6, and that only gives you 2 years until the child is 8, and from 8 up they work right along.

Q. (By Mr. SMYTH.) Work on the farms?—A. Yes, sir; and by the time he is 10 years of age he is as good a plow hand as a man. These are points which it is right hard to get the people to understand.

Q. You say a boy of 10 is a good plow hand?—A. Yes, sir.

Q. And from 8 up they work on the farm?—A. Yes, sir; and they pick cotton from 6 up.

Q. Do girls pick cotton?—A. Yes; and chop cotton, too. That means they use the hoe in cultivating the cotton.

Q. (By Mr. RATCHFORD.) You say it is nothing unusual to see boys plowing at 10 years of age?—A. No, sir; oh, no.

Q. (By Mr. SMYTH.) Is that general in both races—colored and white—working the children as young as that in the fields?—A. Yes, sir.

Q. It is found to be a matter of necessity, is it?—A. Yes, sir; on account of low prices and the families they have to feed.

Q. So 1 child has to pay the penalty for having a good many brothers and sisters?—A. Yes; and then he starts out to having children of his own, instead of helping these brothers and sisters. Now, there is sometimes a good deal of objection to helping in the higher education, especially in the agricultural colleges or university. Here is one thing about that: If you increase the school fund and run on for 9 months, there is certainly one-third of that time that you hire a teacher, and the boys you intend to benefit are in the field working. If you give the higher education, it is true there are fewer to get it, but they are there for it. They will make an effort to feed and clothe themselves and get that benefit.

Q. (By Mr. C. J. HARRIS.) If there is anything now that you think of that you have not referred to, we should be glad to hear you.—A. About the wages of white and colored teachers. There is no distinction; the first grade gets so much, whether white or black, and the second grade the same way. We have no third grade; we have abolished that.

Q. (By Mr. RATCHFORD.) You have no difficulty in getting an ample supply of teachers?—A. No, sir; none at all.

Another thing: When you come to make your appropriation for agricultural and mechanical colleges here in North Carolina, why should it be divided equally in North Carolina between the races? We have twice as many whites as negroes. Even if the negroes were prepared for it, there would be two whites to one negro. I do not want you to take anything away from the negro, but I want to add a little more to the whites. In your own State, South Carolina, where they are nearly two to one, there are more white boys ready to take advantage of it. The teachers employed in these schools are of higher grade than those required in the colored schools, and consequently the same amount of money does not give the same number of teachers in the white as in the colored college.

Q. Do you find as much desire to attend school on the part of the colored as among the whites in this State?—A. The attendance is greater, but I think it is that they just like to get together, like church or anything else. I think more of them will go, but I do not think it is for the education. The negroes rather care for a meeting of any sort. That has more to do with it than the desire for an education. I heard the State superintendent of public instruction say that the rate of taxation on property in 1860 for educational purposes was greater in North Carolina than in Massachusetts. Our public school system has existed since 1840.

While you are looking into the cotton mills—the first cotton mill south of the Potomac River was built up here near Lincolnton, where Mr. Rhyne has a mill, and most of the machinery was made at Lincolnton, in the early part of the century.

(Testimony closed.)

CHARLOTTE, N. C., March 14, 1900.

TESTIMONY OF MR. CHARLES U. SHEPARD AND

Tea planter, Pinchurst, S. C.

The subcommission of the United States Industrial Commission met in the rooms of the Southern Manufacturers' Club at 10 a. m., Mr. Smyth presiding. Mr. Charles U. Shepard was introduced at 11.30 a. m., and, being first duly sworn, testified as follows:

Q. (By Mr. SMYTH.) What is your name?—A. Charles U. Shepard.

Q. Your place of residence?—A. The name of my plantation is Pinchurst, Summerville, S. C.

Q. What is your occupation?—A. I am a tea planter.

(Here the witness submitted samples of his tea and copies of Report of the Department of Agriculture, No. 61, upon the subject of Tea Culture.)

Q. We should be glad to have you give us the history of your business. When did you begin?—A. I began about 10 years ago. I purchased then a portion of the same large plantation which the Department of Agriculture occupied formerly. The Department of Agriculture, under Commissioner Le Duc, had established a tea farm. The first tea plant brought to this country was planted about 100 years ago on the Ashley River, about 15 miles from Charleston, S. C. Then subsequently, in the fifties, a good deal of interest was manifested as to the introduction of the tea plant and the establishment of the tea industry in this country. Mr. Junius Smith, of Greenville, S. C., made some experiments in the fifties, which attracted very considerable attention, and later the United States Government distributed, through the Patent Office, very considerable quantities of tea seed; they also brought over some tea plants from China. These gardens were established just before the breaking out of the civil war, and necessarily, owing to the resulting disturbance, they were either abandoned or neglected. However, it was well established that the tea plant would grow in the Southern States and that good tea might be made therefrom. About 20 years ago there came a Mr. Jackson to this country—John Jackson, from India—and started a tea plantation in Georgia. It attracted the attention of Commissioner Le Duc and he secured Mr. Jackson's services, and from Henry A. Middleton, esq., he secured the gratuitous use of some of this same plantation to which I referred for the establishment of an experimental tea garden, to be used to test the feasibility of establishing an industry in tea in the Southern States. But Mr. Jackson's health, which had been poor from the start, and which had been the cause of his leaving India, broke down completely, and for the lack of an expert and of someone who would devote his entire attention and energy to the promotion of the enterprise, the undertaking was adjudged by Commissioner Loring, who succeeded Le Duc, and by Mr. Saunders, the horticultural expert of the Department of Agriculture, to be more or less a failure, and was abandoned before anything decisive had grown out of the experiment.

So it was that about 10 years ago, knowing more or less about the previous experiments and what had been accomplished, I began my experiments at Pinchurst at my own expense, and up to the past year almost entirely so. During the past year I have received very welcome aid from the Department of Agriculture in the prosecution of my work. I saw from the start what the main difficulties would be. It was not a question of making a few handful of tea, either for the consumption of my household or distribution among my friends or tea brokers. I wished to produce enough tea to test the commercial aspect of the question, to see whether it would prove acceptable to the American trade and the American people would drink it, and, secondly, to get some figures as to the cost of producing that tea. Of course I was aware of the great disparity in the rates of labor in this country and in the tea-producing countries of Asia, but I was not deterred on that account. I felt that by the production of a higher grade of tea the disparity in the labor question might be overcome. But I wished to test the feasibility of selling large quantities of American tea in this country, because I expected that the tea would have a different flavor and a different taste from that made in any other country; and I knew that in the case of Ceylon, when the English tea growers of Ceylon attempted to introduce their teas into the mother country, they were obliged to practically give away one or two crops before they could get the people to drink it; and now the tea business has grown in Ceylon

from less than 200,000 pounds per year 20 years ago to 130,000,000 or 140,000,000 pounds a year at the present time. So I wished to make the experiment on a scale which would be sufficiently large to introduce the tea over the country and get the decision of the people as to its drinking properties. To that end I have planted between 50 and 60 acres of tea, and I am looking forward, when that tea comes to its full bearing, to a production of from 10,000 to 15,000 pounds a year. With that amount I can thoroughly test the acceptability of American tea to the trade of the country.

With regard to the experiment thus far, it is described in the report of the Department of Agriculture which I have the pleasure of submitting to you.

My work was of a tentative character. To that end I operated with all the different tea seed I could procure, either through the trade or through the kind offices of the United States Government—both the Departments of State and of Agriculture. I tested the cultivation of tea under as many different circumstances as possible—on highland and lowland, on sand, clay, and bottom land. It was natural that many of my experiments should prove unsuccessful, but I hoped that out of the many experiments a way might be shown to produce it successfully. I believe I have attained that object by using the character of seed best adapted to the climate; by selecting level rich land, capable of irrigation, but also well drained. Tea may be produced in this country readily at the rate of 400 pounds to the acre. I see no reason why it may not be produced at the rate of 600 or even 800 pounds to the acre. I have succeeded in producing at the rate of 400 pounds to the acre, with a yearly increase of 50 to 75 per cent in the production, and where the point of cessation in the increment would be I am not at present able to state. From my calculations, I think tea, at the present rates, may be produced at a profit of from 10 to 15 cents a pound; so that it should show a handsome profit as a result.

The object that I had in mind in this work, aside from the selfish one of occupation, was to establish a new industry in a country where tens of thousands of people lack employment; where it is very desirable to supply a healthy, easy occupation during the summer months for children and women particularly; also to find some use for the hundreds of thousands of acres of land suitable, as I believe, for the cultivation of tea, and which are now idle.

I am under great obligations to the Government, to Congress, and to the Department of Agriculture for the interest they have taken in my work, and the present agricultural appropriation contains a large sum to be devoted, on the recommendation of the Secretary of Agriculture, to the prosecution of my work. As to the subject of irrigation, we have only about 30 inches of rainfall during the 6 months of the season during which we pluck leaf, and the tea-producing countries have from 50 inches to 150 inches; and I propose applying irrigation and supplying that deficit.

Q. Secretary Wilson visited your farm when in Charleston last summer?—A. Yes, sir; he has shown the liveliest interest in the work, and the President of the United States did me the compliment of referring to it in his message to Congress. The children who pick the tea for me earn 20 to 50 cents a day.

Q. Your labor is all colored?—A. The tea pickers are entirely colored children. I have a school on the premises for the tea pickers, where they receive gratuitous instruction during the winter months. In fact, the school is kept open for 9 months in the year, and during the 6 months in which we pick they supply the requisite labor. No child is allowed to go to the school who will not pick tea at a suitable age, and all the tea pickers must go to the school.

Q. You make no restriction as to the age at which these children work?—A. None at all. Of course I do not regard it as profitable for a child of less than 8 or 9 years to go into the tea field, but the labor is extremely easy. It consists simply in pinching off the leaves we desire to pluck, between the thumb and forefinger, and putting them in a Swiss trout basket suspended at the waist. It is a very easy kind of labor, and the children are very fond of it.

Q. Easier than picking cotton?—A. Very much easier, and they can earn very much more wages than in cotton picking in my region.

Q. (By Mr. C. J. HARRIS.) How does your product compare with the imported teas as to quality? What is the judgment of experts on that?—A. There is a good deal of variation in the estimate of my tea. It is largely a question of taste, and that is chiefly determined by habit. I have brought you samples of my black tea. I also make a green tea. The green tea that I have made has been reported by the experts as inferior to nothing brought to this country. In the first place, it is a natural green tea. It has not been artificially colored, and the taste is different from any of the sorts in the market. So while the experts and those that have resided in China and Japan are enthusiastic concerning it, the

great majority of the people do not like it, just as they do not like the best types of Chinese and Japanese tea. There is very little tea brought to this country that costs more than 20 cents a pound in Japan. There is a great deal of tea grown in the far Orient that costs from \$5 to \$50 a pound in those countries, but that tea would not be liked in this country at all. People would not drink it.

Q. They are not educated up to that?—A. They do not like it. About my black tea—the teas that approach it most nearly command in the New York market from 30 cents to 40 cents, importers' bulk valuation—that would amount to 75 cents and \$1 retail.

Q. (By Mr. RATCHFORD.) Can you meet these prices?—A. As I stated, as an experiment it was necessary to try all possible conditions and all possible sorts; but working on the lines where I have been most successful, I feel every confidence in being able to raise the tea at a cost of less than 40 cents, even in my small way with only 50 or 60 acres; but proceeding on the basis of 200 or 300 acres it would cost very much less, on account of fixed charges, machinery, etc. That tea I have never had any trouble in selling at above 40 cents a pound. I do not carry any tea over from season to season.

Q. You have been able to sell all that you produce?—A. Always, without trouble. I never carry any over into the next year.

Q. (By Mr. C. J. HARRIS.) Did I understand you to say that a rich bottom land was best adapted to tea?—A. Land rich in humus; it must never be peaty nor must it be crayfishy; on the other hand, it must be a light, porous, loamy soil, favorable for the development of the roots of the tea plant. It is a great feeder. There must be an abundant supply of water, and excellent subsoil drainage.

Q. What zone of country would be adapted to tea raising?—A. A very large field in the Southern States. That would depend on the sort of tea that it is decided to cultivate. The sorts of tea from China, Japan, and the Himalayan provinces of India might be cultivated over a very large portion of the southeastern and Gulf regions. The teas from Assam, Ceylon, and other tropical and subtropical climes might be cultivated over a small portion of the country. They will not tolerate frost and ice, and as we well know, there is only a very small part of this country free from the occurrence of cold.

Q. How many years would it require to bring a tea garden into bearing commercially?—A. In 3 or 4 years a tea garden ought to come into remunerative bearing; I do not mean highly profitable, but remunerative; and that would increase from year to year. My best garden of Chinese origin, as you will see from page 11 of the report, increased from 83.8 pounds in 1894 to 185.7 in 1895; then to 215.9, to 247.5, to 307.3, and then to 469.1 pounds in 1899.

Q. (By Mr. RATCHFORD.) Per acre?—A. For two acres. You see the steady increase—as I said before—50 to 75 per cent a year. What is to be the ultimate production when it arrives at its full bearing, its maximum, I can not tell as yet. I have not had the experiment sufficiently long in operation; but I do know that tea is produced in some of the gardens of India and Ceylon at the rate of 800 and 1,000 pounds to the acre. The production in Japan to the bush is only a little over one-half ounce per year of dry tea. In China it is from 1 to 2 ounces. Thus far one field has given me 5½ ounces; so I think the outlook is a favorable one.

Q. How many years will a tea plant bear?—A. There are bushes in Japan that have been plucked continuously for 200 years, and they are said to give the best tea that is produced in Japan.

Q. Have you reason to expect the same results in your country?—A. I presume so; there are in India and Ceylon many successful gardens from 20 to 30 years old. A very important point is this: I begin plucking in April and pluck until the middle of October. I pick the bushes every 10 days during the season, making 20 pluckings of the leaf. If any untoward stretch of bad weather or any accident intervenes to deprive me for a month or two of the picking, my crop is not seriously endangered, because I have 4 or 5 months yet in which to gather it. I grant that the preparation of the field is very expensive, but considering that it is planted for an indefinite future, and that the plucking takes place over half the year, these are advantages that every agriculturist must recognize.

Q. (By Mr. C. J. HARRIS.) Have your plants been killed by severe winter weather?—A. I have been very fortunate in that. Last year we had the greatest cold that we have had in South Carolina for 150 years; whether there was ever any greater cold here we do not know; but the thermometer fell on the 14th of February at my place to a half degree below zero. Had I known 10 years ago that it might fall to that point I should never have planted a tea plant. I should have regarded it as preposterous. My plants were hardly injured, with the exception of two tea gardens that were in a sheltered position and were in a luxuriant condition when the cold struck them. A cousin of the tea plant, the camellia

japonica—it is a cousin of the camellia thea, the tea plant—was in full bloom, and my roses were also in bloom, we had had such a warm winter; and then came this fearful cold.

Q. (By Mr. SMYTH.) How near are you to the coast?—A. Twenty-five miles. The cold struck them when the plants were full of sap, and the result was that they were stricken almost down to the earth. We had, fortunately, a blanket of 5 inches of snow. I was forced, as you see by the illustration, to prune these two fields down to the ground. I had more tender gardens, but they were in more exposed positions, and they had entered upon their period of hibernation. The plants were not filled with sap. They could resist the cold, but these two gardens, in a sheltered position, were not prepared for the cold. However, they have emerged most successfully, and my gardens, including those two, have never looked in such good condition as they do to-day, and I am anticipating this year, instead of making 3,000 pounds of tea, as last year, to make considerably over 5,000 pounds. I was at the Gridiron dinner in Washington—the annual dinner in January—and I met there the Chinese ambassador. He was interested in my work and asked me where I got my Chinese tea seed from. I told him from the Dragon's Pool tea garden near Hang Chow. He manifested the greatest surprise. "Why," said he, "that is one of our most celebrated gardens. That tea is almost entirely consumed by the higher classes at the court. It is very rarely sold and, if sold, it is sold at such a high price that exportation is out of the question. How did you come to get it?" I told him through the kind offices of the United States State Department and the Chinese Government. I asked him to come down and look at it, and promised him that he should see several acres producing more than they did at home. He was very much gratified.

Q. Do you know what the census reports would show as to the consumption of tea in this country?—A. We consume about 80,000,000 to 90,000,000 pounds. The consumption per head here is much less than in Great Britain and the British colonies. They, outside of the Chinese people themselves, are the largest consumers of tea, the consumption ranging from 5 to 7 pounds of tea per head of population per year. In this country it is only about one-third of that. Russia consumes about what we do per head; then there is a fearful drop, the other nations of the world consuming proportionately a small amount of tea.

(Testimony closed.)

ATLANTA, GA., March 19, 1900.

TESTIMONY OF MR. R. J. REDDING,

Director of the Georgia Agricultural Experiment Station, Experiment, Ga.

The subcommission of the United States Industrial Commission met at the Kimball House at 10 a. m., Senator Kyle presiding. Mr. R. J. Redding, director of the Georgia Experiment Station, Experiment, Ga., was introduced as a witness at 11 a. m., and, being duly sworn, testified as follows:

Q. (By Senator KYLE.) Will you state your full name?—A. R. J. Redding.

Q. Address?—A. Experiment, Ga.

Q. And your vocation?—A. I am director of the Georgia Experiment Station.

Q. You came to testify in regard to the agricultural interests of the State?—A. Yes.

Q. You have the topical plan of inquiry sent by the commission, have you not?—A. Yes.

Q. You are conversant with the agricultural interests of the State, generally, I presume?—A. I am pretty well posted in regard to the conditions generally prevailing.

Q. In this State and the South?—A. In this State and the South.

Q. What are the agricultural products of the State of Georgia?—A. Cotton is the leading product, followed by corn, rice, sugar cane, peanuts, potatoes, and fruits.

Q. Your main crop, and what the farmers call the money crop, is cotton?—A. Yes; in this section. Near the coast rice comes in. That is a crop of considerable importance.

Q. For how many years have you been conversant with agricultural conditions of the State?—A. About 45 or 50 years.

Q. Is it your impression that the conditions are improving?—A. I can not say that they are, sir. I think the farmer is about as hard up; a little more so than he was before the war.

think that the account of the advance in price of cotton is that been of any benefit to the farmers?—A. Because most farmers sold their crop before they got much opportunity to sell, and you to say the price of cotton advanced about 4 or 5 months?—A. No; it was.

Q. Before that, for the first time, we had a very low price for cotton?—A. Yes.

Q. (By Senator KYLE.) What were the prices of 1893, 1894, and 1895?—A. Four and one-half and 5 cents.

Q. And 1897 and 1898, was there a rise?—A. As far back as 1893, did you say? I do not remember exactly.

Q. 1893, 1894, and 1895 you say about 4 to 5 cents, and what was it about 1897, 1898, and 1899?—A. It is about 5 cents, $5\frac{1}{2}$ or 6 cents. I am not so much interested in the price of cotton.

Q. This past year the farmer got for his cotton about what?—A. I suppose the farmer would average 7 cents. Some sold before it got to that point and some held on until it got to 8.

Q. What per cent of the farmers are able to hold on, as you say?—A. I do not suppose more than 15 or 20 per cent of them.

Q. What is the reason they can not hold on?—A. They buy their supplies on credit, and they buy their fertilizers on credit, and they incur obligations and make mortgages, and they are obliged to do one of two things, either go to the bank and borrow money or get their supplies from the commission merchants.

Q. Do you think this difficulty is being removed?—A. Yes. There is a disposition on the part of the banks to loan money to the farmers. They have been more liberal in that particular than usually.

Q. Do you think that more farmers are able to hold cotton than formerly?—A. Yes; I think so. That is due to the spirit gotten up among the farmers and which appeared in the co-operation of bankers and business men last fall at a good many meetings over the State. There was a general desire to come together and benefit the farmers.

Q. (By Mr. RATCHFORD.) What interest do the banks usually charge on money loaned in that way?—A. They loan in the city of Griffin at 8 per cent.

Q. On what security?—A. Personal securities and mortgages.

Q. Mortgages on what?—A. On the crop and land and stock particularly.

Q. (By Senator KYLE.) Do you know of this proposition of New York capitalists to establish farmers' warehouses where they could deposit cotton?—A. Yes; I have heard of it, sir.

Q. Do you think that would be of benefit to the farmer?—A. Well, I suppose it would.

Q. (By Mr. SMYTH.) This 8 per cent money was advanced before the crop was planted, was it not?—A. I was speaking of money advances that were given last fall. The farmers had made their arrangements in the spring, maturing in October and November. They wanted to hold longer in anticipation of a rise, which at about that time had been developed. Notwithstanding the estimates made by some parties, the farmers pretty generally felt that there was a short crop and that high prices would prevail, yet they had obligations to meet. That was what I alluded to.

Q. (By Senator KYLE.) As to diversified farming: Do your farmers here generally raise the cereals that are consumed upon the farm?—A. They generally raise part of their supplies. There are very few farmers who would not like to raise a large part of their cereals, their food stuffs for their stock, but a great many of them make short calculations, and they do not make enough—do not plant enough. I think, however, that there has been a great improvement in that respect.

Q. You think they are raising more wheat, corn, oats, and barley?—A. Yes; no doubt of that.

Q. Than they formerly did? I have before me here statistics taken from the Agricultural Department.

Q. (By Representative LIVINGSTON.) Just pardon me a moment. It is true, is it not, that cotton sold at $5\frac{1}{2}$ to 6 and $6\frac{1}{2}$ before the holidays, and about the 1st of January it went up to 7 cents?

The WITNESS. This past year?

Representative LIVINGSTON. Yes.—A. I do not remember exactly the course.

Q. It was not above $7\frac{1}{2}$ during the month of January, was it?—A. No.

Q. During the months of October, November, and December these obligations to the merchants made in the spring all fell due?—A. Yes.

Q. Not over 10, 15, or 20 per cent. in interest on money and held over; then the great bulk of the farmers, I think, sold their cotton from 7 cents down?—A. Yes.

Q. And therefore, you see, they are better off by the advance?—A. Yes.

Q. (By Senator KYLE.) What is the cost of raising cotton?—A. It costs all the way from 3½ to 20 cents. The price for the last 20 years has been about what it sells for. I think for the last 10 years the market price has not averaged much, if any, above the cost of making the crop.

Q. (By Mr. RATCHFORD.) The average cost to-day is 7 cents, you say?—A. I think that is about what it sells for.

Q. There must have been a great loss when cotton was selling at 4, 4½, and 5 cents a pound?—A. Yes; many men used to live by skinning the banks and cutting the negro or the merchant out of what they owed them. I think a great many farmers do not make any money at all on the farm.

Q. Was this system of money loaning and borrowing practiced generally at that time?—A. No, sir; it was buying supplies on credit and paying at the rate of 30, 40, and 50 per cent above cash prices.

Q. And giving security?—A. Giving security.

Q. Were there many cases that came under your notice where a farmer was unable to pay his obligations and lost his product as a result?—A. Not many of very recent years. I have known a good many cases along in the fall of the year, December and January, where a man has been sold out to pay his creditors.

Q. (By Mr. SMYTH.) Have you a large class in this State who rent land?—A. Yes.

Q. Mostly white, or are a great many of them colored?—A. I should say most of them are colored.

Q. Can a colored farmer raise cotton cheaper than a white farmer?—A. A colored farmer can live harder and make a much poorer crop, and even may pay his debts. The white farmer is not willing to live so hard and deprive himself of so many comforts of life. He must make cotton at a less cost or get more for it or he can not live.

Q. Does the colored farmer live in more dilapidated surroundings, therefore?—A. Yes.

Q. Does he not compete with the white farmer right in that way?—A. Yes. I think that is the great trouble with cotton farming in the South. Negroes in the country are willing to live in the most primitive style, living on hog and hominy, and not always enough of that, and living on blackberries and plums. Those men can make cotton at cost and sell it at 7 cents, and it perhaps cost them really more than that, if they would count up as the white man counts up, the cost of labor of the wife and children. They don't count that.

Q. (By Senator KYLE.) Is not that generally true of all farmers? They do not put in any of these expenses?—A. Largely so.

Q. (By Mr. RATCHFORD.) Will the same condition hold good where the black man competes with the white in other departments of labor, where they work for daily wages?—A. That is true, and I think it is true in regard to factories, that if the white people would allow the negro to come in and take their places for half the price, many perhaps would do so.

Q. What has that to do with keeping the wages of white labor down to its present level?—A. I think the wages everywhere, of common physical labor, are down at the point of actual subsistence, and no man rises above that level unless he becomes skilled, unless he displays extraordinary energy and ambition. As a rule labor in this country gets only a bare subsistence.

Q. (By Mr. SMYTH.) Is that not due largely to the present colored labor?

The WITNESS. Does it not tend to lower the standard of wages?

Mr. SMYTH. Yes.

A. There is no doubt that it tends to lower the standard of living.

Q. I meant the standard of wages?—A. I think so.

Q. The negro will work for less?—A. Yes.

Q. As a bricklayer he will work for less than the white labor, will he not?—A. I do not know so much in the mechanical trades. They seem to stand together pretty well, and keep up prices pretty well. For instance, in Griffin, I sometimes employ negro carpenters—no, I never employed carpenters, I employed brick-masons, and I find that I have to pay about as much as for the white man. Then the white man is generally more intelligent, and he can manage better; he knows more. But as to the common bricklayer, the man who just simply works on the wall, puts up bricks, my observation is that the negro if an expert gets about as good wages as the white man.

Q. Does he have the same opportunities as the white man?—A. Yes.

Q. We have had testimony before this commission to the effect that the colored bricklayer may offer himself at a rate of wages ranging from 50 to 75 cents per day less than the white man. Will you state if you find that to be the case in your observation?—A. No, sir; not a skilled mechanic—brickmasons.

Q. You made a remark that the labor stands together. Are they unionized?—

A. I do not know that they are in a small town like Griffin. I never heard of it.

Q. Do you know of any case where the bricklayers, or any other trade, are organized in the city and the organization embrace both races?—A. No, sir. I do not think there is any organization. There may be. If there is I have never heard of it. I have never heard any suggestions made that these are union prices, or anything of that sort. I employed this man, and I paid him \$2.50; and, as I say, that is about the price of a first-class brickmason, whether white or black.

Q. Do you find in the field of common labor that the negro is a drag to white labor?—A. Yes; no doubt about that. We have white men working on the farms. We frequently have applications every day. But when the white men come and are willing to work we have to say: We can not afford to pay you any more, because I can get a negro for 60 cents a day; if you are willing to work at that price the first vacancy we have you can have it. We occasionally put a white man in in that way.

Q. (By Mr. RATCHFORD.) Is 60 cents a day about equal to the average for farming labor throughout the State?—A. It is above the average.

Q. What will the average amount to?—A. For men?

Q. About 50 cents?—A. About 50 cents.

Q. (By Senator KYLE.) Is it not generally true that hired help on the farm are paid so much and board?—A. On the farms we hire at what we call standing wages, that is give them so much and board them; but not universally.

Q. What is that arrangement?—A. I should prefer that some of these practical farmers answer that question.

Q. I was going to ask whether the condition of the farmers can be materially improved by devoting more time to the production of corn, wheat, oats, rye, and barley, and these things that are necessary to sustain life on the farm, both for the people and the animals, and not so much to raising cotton, which, you say, is raised at a loss.—A. That goes without saying; everybody agrees to that.

Q. The statistics of the Agricultural Department say that there is a decrease in the amount of cereals raised in the Southern States. Georgia is an exception. I am glad to say. There is a gain of 6 per cent, I think, in 10 years; in corn an increase of 13 per cent; in wheat it is a gain of 21 per cent. The loss as regards some of those goes to farm animals. There is a general gain, I think, in the State of Georgia, but there is a loss in milch cows and cattle, a general loss in sheep, and to take the Southern States as a whole there is a very decided loss in 10 years in both cereals and farm animals. In other words, it seems that the people are determined to raise cotton because it is a money crop, and sacrifice everything else to that end. Would the condition of the South be very materially improved by adopting the system of diversified farming?—A. Yes; and I give a different definition to diversified farming. I do not think every farmer ought to grow everything he needs, but I think diversified farming should be followed in a neighborhood by a cooperation among farmers themselves. For instance, one man says, I have got good wheat land; I can raise a good deal more wheat than I will have any use for; you have sugar-cane land. Let us all come together now and say that we will supply ourselves with these things. I will furnish wheat for all of you; you furnish sirup for all of us. Another man has got some nice rice land, and he will furnish all the rice we need. I think that is the kind of diversification that ought to be practiced.

Q. I think that is true of all States where they go on diversified farming; it should be the rule.—A. It is not a desirable thing for a man because he wants 50 pounds of rice to have to go to raising rice. There are a few exceptions where a man does not need much of a thing. For instance, for a tobacco smoker, if he grew his own tobacco, because it don't require any manufacture. But rice requires a mill to mill it, and wheat requires a mill to put it into flour, so if I do not want more than 25 bushels of wheat to supply my family I should not find it any advantage to grow wheat.

Q. Suppose a man had a good wheat farm of 200 acres; would he feel justified in putting that all into wheat, and would he feel that he could get a market for the wheat?—A. I would arrange for my market before I grew the wheat. I would not carry my wheat to town and sell for 50 cents a bushels and then have to go to town and pay \$4 a barrel for flour.

Q. And is your State well adapted to the production of these cereals?—A. Yes.
Q. Can they raise good winter wheat?—A. A large part of the State is well adapted to wheat.

Q. And good corn?—A. Yes.

Q. Is there any corn imported into this State from other States North?—A. Yes; more or less corn. I think it is chiefly, though, demanded by city trade. I think the farmers as a rule, when crops are fairly good, make now a very good supply.

Q. Do the farmers generally raise enough corn to supply their trade?—A. I do not say that. I say most of it is for the purpose of supplementing the supply.

Q. And the farmers buy mules from the North for the purpose of raising cotton?—A. Yes.

Q. They do not raise their own mules?—A. Not as a rule.

Q. Could they be raised here on the ground?—A. Just about as cheap as a steer.

Q. Do you have good pastures here in the State?—A. Yes; we have them.

Q. Can not a man have 3 or 4 steers to turn to?—A. Right there he needs cooperation. A man raises a steer, and the butchers here give him 2½ cents a pound and sell it for 4½ to 5 cents and realize 6 or 7 cents for dressed beef. There is need of cooperation and education to show the farmer that he should not sell his products for less than a fair market value.

Q. What is being done to correct this difficulty and improve the condition of the farmer—your farmers' institutes?—A. Nothing is being done except by organized institutions, such as the experiment station, and to some extent other institutions, like the State Agricultural Society, in a desultory way. The State does not recognize the necessity for farmers' institutes.

Q. You have held a few State institutes?—A. Yes; we have held them, but in an irregular way. We have not any funds to pay the expenses of the managers, or to pay the expenses of speakers and instructors from abroad.

Q. What is the particular office of the experiment station?—A. It is for investigation and research primarily. It is not for the purpose of education, except incidentally.

Q. You make a report, don't you, and circulate it among the farmers?—A. We largely illustrate the better methods, and attempt to get the farmers to follow the methods that we find and prove to be the best.

Q. You demonstrate that certain cereals can be grown to advantage in the State of Georgia, and so notify the farmers?—A. I, for instance, convinced the farmers of Georgia that oats ought to be grown for stock food in this country.

Q. Georgia has done well in oats? No, I will not say that; in 1890 Georgia produced 5,455,000 bushels; in the next year 7,009,000; it ran along at 7,000,000 for a few years and dropped back to 5; then ran to 7 again, and in 1899 it produced only 4,000,000, which is less than in 1890?—A. Well, the great frost in February of last year killed out the oats, except where they were planted as the experiment station directed to plant them. This last February frost did not kill our oats. It is the plan of the station to advise farmers. We did not lose any oats last year, notwithstanding the fact that the weather was below zero, and the farmers are catching on to our methods and devices by which they can save themselves from destruction by winter frosts. That has always been the difficulty in the way.

Q. (By Mr. SMYTH.) How is the standard of oats this year?—A. They are very badly affected by frost where they have been sown in the ordinary way.

Q. Much of that land that was in wheat and oats is going to be torn up and sown in cotton?—A. Yes; I am afraid so.

Q. You said that mules come from the North. You mean West—Tennessee and Kentucky?—A. Yes.

Q. Have you any local roller mills in this State at local points to encourage?—A. Yes; we have some up in northwest Georgia, what I call the wheat-growing section of the State, and what is known as the limestone region, which has been considered a very fine wheat section, and farmers have grown it there all the time as a suitable crop and as a market crop.

Q. More attention is paid to that (encouraging farmers to plant wheat and offering a market for it) by establishing the roller flour mills and making wheat a cash product?—A. That is being done more, even in middle Georgia. I think they are trying to start a mill in Macon, and several have started in various places. Quite an interest has been gotten up in wheat in the last 3 years, and the interest largely centers about Macon. One of the Macon papers has taken a very active part in it.

Q. That is in a city. There is no flour mill established at small points like Griffin and places like that?—A. I do not know a single one.

Q. Would not that tend to increase the demand for the local wheat crop?—A.

Doubtless it would, and a great many old-fashioned merchant mills which used to run years ago, apparently idle now, or only grinding corn, could be fixed up for grinding wheat.

Q. (By Senator KYLE.) What about the possibilities of growing fruit in northern Georgia?—A. They are unlimited.

Q. Where do you find a market for your fruits here?—A. All over the North and West—Boston to St. Paul.

Q. Apples mainly and pears?—A. Not apples; very few apples. Apples generally are for local markets. We have no variety of apples that will compete with Northern and Western apples, as a rule.

Q. What per cent of the agricultural class are tenant farmers in Georgia?—A. I do not know, sir. I would refer you to statistics.

Q. What proportion of the farmers are colored and what proportion are white? The WITNESS. Do you mean by "farmers" those who work in the field, who actually labor?

Q. I mean people engaged in agricultural pursuits.—A. I can not say.

Q. (By Mr. SMYTH.) How many classes of labor are employed on the farm?—A. There are a good many laborers—negro laborers—you know, and some negro farmers that do their own work.

Q. They rent land?—A. Yes.

Q. (By Senator KYLE.) Do they rent from the man who owns the farm?—A. They are farmers in that sense; they rent the farm and have their own stock.

Q. You mean to say that the white people generally own the land that they farm?—A. I think they generally do.

Q. The negro generally does not make much, but he is the tenant and rents his land from the white man?—A. There are a great many different ways to employ negroes—cropping and sharing, and hiring for standing wages.

Q. Now, you can give the commission the benefit of your observations along that line, and the method of renting land to tenants?—A. I have not been over the country so as to form an opinion of the merits of the different methods since I was a farmer myself. I tried from the time the negroes were made free after the war to hire for standing wages, and I am satisfied that is the correct way to do it now. I think as a rule those farmers have been most successful who have hired labor for standing wages.

Q. (By Mr. SMYTH.) What do you mean by standing wages?—A. So much a month or year.

Q. You mean money basis?—A. Yes.

Q. Not a share of the crop?—A. No.

Q. (By Mr. RATCHFORD.) How often do they receive wages when they are hired and then found?—A. To some extent in cash, and others are paid in supplies. Some pay at the end of the year. A good, careful, industrious wage laborer will have something coming to him at the end of the year, and a good, honest, upright farmer will see to it that the laborers have something at the end of the year. But in the case of a good many of them who get good wages, the expenses of their family will absorb pretty much all they make.

Q. In the case where a man is employed at standing wages, does the employer furnish the house to live in?—A. As a rule.

Q. And garden patch?—A. Yes.

Q. Free of charge?—A. Yes.

Q. And pays him about 50 cents a day?—A. It is estimated by the year; so much a month, say \$120 to \$125 a year and his rations.

Q. (By Senator KYLE.) And his house rent?—A. Yes.

Q. That means flour and potatoes?—A. No, sir; it means 4 pounds of bacon and a peck of meal a week.

Q. (By Mr. SMYTH.) He gets fuel?—A. Yes.

Q. (By Mr. RATCHFORD.) Is it not difficult for a man to support a large family on those wages?—A. Yes; pretty difficult. A man working only for himself, or for himself, and wife, and no small children, if the wife is willing to work, can lay up something every year. If a man and his wife have 5 or 6 little children, it is just about "tight and toady" to get through to the end of the year, and then they have to work at all seasons, from the chopping of the cotton to the harvesting.

Q. She usually works for the same employer, does she?—A. As a rule, she does. We employ most labor on the farm, and men are the only ones regularly employed; but in the spring of the year, chopping cotton, and in the fall of the year, in gathering cotton women are mainly employed.

Q. (By Senator KYLE.) That is almost entirely colored laborers on the farms?—A. Almost entirely.

Q. Do these laborers look forward to the time when they can own or rent a farm?—A. I do not think they care much about it as a rule; a few of them do. They do not seem to have much ambition. The negro, if he gets enough to eat and coarse clothes to wear, and something to wear on Sunday, is pretty well satisfied.

Q. He has very little ambition with reference to owning a farm of his own?—A. I notice on our farm and the neighboring farms that the negro is pretty well contented if he has plenty to eat and coarse clothes to wear.

Q. Turning to the other class. Is the young man who is brought up on the farm disposed to remain on the farm?—A. No, sir; I think his disposition is to go away; go to the city factory, or machine shop, or store.

Q. The moment they have an opportunity they leave?—A. Yes; they leave if they get an opportunity. They go to town and get more wages than in the country.

Q. What reason do you assign for that?—A. I think because agricultural labor is not well paid. Agriculture at present is not a prosperous business, of course with a number of exceptions. There are a good many farmers who are making good money and are paying their laborers fair wages, but their sons can not always be kept on the farm. A young man comes up and the father is not able to give him a number of acres of land and a couple of mules as he used to do, and he does not like the idea of starting out with nothing, and if he has got a little education he will go to town and hire out at almost anything in the town. He sees more of life.

Q. I bring this up because of the parallel case of the young men on our farms in the Northwest. Many of them are leaving; they want to go to town. Many reasons are given for it, and I can not say whether it is because farming does not pay as well in the long run as some other vocations in town. They are not satisfied to remain on the farm where they get precisely these comforts. Why do they leave the farm?—A. The farm does not give the wages. They do not get returns every week. They can go to town and get employment and are paid off every Saturday night or twice a month. The man has to work and wait until the end of the year in the country, until the crops mature, and in the meantime he has got to have something to live on, and if he does not have credit he has to live very hard indeed to eke through until he can realize on his crops.

Q. We also learned, of course, in our investigation, that where these young men go to factory towns their lot is very hard also. They get their pay, as you say, every week, but at the same time it is a very hard lot that they have to endure. Is there anything in the social conditions of the agricultural life that makes it distasteful to the young man?—A. Largely so. There are scarcely any social opportunities in the country; the roads are bad, the post-offices are some distance off, and the churches are wide apart. There are no electric lights and street railroads, shows and pretty things to see; those are the things that carry them to town more than anything else.

Q. (By Representative LIVINGSTON.) Young boys are not the only ones who go to town, are they?—A. Others love to go up and get pretty things and have frolics. There are a great many things to attract the young man to town. I do not blame them myself. I have been asked the question, "Redding, you have three sons?" "Yes." I suppose they are all farmers? "No." How is that? "They have got a pretty good education, and they can do much better in the city than in the country."

Q. (By Senator KYLE.) Is there a disposition to look down on agriculture as a low vocation?—A. No, sir; I do not think so. There is never any disposition to look down on agriculture in this country. But laboring people always associate the idea of field labor with negro labor, because most of the laborers in the lower part of Georgia and the corresponding parts of South Carolina are negroes, and if a white man went into the field, he would have to work with the negroes; but that is passing away very rapidly.

Q. Is it not true that the comic newspapers of the country rather make little of agriculture as a vocation? When they want a picture of an all-round jay, it is a farmer with hay seed in his hair and that sort of thing. They try to make it appear ridiculous, and the young man gets on to this.—A. They are mighty glad to get the countrymen's money, and they know how to do it, too.

Q. In speaking of opportunities on the farm, are not the opportunities about as good to-day as formerly for owning a farm?—A. I can not say as to that. Under the old régime, when I began to farm, the farmers owned land and the sons worked, and they were given part of the land, or were helped to buy a farm close by; and it was an easy matter for the farmer's son to start out for himself and get a farm. The father would give him a few negroes, according to his ability, and that was the natural sort of thing. When a man got to be 21 or 23 years old he married a farmer's daughter, and was set up on a farm,

Q. The wages out in my country range from \$20 to \$25 a month, and the work is about the same as was performed by the young man a generation ago; lands are cheap in our country, cheap in your country. Here a young man will hire out on a farm for \$25 a month or \$20 a month, the year round, making \$240 a year, and gets his board and everything except his clothing. By being economical he can save \$200 a year, and in the course of several years he can make a payment on a piece of land, and the opportunities for owning that land in a few years after starting out in life are just as good as they were 25 or 30 years ago?—A. The economic changes have not been as great as in the South. What State is that?

Senator KYLE. South Dakota.

A. There is no colored labor there.

Q. (By Senator KYLE.) Your condition down here is peculiar. I want to know the opportunities for a young white man who wishes to own his farm and the equipments necessary to start out in life.—A. They are considered very good by men who come down to us from the Northwest, men accustomed to labor themselves, even men worth \$4,000 or \$5,000. A man of that description in Georgia does not go on the farm. He hires somebody else to do it. A man from the Northwest comes down to do his own work, and he finds the conditions very much more favorable than he would have found them 25 years ago. They are some of our best farmers. Not, perhaps, more successful for the first 2 or 3 years. They have to adapt themselves to our conditions. Their plowing is better; their hoeing is better; they use better tools, and they are good patterns for our farmers to follow after, and some of our farmers have taken heart and have become just as good as they are. There has been considerable improvement in the last 20 years. There are fewer gullies in the State; they are generally filled up, and now people are freely cultivating the land and making fair crops. The general tendency is to the improvement of the farms, and although there is room for improvement yet, it is far better than it was 20 years ago.

Q. How about the value of land?—A. Lands have not moved much in either direction. They have been of slow sale.

Q. Have you many of what are called abandoned farms—worn-out farms?—A. No.

Q. All land is pretty well farmed in Georgia?—A. There are some old farms—farm estates—locked up in some way. I do not know a single place that can be called abandoned.

Q. What can agricultural land be bought for?—A. From \$5 to \$10 an acre.

Q. Does that mean improved farms?—A. Yes.

Q. With farmhouse and barn, orchards, etc.?—A. Yes.

Q. It seems like a good opportunity for a young man who wishes to get hold of a piece of land.—A. Of course near the villages and railroad towns the prices are higher than that—\$20 and \$30—and the conditions are generally better when near town; but I should say a man would have no difficulty in buying a very fair farm with a good house on it, in fine locations, at \$10 an acre, almost anywhere in Georgia; and in some places for much less than that.

Q. (By Representative LIVINGSTON.) What can be done successfully with proper cultivation of the farm? What crops besides cotton, taking the State as a whole?—A. Taking the State as a whole, they can grow everything but coffee; that is the common saying, and I believe it is true.

Q. Can they grow sugar cane successfully?—A. Yes. We can not grow coffee, but we might grow ginger. I do not mean to say we can grow everything profitably, but we can grow everything, more or less.

Q. (By Mr. SMYTH.) Have you ever experimented in tea?—A. Yes, we have a tea farm started in our State.

Q. (By Representative LIVINGSTON.) Do you think the farmers of Georgia would be vastly benefited by diversified farming?—A. Yes.

Q. To the extent at least that they ought to raise home supplies?—A. Yes.

Q. If they did that there would be no trouble in a young man making a good living and money besides on a farm if he stayed there?—A. Well, no trouble other than this condition (I may express some views of my own in this connection). A man who works on the farm can succeed only by producing something. The city man may live mainly by "his wits" without producing anything. The lawyers and doctors, merchants, insurance men, and other professional and business men live largely by "getting the advantage" in trade. They may live by "their wits," in the sense that they do not produce what they gain or do not give value received for what they gather in. But the farmer can not live that way. He can not get much the advantage of his laborers, because they are already at *hardpan*. He can not make much by dealing unfairly with labor.

Q. Do you think the system of education in the South has something to do with

driving the young men away from the farms and into the cities? Do you think they are educated to the farm, or educated away from work? You talk about living by their wits.—A. I think when a young man goes to an agricultural college, for instance, or goes to any other college, he comes to the city and gets some wisdom, and after he sees the railroads, the electric light, enjoys the social functions, and all that sort of thing, the young man dreads, necessarily, work and common clothes and not good style.

Q. Would it help to keep these young people on the farms in the country districts if they had more of the technical education? Would you advise that?—A. That would be helpful, of course. I think it would be very desirable, if a young man goes on a farm, that he know how to do everything on the farm in an expert manner.

Q. Our schools do not teach that at all, do they?—A. No, sir; I do not think they do.

Q. Therefore, when a young man is educated at Athens or Emory or Mercer or any other school in the State, he will learn nothing about farming?—A. Except theory, and not much of that.

Q. Has not that something to do with our young people drifting away from the farms and hunting professions and other business? Their education, they think, fits them to do something, and they have not the education to farm?—A. I have no doubt that has something to do with it, but I think a man quits farming because it does not promise an easy living, and goes to the city professions, and that includes all professions, where it seems to promise an easy living.

Q. (By Senator KYLE.) But suppose the young white farmer has worked hard for years and denied himself the social functions you speak about and now owns his farm, and in his old days is able to sit in his own house and on his own grounds and enjoy probably some of the comforts in his declining years, whereas the party who goes to town and works in the factory does not?—A. I remarked it seems to him that way.

Q. But in your judgment is not the white man who starts out in the agricultural vocation really better off in the end?—A. I should rather think so in the long run, unless he goes to town well equipped. My boys, for instance, are well equipped. One of them is an electrical engineer, and another is an insurance man, but the average young man in a community doesn't get any special qualifications for anything. He may take a clerk's place in a store, and he will have to stay there for years and years, getting \$30, \$40, \$50, \$75 a month. Seventy-five would be considered a good salary, and he will spend it all nearly, but he will enjoy life.

Q. (By Representative LIVINGSTON.) You have a State Agricultural College here?—A. Yes.

Q. With an agricultural course?—A. Yes.

Q. Do many students take that course when they enter college?—A. No, sir; very few.

Q. Do they go there for engineering or some other purpose?—A. Lawyers, journalists, merchants.

Q. I was going to ask about the school facilities in the rural districts compared with what they used to be 30 or 40 years ago.—A. They are fairly good; better than they were, but not as good as 30 or 40 years ago.

Q. You have the public school system?—A. Yes.

Q. Supported by the county?—A. The public school does not furnish as good teachers as the private schools do.

Q. The white children attend public schools?—A. Yes.

Q. How many months a year?—A. Five months, I believe.

Q. That is the rule throughout the State, is it?—A. In the cities and towns they teach 9 months.

Q. Do you maintain separate schools for colored children in the country?—A. Yes.

Q. Are those schools maintained at public expense also?—A. Yes.

Q. With colored teachers or white teachers?—A. Sometimes one and sometimes the other; generally colored teachers.

Q. And how many months a year are those schools open?—A. Some for 5 months in the country, generally 9 months in the city.

Q. And sufficient facilities are supplied for colored children?—A. I think so; no difficulty about building schoolhouses in the country. A few men get together and put up a house in a day or two that answers all purposes for an ordinary school.

Q. What are those teachers paid?—A. I do not know; I suppose very few are paid as much as \$40 a month.

Q. It is according to the grade?—A. Yes.

Q. They are examined and graded?—A. Yes.

Q. Is it not true that the negro children have the same facilities for schooling in the country that the whites have?—A. I think so.

Q. They are paid from the same fund—the same way and the same amount?—A. I think the negro schools have negro teachers, and they are not as well paid and as well clothed as the whites.

Q. (By Mr. RATCHFORD.) What proportion of the people in your State are colored?—A. I suppose about 40 per cent.

Q. What portion of the tax is paid by that 40 per cent?—A. I have seen that stated often in political papers. I suppose 5 per cent.

Q. What part of the tax belongs to the school fund?

The WITNESS. Of our general tax?

Mr. RATCHFORD. Yes.

A. I do not remember. A large part of the school fund comes from the State railroads and the liquor tax, and some other special tax.

Q. There is no discrimination in the expenditure of the school funds as against colored children?—A. Not that I am aware of.

Q. They receive the same benefits from the general school fund as the white people?—A. Practically the same. I do not think they give them quite as good accommodations, but practically they get a full share.

Q. (By Senator KYLE.) And your statement is that the white people pay about 95 per cent of the tax?—A. I think so.

Q. (By Mr. RATCHFORD.) Do the colored people as a rule receive the same salary for teaching as the white teachers do, when their conditions are equal?—A. I do not think they do.

Q. (By Representative LIVINGSTON.) You must remember that they are compelled to have or stand the same examination, and you say if a negro teacher takes the first grade he gets first pay?

(No response by the witness.)

Q. And the pay is regulated by law?—A. That is regulated by the county board.

Q. (By Senator KYLE.) Is there a complaint among the farmers that they are unduly taxed as compared with business men in town?—A. I do not know. I do not hear much complaint. The farmers do not know how much tax they pay. There are no complaints amongst the farmers about the direct tax they pay. That don't amount to much.

Q. (By Representative LIVINGSTON.) He knows the direct tax?—A. Yes.

Q. But he don't know what he pays in customs duties?—A. No; he does not know what he pays in a thousand different ways.

Q. (By Senator KYLE.) Is it not true that everything the farmer owns is in sight?—A. Everything the farmer owns is in sight. He pays the biggest part of the tax of the State—no question about that. He can not hide what he has, unless he is rich and has some stocks and bonds. He generally pays taxes on his farm, mules, horses, cattle, and furniture.

Q. There is no escaping that at all?—A. No; and if he doesn't give in the property at a fair valuation some of his neighbors will grumble, and complaint will be made, and the apprehension that he may be raised in his valuation generally keeps him up pretty well to the average valuation.

Q. (By Representative LIVINGSTON.) Under the law requiring that the tax assessor shall put his books before the grand jury every spring term, it is made the grand jury's duty to examine farmers' returns, and are they not empowered to have them reassessed and make them pay over again?—A. That is what I had in mind.

Q. (By Mr. RATCHFORD.) Have you a board of equalization in this State?—A. No, sir. We had several years ago, but it lasted only 2 years. I think our system of taxation is most barbarous, unjust, iniquitous.

Q. What would you substitute?—A. I would substitute the single tax. I would take all taxes off personal property, whether it be the result of brain or manual labor. In other words, I am a single tax man. The merchant pays no taxes; he takes it out of his clerks or customers, but the farmer can not shift it. There is no one below him but the negro laborer, and he is already on barely subsistence wages. Everybody shifts it on down to the farmer, and he has to pay it. He pays his merchant, his doctor, his lawyer.

Q. Don't you think the farm laborer who is working for 50 cents a day pays his share of that tax?—A. Yes; I think the laborer pays all the tax.

Q. Don't you think he pays the bulk of it?—A. I think the common laborer bears the burden of the tax, indirectly. Of course the direct tax is put on other

persons and trades, and is handed down. If you put a heavy tax on his business he can not pay as high wages; in other words, he makes his employees pay it. If the physician is heavily taxed he will be more particular about collecting his charges, and it is handed down in that way until it gets to the bottom. There being a great many more of the unskilled laborers than of all other classes put together, they pay the bulk of it.

Q. (By Senator KYLE.) In regard to farm machinery, does that cut much figure in these States?—A. Not much. It does not benefit the laborer, but it benefits the farmer.

Q. What are the new improvements in regard to raising cotton as compared with 25 or 30 years ago?—A. I do not know of any.

Q. The same old style?—A. They have introduced to some extent 2-horse cultivators that will plow out a row at one trip, but they do not use them much in Georgia.

Q. They have to hoe the cotton the same as before?—A. Just as they used to. It costs about as much as it did 40 years ago. The improvements are usually in the way of selection of seeds, fertilizers, and preparation of land. There is an improvement in farming, but not so much in farm machinery.

Q. Improved machinery will come into use with more growing of cereals?—A. Yes.

Q. (By Representative LIVINGSTON.) To cheapen the raising of cotton two things would be necessary that never have been invented and never will be—a cotton picker and a cotton chopper?—A. Yes.

Q. You do not believe they will ever get them?—A. I do not think so.

Q. Where we raise cotton, we are compelled to use the common hoe and ordinary plow.—A. Yes.

Q. And when we pick, we are obliged to do it with the fingers.—A. Yes; that is the principal item of expense—gathering the crop.

Q. (By Senator KYLE.) One other problem concerning the farmers of your section, is the transportation of your crop when raised. You find a home market for all your product, do you?—A. We sell it in the local market. Thus the farmer does not have to haul his cotton very far; perhaps 5 miles would be an average.

Q. It is usually manufactured within the State?—A. They say they can't get enough factories to consume it, but I guess most of our cotton goes to New York yet. I think so.

(Testimony closed.)

ATLANTA, GA., March 19, 1900.

TESTIMONY OF MR. J. E. NUNNALLY,

Farmer, Nunnally, Ga.

The subcommission of the United States Industrial Commission met in the parlors of the Kimball House at 10 a. m., Senator Kyle presiding. Mr. J. E. Nunnally was introduced as a witness at 12.07 p. m., and, being duly sworn, testified as follows:

Q. (By Senator KYLE.) You have read a plan of inquiry?—A. I have seen it.

Q. You may state your full name and post-office address and occupation.—A. J. E. Nunnally, Nunnally, Ga.

Q. Your occupation?—A. Farming.

Q. You are a planter?—A. Yes.

Q. How much ground do you cultivate?—A. About 400 acres; between 300 and 400.

Q. Mostly what?—A. Cotton.

Q. Entirely cotton?—A. No, sir. I never bought a bushel of corn in my life until last year; and I have always been a planter of oats. I raise all the cotton I can.

Q. That is your money crop?—A. Yes.

Q. You aim to produce the cereals necessary to feed the animals and the family?—A. Yes, sir.

Q. You have some stock in addition to this?—A. Yes; I have stock to equip the farm.

Q. (By Mr. SMYTH.) How many plows do you run?—A. Nine.

Q. (By Senator KYLE.) Do you buy your mules in the market?—A. Yes, generally.

Q. You do not raise them?—A. No.

Q. Do you consider that you can buy them cheaper than you can raise them?—A. Yes.

Q. How many bales of cotton did you make this year?—A. Sixty-five.

Q. How many to the acre?—A. About 2½ acres to the bale this year.

Q. How did that compare with the crop last year?—A. Last year I made a bale to every 2 acres I planted. That is generally my estimate of the crop. If I can get 3 acres to make me a bale of cotton I consider it very good farming.

Q. That is half a bale to an acre?—A. Yes.

Q. (By Representative LIVINGSTON.) Have you sold that cotton?—A. Yes.

Q. What did you get for it?—A. I sold it all in one lot in February at 7½ cents.

Q. (By Senator KYLE.) Were you able to hold it on?—A. I could have held it.

Q. What is your observation in regard to farmers generally in your locality? Are they able to hold the cotton?—A. Not 1 in 10. The farming in my community is done by small farmers on 1 to 2 horse farms. We have very few farmers that operate more than that. The farming is done on the half system, or tenant system, as we call it.

Q. Explain that plan—the system of tenant farming as applied to the South. Give it in detail.—A. To avoid a great many questions I simply wrote on those 2 lines, and will read what I wrote. I think it will answer all questions without any inquiry. I devoted an hour to it. I have a few thoughts here that cover that point. I thought it might facilitate the examination here.

(Here the witness read paper.)

“CONDITION OF LABOR.

“Being a Southern man, my experience with labor and agriculture is limited entirely to the labor employed in that section and to Southern products and methods.

“Fifty years ago our laborers in the South were slaves, and on their work in the fields depended the success of agriculture in the Southern States. My experience runs from antebellum days down to the present. But even in those olden days of luxury and ease many discrepancies were discernible in our system. A man so unfortunate as to be obliged to face poverty from the beginning in the majority of cases remained poor, the odds against him being too great to overcome. The advantage gained by the inheritor of wealth only added strength to the chains that bound his less fortunate brother. That day is passed, and happily so, for the American people. Then progress in agriculture and appliances was at a standstill, owing to the capacity of the labor. The implements of husbandry were few and primitive. The watchword was, ‘cut down, wear out, and move on to more productive fields,’ only to keep in perpetual motion the same destructive theory. Our country was then rich in its virgin fertility, our hills and valleys clothed in beauty lavishly bestowed by a Divine hand, whose royal favors, misunderstood and unappreciated by the greedy recipients, were marred and robbed of all their loveliness for gain.

“But the day of waste and devastation is over and the ruinous order of the past is exchanged. The shorn valleys, the old red, gullied hills, the bald and rocky knolls have been reclaimed and once more blossoms as the rose. The richness of the earth and its fullness have been discovered to blinded eyes, and on those plundered lands to-day are produced far richer crops than in their early freshness. The olden appliances are being supplanted by the best inventions of to-day. The work of 6 or 8 men is now accomplished by 1. The hard and tedious work of the old reaping hook is but a dream of the past. A McCormick reaper and 2 mules do the work of 8 good men. As to increase or decrease of labor, if you ask numerically, I would say 33 per cent less to-day than at the close of the war in '65. Not that our population has decreased—it is a well-known fact that it has steadily increased. The work is now done mostly by men, the females being employed only in the light work, such as chopping corn, hoeing, and picking cotton, but a large majority remain in the house the year around. Work is so facilitated by improved machinery there is really less necessity for so much manual labor.

“As to the comparative condition of labor now and 35 years ago, when our slaves became free men they were thrown from a position in which they had been fed and clothed, without care or forethought on their part, upon the resources of their own judgment and inclination. The negro loves a jolly good time. With plenty to eat and wear for the present and a few dollars to spend at Christmas, he reaches the height of his ambition. Of course there are a few exceptions. They are the happiest, most care-free people in the world. But little progress has

been made by them in accumulating and saving wealth. Very few own homes of their own, and not one in a thousand cares to provide for to-morrow, always depending on his employer to furnish food and clothing for the next season, covering his half of the crop.

"All that is done on the farm outside of this system is done by the landowners and their families. Improved machinery has greatly aided these white farmers. They employ 1 or 2 hands, white or black, to aid in cultivating the crops, filling in the time with chores. Wages paid these hands range from \$5 to \$8 per month, with board and house room, seldom reaching \$10 per month. The greater portion of farm work is done on the share plan, the lion's share of expense being borne by the landowner, he furnishing land, stock, feed for same, all farming implements, half fertilizers, dwelling houses, garden plot, firewood, etc., the tenant furnishing labor and food for the same, the crop being equally divided between landowner and tenant. This ruinous system has done more to impoverish and retard the progress of our farmers than any other combination of circumstances. It had its origin in lack of money with which to pay for labor in the first place; then the price of farm produce and its continual decline since '85, still depleting the revenue of the land owners. The labor thus employed only works about 7 months in the year. The rest of the time is devoted to loafing, fishing, hunting, having a general good time, and, I fear, breaking the command which is one of the 'shalt nots.'"

Q. But the man who works by the month at from \$5 to \$8 is supposed to work all the year?—A. Under this yearly contract we sometimes contract to allow them 2 months in the year that they just loaf like the others. We have to do it in order to meet the circumstances around us. We can not simply employ a laborer for the whole year; we must allow him 2 months in the summer season after the busy season is by.

Q. (By Mr. RATCHFORD.) Do his wages go on?—A. No, sir; that stops.

"Our contracts on this line have grown looser and looser each year until the tenant ignores the boss by bossing. This system may have been the best at the hour of its adoption to succeed in cultivating our lands, but taken altogether it has been a stumbling block in the way of prosperity and progressive and diversified agriculture. Tenant as well as landowner has grown poorer year by year under its oppression. All cotton to the exclusion of grain, stock, and cattle is a stupendous error that requires heroic treatment before the mischief wrought can be counteracted. It is plain to the most casual observer that the laudable ambition for plenty and prosperity can not be reached by pursuing a shadow while the substance escapes. There is a solution to the most intricate problem, and there is one to this. So it behooves us by the most careful study and wisest guidance to discover it, treating our fellow-men, both laborer and employer, with due respect and justice. Loans are made to tenants by landlord or merchant in 9 out of 10 cases, all of which is secured by mortgage on the crop or crops to be planted by the tenant.

"Under our Georgia laws, in the absence of a contract, the landlord is first paid out of the tenant's half interest for supplies furnished tenant with which to make the crop, and what is left goes to tenant. This law has worked well in Georgia, giving protection to landlord and at the same time bread and meat to the tenant. It is sometimes used to defraud other creditors, but this seldom happens, and only by men that are paid by the tenant to do so. The greater portion of our field labor comes from our colored population. About 20 per cent are white. All share alike. The contracts are made on the same basis to each race. The State gives to each race the same privileges in our common schools for the education of the masses. A school term of 5 months is provided and paid for by the State. This covers all the time that can be taken from the farms during each year, and some progress is being made in the education of the masses.

"I know of no legislation by Congress that would better anything in this paper more than an appropriation to aid our common-school system. That we need more money along these lines is apparent from the small pay received by our teachers for the services rendered."

That is all that I have written. If I had had time, I would have finished what I had to say along the lines of this inquiry. Now I am ready to answer any questions that I have not answered.

Q. (By Senator KYLE.) You have sons operating with you on the farm?—A. No; I have no children. I manage my farm myself.

Q. By white or colored labor?—A. I have both.

Q. White overseers?—A. No, sir; I am the boss.

Q. Your plan is to work by the tenant plan?—A. Yes; altogether. I only keep one man to wait on me.

Q. You still pursue this system that you consider iniquitous?—A. Yes, sir; I can not help myself. I can not get the labor to work otherwise.

Q. You intimated that there is a solution to this problem; what is it?—A. Simply to adopt the other plan, and everybody hire labor by the day or month.

Q. These men hired at \$5 and \$8 a month, they are satisfied?—A. Perfectly so. If you give \$3, they are overjoyed.

Q. If you hire white men, what do you pay?—A. Eight dollars, and furnish him with a house to live in.

Q. (By Mr. RATCHFORD.) Why don't you try that plan?—A. I have, but I could not succeed while all my neighbors worked on the other plan.

Q. Is the plan you are following more profitable to you?—A. It is under the circumstances; and under the low price of cotton it was the only one under which we could work.

Q. Is it less profitable to the laborer?—A. It throws him on his own resources more. He is dependent on his half of the crop, and if he does not make it, he does not have it.

Q. Under the other system, it is assumed that the reliable workman will raise the best crop it is possible for him to raise?—A. There is a don't-care about our labor.

Q. I am speaking about the reliable man, such as you would seek if you wanted to employ labor.—A. Yes, sir; I should want to make the best crop I could; that is true.

Q. You spoke of slave labor. How much, if any, is the condition of the colored man improved over that of slavery by the present condition of farm life?—A. Well, sir, but very little, taking the masses. There are a few that have made some progress.

Q. (By Senator KYLE.) Do they take advantage of the school five months in the year?—A. Oh, yes.

Q. Up to what age; 10 or 12 years?—A. Yes; up to 18.

Q. Do they go to school as long as that?—A. Yes.

Q. They are generally able to read and write?—A. Nearly all the children are now learning to read and write.

Q. (By Mr. RATCHFORD.) You think the colored man was nearly as well off in slavery as he is on the farm to-day?—A. I do not know but he was better off in some respects, but it is better for the country that it turned out as it did, though I owned a large number of slaves.

Q. Is his service on the farm to-day as cheap to the employer and as productive of good results as under the system of slavery?—A. I doubt it.

Q. Was it more productive of results then?—A. Yes, sir. We took our summer months to make our manure. We used no patent fertilizers; we raised all our fertilizers on the farm during the summer and winter months, and carried it out to the field, which can not be done under the present system.

Q. Does the colored farm laborer live as well to-day as in slavery?—A. Not as well.

Q. We have testimony to the effect that he is getting 50 cents a day, and that it requires all of that or nearly all of that to support him. If that be the case, and his labor is given as freely and as fully now as it was in slavery, I can not see that there is any great difference in the cost of the labor to the farmer.—A. If all the farmers in Georgia were to attempt to move along on that line, we should all be defeated in carrying out that kind of process of farming. The whole thing would come right back to this, that we should abandon it and take to the crop system—that they work so much land and we get half of the crop.

Q. (By Senator KYLE.) What is the length of the day's labor?—A. Sunup to sundown, taking about an hour to an hour and a half at noon. Under the tenant system they work pretty much as they please.

Q. (By Mr. RATCHFORD.) You spoke of labor-saving machinery in your paper. Is it your judgment that the hours of labor should be reduced in proportion to the advent of this machinery and the increased capacity of production resulting from it?—A. That usually falls into a man's hands who uses it to his own advantage. Under our general system of labor they are not supplied with it. In fact, we can not trust it to them.

Q. I understand that the machinery, of course, is the property of the owner of the farm?—A. Yes.

Q. But, speaking of the relation of labor to that machinery, is it your judgment that the hours should be reduced when that machinery is introduced and when it aids so materially in the increase of the productive capacity?—A. As I remarked, all that machinery is owned by the landlord, the man that owns the land, and he operates it with his own labor and with that of his family, with the

assistance of one or two hired hands. All that improved machinery is operated that way in my country. There are one or two simple things like cotton-seed planters that we furnish to our tenants, but the tenant does not care for anything but cotton.

Q. (By Mr. SMYTH.) Do you consider the colored tenant intelligent enough as a class to operate improved machinery?—A. That is the trouble.

Q. You have no machinery for picking cotton?—A. No, sir; it is done by hand.

Q. (By Senator KYLE.) The only change you have in the cultivation is in the two-horse cultivator?—A. That is all.

Q. How much wheat are you able to raise per acre?—A. About 10 bushels.

Q. Winter wheat?—A. Yes.

Q. How much corn?—A. About 15 bushels of shelled corn.

Q. Lands are worth what?—A. Lands are worth from \$10 to \$20 an acre.

Q. With buildings on them?—A. Yes; any farm down there will bring that.

Q. Do you notice a tendency among the white young men to leave the farm?—A. Yes.

Q. To what do you attribute that?—A. The low price of products.

Q. Simply that?—A. Yes.

Q. If you had a good price, they would all remain at home, you think?—A. Yes. You never saw a man as anxious as the young men in my section to procure a farm; they will put in a good year's work with the hope of realizing a little. The last 5 years we have realized very little on our cotton crop.

Q. If a man owns a farm and the machinery, and so on, he may make a fair living?—A. Yes.

(Testimony closed.)

ATLANTA, GA., March 19, 1900.

TESTIMONY OF MR. W. L. PEEK,

Farmer, Conyers, Ga.

The subcommission of the United States Industrial Commission met in the parlors of the Kimball House at 10 a. m., Senator Kyle presiding. Mr. W. L. Peek was introduced as a witness at 12.38 p. m., and, being first duly sworn, testified as follows:

Q. (By Senator KYLE.) Please give your name and post-office address and vocation.—A. W. L. Peek, Conyers, Ga.

Q. Your occupation?—A. Farmer.

Q. You are a practical planter, then?—A. Yes, a farmer.

Q. You own a farm of how many acres?—A. About 600 or 650.

Q. You raise cotton mostly?—A. I raise cotton; that is the principal crop.

Q. Do you raise wheat, corn, and oats?—A. Yes.

Q. Enough to supply you?—A. Generally.

Q. What is your observation of farmers generally in your locality with reference to the products they raise? Do they enter enough into diversified farming?—A. I doubt it. Our money crop is cotton.

Q. But if the farmer does not raise the wheat and corn necessary to supply his family and animals, he is at a disadvantage?—A. I should like to preface that a little. What we term farmers in our section of the country are those who work on the farm. We have 2 classes of farmers, one that owns the land and one that does not own the land. We do not make any distinction in our social relation as to names. We do not use the name landlord or tenant; we use the name farmers. The bulk of our farmers, a large per cent of them, are nonlandowners that work for the man who owns the land.

Q. (By Representative LIVINGSTON.) They are really tenants?—A. Yes, or renters.

Q. (By Senator KYLE.) How much cotton does your land produce?—A. You mean mine individually or the average?

Q. Average.—A. About a bale to 3 acres is the average.

Q. What is the cost of raising cotton?—A. When we make a bale to 3 acres it costs about 8½ cents.

Q. That includes every little item of expense?—A. That includes the cost of raising cotton and putting it on the market.

Q. That includes the wages paid to one's own children and the help around the farm that is ordinarily counted in?—A. Everything, not counting wages to children nor wife.

Q. (By Mr. RATCHFORD.) Does it include transportation?—A. Delivering at our depot.

Q. (By Representative LIVINGSTON.) Interest on land?—A. Interest on land, taxes added in, everything of that sort. Where we raise a bale to every 2 acres we can do it at about 7½ cents, and when we get a bale to the acre we can make it for about 6½ cents.

Q. (By Senator KYLE.) What is your observation as to the ability of farmers to hold the crop?—A. There is no ability as a rule with farmers to hold their cotton.

Q. What per cent are obliged to turn the cotton off?—A. About 90 per cent.

Q. Has there been a movement on foot to build warehouses and store the cotton, bankers furnishing the money and taking the cotton as security?—A. There has been newspaper talk, but no direct movement. It is discussed through the papers.

Q. Do you think that would be an advantage to the farmers?—A. Not to the man who makes the cotton, as a rule, but the fellow who builds the house—it would help him individually.

Q. The men you refer to are the laborers?—A. Yes, those who really make the cotton.

Q. They are working for wages practically?—A. No, sir. With us as a rule it is the tenant system. We rent out for so much cotton, or we go on the half system, the landlord being at all the expense except the labor and half the fertilizer, which the laborer buys. Our land has to be fertilized to make a crop of cotton.

Q. You have been raising cotton how long?—A. Ever since I was big enough to toddle.

Q. The average price has been what?—A. For the last few years very low. You know cotton immediately after the war was away up, but since 1872 it has been falling gradually, until last year it was 4 cents.

Q. In 1890 it was what?—A. I forget. You have and can refer to the statistics. I remember very well that in the fall of 1892 it got up once to 10 cents.

Q. According to the figures here, in 1865 it was 83 cents. Coming down to 1873 it went down to 18, and in 1872 to 20; 18 in 1873 and down to 14, 12, and 10—9 in 1886; 11 again in 1890, 9 in 1891, 8 in 1893, 7 in 1894, 6 in 1895. That is as far as it is carried here.—A. In 1892 when it was announced that Mr. Cleveland was elected it jumped to 10 cents. Last year, you know, the crop sold principally at about 4 cents.

Q. If it costs you 8½ cents, you have been raising it at a woeful loss for the last few years.—A. Yes sir; so much so that nearly everybody has lost a home in this country. I have partly escaped, but the majority of people who farm are now homeless.

Q. (Interrupting.) A man with no mortgage on his farm is able to worry along?—A. A great many have had to mortgage their land and lose it.

Q. To what do you attribute the low price of cotton in the last few years?—A. I attribute it to the lack of money.

Q. Bank facilities?—A. Bank facilities—the farmers have never been able to reach banks. They pay no attention to him. The banks look for larger fish.

Q. I have heard it stated that there is always a scarcity at the time of moving the crop.—A. The crop can always get moved at the price from the planter to the manufacturer. There is no difficulty about that. The trouble is for the farmer to get sufficient price to make money.

Q. Is there too much cotton raised for the consumption of the world?—A. No, sir; there never was too much of the fruits of the earth raised, in my judgment. There has been an underconsumption.

Q. When cotton goes down so very low, is there not more profit in raising wheat or corn?—A. There is not anything in the world in the South that will bring in a dollar during the summer months—I mean a cash dollar—but cotton. We can raise our surplus of wheat and corn, but we are compelled to have some money, and nothing will bring it but cotton on our markets.

Q. (By Mr. SMYTH.) What did you sell your crop at this year?—A. I commenced at 5 and sold up to 6½ and 8 cents.

Q. Did you hold any cotton?—A. No.

Q. What has caused the advance in the price of cotton?—A. I attribute it to the world coming to the opinion that there is a small crop and no surplus behind it.

Q. It is the shortage that has caused the rise?—A. I think that is right, partly. In other words, I think the cry of overproduction of cotton has had some tendency to hold cotton down heretofore, but the intelligent world has figured it out that there is no oversupply, no more made than there is a demand for; and that,

together with the short crop, which will probably fall a million or a million and a half bales short, has brought us better prices.

Q. Do you think you would have had better prices had you raised as much this year as last year?—A. I think only to some extent.

Q. You do not think, then, that the short crop has had anything to do with the advancing of the price?—A. Somewhat, of course, but I think we should have got a better price than we had before, as I told you.

Q. (By Senator KYLE.) What do you think in regard to this system of tenant farming?—A. It is all we can do in the South. Our laborer wants some liberty. The wage system is constant work, constant employment, his time belonging to the other man. Under the tenant system he takes a good deal of time and has liberty to go and come as he pleases.

Q. Which is best for the workman?—A. I do not know how to value his time as compared with dollars and cents.

Q. He bears some of the responsibility, of course; learns to assume responsibility in working for himself?—A. Yes, sir; a little.

Q. (By Representative LIVINGSTON.) Are these tenants usually of sufficient intelligence and information to preserve and take care of a farm and cultivate it as it ought to be cultivated?—A. I think a great many of them have plenty of intelligence, but there is a tendency in the South with our tenants to get out of doing anything that keeps up the farm. In other words, as you gentlemen well know, our land here was much worn under our old system of farming, and we have had to bring it up by particular methods. For instance, the terracing system is doing a great deal to bring back the fertility by keeping it from washing, and the average tenant does not care to do that thing. He does it in some instances, but it is rather reluctant.

Q. I gather from your testimony and others that there are few responsible colored men who will rent a farm and go to work and do as a white man does in the North?—A. That is right; very few.

Q. Do any considerable number of colored men own lands?—A. A few years ago they did, but they have generally lost them. Immediately after the war, the first 10 years, some colored men bought homes; and after the price of cotton got so low, as a rule they lost them.

Q. So that there are very few colored farmers in the South that own their own land?—A. Yes; but few.

Q. Most rent individual farms?—A. Yes.

Q. Most work by the month or— A. (Interrupting.) Or on the tenant system; and I think that will apply to the entire State.

Q. What have you to say as to the future of the negro?—A. Well, sir; it is a tender question, one I do not want to discuss.

Q. He has advanced in regard to education?—A. He will go to school every day in the world that he has an opportunity, and in Georgia he has the opportunity of the white man.

Q. His plane of morals is rising?—A. I could not say that it is.

Q. (By Mr. RATCHFORD.) Does it not follow the negroes' education, a higher moral standard?—A. Well, it ought to do it.

Q. (By Senator KYLE.) You have negro institutions in the State?—A. Yes.

Q. Industrial schools?—A. Yes. The negro in Georgia stands with the white man in regard to educational facilities.

Q. The public-school facilities are the same?—A. Yes.

Q. You have public institutions of an advanced character, have you?—A. Yes.

Q. (By Representative LIVINGSTON.) You have no industrial school in Georgia?—A. Yes; at Savannah.

Q. There is one in Alabama?—A. Yes; they have one in Alabama and one in Savannah, Ga.

Q. (By Senator KYLE.) These students are taught trades?—A. Yes, sir; just as in the white schools.

Q. What percentage of the colored population are employed on the farms?—I should think about 75 per cent of the colored people in Georgia are employed on the farms.

Q. (By Mr. SMYTH.) Women, children, and men?—A. Everything; yes, sir.

Q. Quite a proportion employed in town as laborers generally?—A. Yes. Under our farming system the negroes catch at every little thing. Prices have not been remunerative, and there is a disposition to get away from the farm to other employment. There is quite a disposition of both the white and colored to move off.

Q. White and colored?—A. Yes; laborers, and not only the laborers but the landowners, to get away from the farm. In some sections of Georgia the farms

are turned over entirely to what we call tenants. The landowners have left them.

Q. Gone to the towns?—A. Yes.

Q. The negroes flock to the towns too?—A. Yes; very rapidly, too.

Q. What do they do in the towns?—A. Not being a man who lives in town, I can not tell; all sorts of work, street work, porters on trains, brakemen, hotel waiters, and bootblacks.

Q. (By Senator KYLE.) Do they get an advance in wages?—A. Wages are generally better than in the country.

Q. About what hours of labor?—A. The man who works on a farm in Georgia regulates his own hours of labor—I mean the tenant. He is not forced to a certain time—strict hours.

Q. Farming, then, is not considered a very desirable employment?—A. Not in Georgia. If we could get out the capital we have invested in farms, as a rule, the majority of the men would go into other business.

Q. What percentage of the farmers own their land without mortgages?—A. About 20 per cent. I believe the Eleventh Census showed that 21 per cent of the inhabitants of Georgia owned their own homes; about 19 per cent in the cities and perhaps 21 per cent and a fraction in the country.

Q. Eighty per cent, then, do not own them?—A. That is right.

Q. They must be renters—that is, the white?—A. White and black.

Q. That takes in tenant farmers as well?—A. Yes, sir.

Q. There may be four or five tenants working for you?—A. Yes.

Q. Taking it amongst the whites that own and operate these farms, what per cent own their farms?—A. Twenty.

Q. The balance are renting from some one else who own these farms?—A. Yes. As a rule, they are citizens of Georgia, you understand. There are a few farms owned in our State by loan associations which covered this country a few years back.

Q. The banks foreclose mortgages and such things as that?—A. Yes, sir; some few in my neighborhood have been closed out.

Q. Did that have a tendency to depreciate real estate?—A. There is now a demand for real estate. Real estate has not depreciated in the last 12 months; it has been steady.

Q. But there has been a fall in real estate for a number of years?—A. Yes, sir; no desire to invest in agricultural land.

Q. Have you any immigration from the Northern States?—A. No, sir; not to amount to anything.

Q. No colonization from foreign countries?—A. Some in Georgia—one or two.

Q. Have you anything to say in regard to the system of taxation?—A. Our taxes on the farm are pretty heavy. We pay about 6½ mills in Georgia, and there is nothing in the world we have got that can escape taxation on the farm.

Q. (By Mr. SMYTH.) How do your assessments compare with the real value of the property?—A. Generally very well with its cash value.

Q. Its cash value is taxed about 6 mills?—A. Yes; taxed about 6 mills.

Q. What is the average value of land in your country?—A. Twenty dollars an acre in my home county.

Q. What is the land taxed or assessed there?—A. Twenty dollars an acre.

Q. Is there much of an idle class in your community?—A. Right smartly at times.

Q. With the colored people?—A. Generally colored.

Q. How are they supported? By their wives?—A. They are supported generally by their labor; they are not exceedingly well supported, sir. I think it is a pretty hard living; that is my observation. He is so fixed that he can get along somehow or other with less than average white labor.

Q. (By Mr. RATCHFORD.) Do these people find employment if they desire it?—A. Any time, sir.

Q. (By Mr. SMYTH.) Their labor is in full demand if they want it?—A. Not always.

Q. (By Senator KYLE.) Nobody need remain idle then if they want employment?—A. Nobody, at some kind of wages; I do not say there are remunerative wages.

Q. Do you hire anybody by the month?—A. Yes.

Q. White or black?—A. Both.

Q. What wages do you pay?—A. I pay \$10 a month and rations, as we call it.

Q. That includes provisions, board and lodging, does it?—A. I give a furnished house and patches for them, and pay them \$10 a month, and our custom is to give about 15 pounds of bacon, a bushel of meal, and a gallon of syrup a month, and we generally employ all the wives and children on the farm.

- Q. That is during the busy season?—A. The year round.
- Q. (By Mr. SMYTH.) Do you furnish firewood?—A. Yes; we furnish everything.
- Q. (By Representative LIVINGSTON.) If you received rent for the house, and a reasonable rent for the garden patches, and charged for their wood, with these rations it would run up to about \$15, would it not?—A. Yes, \$15, or about that.
- Q. You practically pay \$15 a month?—A. Yes.
- Q. (By Senator KYLE.) What would you say with reference to the markets for your cereals and cotton in this country?—A. We could market right at our door, within four or five miles; we think this country is pretty well cut up with railroads, and there is always somebody ready to buy your cotton at some price.
- Q. There are no complaints amongst the farmers in regard to overcharges for transportation?—A. Yes; the world is full of it.
- Q. Tell us something about that.—A. I can illustrate that, possibly. I live 31 miles from Atlanta; I pay 15 cents a hundred freight to Atlanta for my cotton; I pay 4 cents a bushel for corn from my place to Atlanta. That is just about the rate of transportation all over Georgia. The transportation is one of the great drawbacks to the farmer, we think. We can illustrate that by the report of our railroad commission in a great many instances, the report of our railroad commission shows that our railroads have earned a dollar for every linear yard of the road.
- Q. For the last year?—A. Yes. That was last year, from the last report.
- Q. Have you anything to say in regard to combinations by brokers and others for the purpose of controlling the price of cotton?—A. They do that.
- Q. For the purpose of bearing the price of cotton?—A. Dealing in futures is a great drawback to the farmers, and it keeps things unsteady.
- Q. I believe you stated that 90 per cent of the farmers were compelled to turn off cotton in the fall?—A. Yes.
- Q. Is it your observation that prices are generally beared during that season of the year?—A. Not always beared.
- Q. (By Mr. RATCHFORD.) Do they usually sell to brokers and dealers?—A. To what we call brokers.
- Q. (By Senator KYLE.) And it goes up after it is in the hands of the broker, as a rule?—A. Yes, always. A man up on the history of cotton knows that to be true.
- Q. Who are the parties responsible for bearing the price of cotton?—A. I think the Government is responsible for it, the United States Government.
- Q. In what way?—A. I think she is all-powerful, and can regulate these things if she would.
- Q. In other words, you say the Hatch bill, prohibiting gambling in futures, should have been passed?—A. Yes; that would help.
- Q. (By Mr. SMYTH.) Is it not a fact that cotton in the last few years has been higher in November and February?—A. Yes.
- Q. Has it not been higher in October than in February?—A. I do not think so.
- Q. I think so.—A. Last year cotton was 6 cents in February and 4 cents in October; that is what my cotton bill shows.
- Q. How about the year before?—A. I think it ran nearly the same way; I would not say for certain.
- Q. (By Representative LIVINGSTON.) Is not the low price of cotton in October, November, December, and January largely to be accounted for from the fact that very nearly the entire cotton crop of the South is sold in these 4 months?—A. Yes; the farmer's financial condition forces him to sell.
- Q. How long does it take to spin it, 12?—A. Manufacturers say 12 months.
- Q. If any other crop was disposed of in the same way, would it not depress it in price, and would not the outside world take advantage of it? Suppose all the mules that would be sold in the next 12 months were crowded into 4 and sold in 4 months, would it not reduce the price of mules immensely?—A. Is it not true that all the mules that are sold are sold within 4 months? They are just about the same way; they are sold just so. And the wheat crop is pushed on the market in just about the same way as the cotton crop.
- Q. If the last cotton crop could have been sold, one-twelfth in September and one-twelfth each month, running along until the next September, what would have been the price of cotton in October?
- The WITNESS. If it had been known?
- Representative LIVINGSTON. If the world had known that one-twelfth was to be sold each month, what would have been the price?—A. If the world had known that I was able to hold it, it would have brought a better price; but if this world had known that that warehouse man had a lien on that cotton, and that he could

close me out at a certain time, it would not have had any effect. I am not favorable to the syndicate warehouse system.

Q. I want to ask you this question: You say the farmers are not able to hold. What plan would you suggest to enable them to hold and scatter this sale along throughout the year?—A. There is only one plan to my knowledge, and that is the old alliance warehouse system.

Q. That is what we are talking about.—A. It is a system—syndicate of systems.

Q. Well, the Government was a system.—A. They were to advance to a certain per cent.

Q. So these people offered to advance at 5 per cent?

Q. (By Senator KYLE.) It would not be profitable for the syndicate to close them out?—A. Yes. If it was so arranged by the directory or by law that these men could not close a fellow out just when they saw an opportunity, and if at 12 months, as we asked the Government, then it would be all right. But we are all human beings, every man, and the purpose of syndicates, if I understand it right, is to make money; and if they get to such a point that they can squeeze me, if they have the right to do it within 12 months, then I am gone. I want to express myself right here, that I have felt hopeful and feel hopeful yet that much good would come from this commission; and if you can do anything to help us, we want to be helped, because we are away down.

Q. Would not a plan of that kind, to rent of the Government or rent of a syndicate, have a tendency to put the farmer on his legs so that he could take advantage of the demand for cotton and sell as the demand grows?—A. I think it would have some tendency to help.

Q. (By Mr. SMYTH.) It would not help the renter though?—A. No, sir, as a rule, until the land owner can get in such a condition that he can assist the renter too.

Q. The plan now—the landlord takes the crop from the renter in October and November, if he chooses to hold out this much.—A. Yes; as soon as gathered.

Q. And any advance in price, the landlord gives the renter generally?—A. At his option.

Q. (By Representative LIVINGSTON.) If we should carry that cotton in the warehouse for your tenants and my tenants, why would they not be benefited?—A. They would if we were benefited.

Q. Then it would be our fault if the tenant was not benefited?—A. That would help, if we are helped by it.

Q. There would be a discrimination against the farmers who did not do it. They would see your tenants getting advantage of it, and my tenants getting advantage of it, and they just would not work without it. They would force the farmers to carry it into the warehouses. Does it have that effect to a large extent?—A. If that plan can be carried out as you say—and I am not to be squeezed in 12 months—then I can help men who work with me, and so on, if I should be helped.

Q. (By Mr. RATCHFORD.) The danger that you apprehend is that the syndicate will have certain provisions in its contract that would enable them to take advantage of the men who can not meet obligations at the end of the year?—A. That is right.

Q. (By Representative LIVINGSTON.) If they carry cotton to the end of the year, it is no advantage, that is true. They ought to be able to sell out cotton at an advantage.—A. I do not propose to hold it, and there is nothing that laps over except tobacco.

Q. (By Senator KYLE.) I think, in addition to this system, that you can diversify farming and enable the farmers to exist.—A. That perhaps would help us.

Q. We shall be glad to have you make any suggestions along the line of remedial legislation.—A. Now, the South is rapidly going into industrial slavery and our lands are all going into the hands of a few men, and I attribute it to two or three causes, and I believe it can be remedied. Just a few years back, you know, 120 years ago, this Government was formed. Now, at the age of 120, if you will take the abstract of the Eleventh Census you will find that about 65 per cent of your citizens are homeless—have got to ask somebody for a place to live and put their heads. In Georgia we have 80 per cent in that fix. That is our fix to-day if the Eleventh Census be true. There are several causes which have brought that about; the causes I do not want to discuss, but it is so. We are a nation of tenants—a man without a home don't love his country, I do not care what you say about it. I want to tell of a remedy for these things, because I understand that one man doesn't know it all and that we learn from each other. Our laws govern our financial relations and social relations. The first thing we want to change is our financial system. I have no opportunity to get money

out of the bank under our national banking system. In the first place the banking system of this country says to the banks, you shall not loan money on real estate.

Q. (By Mr. SMYTH.) You have no State banks?—A. No State banks of issue.

Q. I mean to loan money?—A. They are few and far between. There are some loan associations—that is what we call them—that loan for enormous prices; you must pay all the fees and everything else; we have few banks that loan money. I have never been able to find one of them yet that would loan on real estate as a rule, only at ruinous interest.

We are certainly an exporting people, and all our agricultural exports are sold at the price of pauper-labor agricultural products, and we pay a bounty or tariff on everything we consume. The protective system is right, but it is not carried far enough. You force the farmers to sell at prices, competitive with pauper labor. To make that tax even, every agricultural product that passes out of the United States should have a bounty paid on it, and for the reason I just gave.

Q. (By Senator KYLE.) That is in support of what is called the export bounty bill introduced in Congress?—A. Yes. There must be a change in our transportation system; there has got to be one. It is of no use to argue that, because you are intelligent gentlemen, and you have had it argued before you.

Q. What way would you advocate? Some increase of the powers of the Interstate Commerce Commission?—A. If I read right, our State and interstate commissions are just as helpless as I am to enforce that law.

Q. And would you advocate an amendment to the law?—A. I would advocate some kind of an amendment, but I would advocate Government ownership of all public utilities and transportation.

Q. Pending that; that is quite distant?—A. Then I would advocate that the government we have to-day have power to enforce decrees.

Q. (By Mr. SMYTH.) Have you read the recommendations of the commission on that line?—A. No, sir; I have seen them.

Q. (By Mr. RATCHFORD.) Government ownership and Government regulation and control?—A. I believe in Government ownership, and I think you and I, young men as we are, shall live to see the time when we shall be obliged to do it. Syndicates are eating up this country everywhere.

If you want America to remain America you want a citizenship. If you want to be true to the flag you have got to restrict land ownership in this nation, and provide them a home. God's earth is large enough for all. When Rome fell, 1,800 men owned the known world. Thirty-five per cent of the citizens of the United States own the United States. You know it just as well as I do.

Q. (By Representative LIVINGSTON.) You mean they own the real estate?—A. I am talking about real estate, and you know, gentlemen, that you have got 4 or 5 men in the Government who could buy the whole State of Georgia, boots, breeches, and everything else.

One more thing, you have got to do is to make the homestead secure. You have got to relieve it of taxation or fix it so that it can not be taken under any consideration whatever. If you will do that you will build up a nation that will be a power in the future that the nations of the earth can not overturn and will respect.

Q. (By Mr. RATCHFORD.) Can the homestead be taken under the laws of Georgia to-day?—A. Yes, I can volunteer to give a waiver on my homestead; I should not have the right to do it. I know these are coming questions, and I know you gentlemen are seeking information, but I can go and waive my homestead down there to-day and buy a bill of goods.

Q. I mean, can it be taken by debt without a mortgage?—A. There is no debt without a waiver on the homestead—no note.

Q. (By Mr. SMYTH.) I am surprised to hear you say you have very few State banks in Georgia that loan money on real estate.

Q. (By Representative LIVINGSTON.) You had better correct that, Colonel. We have a great many State banks in Georgia.—A. I said State banks of issue.

Q. (By Mr. SMYTH.) A State bank will lend money on real estate?—A. It is likely that they will; I think they will. Interest under the loan system has eaten up the farms of Georgia. Why force the farmers to borrow money from State banks?

Q. (By Representative LIVINGSTON.) Let me ask you about this home. Allman Bank is a State bank?—A. Private bank.

Q. They loan money on real estate?—A. Yes.

Q. I believe the Clarke Banking Company of Covington—A. That is private—individual.

Q. They are chartered by the State?—A. Not incorporated.

Q. You will remember this company—the Clarke Banking Company—asked permission of the State to cut the charter from \$100,000 to \$50,000, and it was done. You take the Madison Bank and Walton Bank—that is a private bank? I think all that class of banks in Georgia are loaning money on real estate.—A. It is interest paid to these banks that is eating us up largely.

Q. (By Senator KYLE.) What rate of interest is charged for loans on real estate by these private banks?—A. Anywhere from 8 to 12 per cent.
(Testimony closed.)

MEMPHIS, TENN., March 22, 1900.

TESTIMONY OF MR. JOHN C. KYLE,

Lawyer, Sardis, Miss.

The subcommission of the United States Industrial Commission met at the Peabody Hotel at 10.07 a. m., Senator Kyle presiding. Mr. John C. Kyle was introduced as a witness, and, being first duly sworn, testified as follows:

Q. (By Senator KYLE.) Please state your name, post-office address, and vocation.—A. My name is J. C. Kyle. I live at Sardis, Panola County, Miss.

Q. (By Mr. SMYTH.) What is your occupation?—A. Lawyer.

Q. Are you also a cotton planter?—A. Yes.

Q. How many acres do you plant in cotton?—A. I am not really a cotton planter. I rent some of the land and furnish the hands that cultivate it.

Q. Will you describe that arrangement; how you rent your land, on what terms, and the color of your tenants?—A. I have a place near Friars Point that I rent for about \$4 per acre.

Q. Money rent?—A. Money rent. It is subrented for a much greater sum than that. I rent for a sum total.

Q. To one man?—A. Yes, sir.

Q. To a white man?—A. Yes, sir.

Q. He subrents?—A. Yes; to colored people and Italians.

Q. Are there many Italians renting in that way?—A. I do not know of a great many. There are a half dozen families on this place of mine. The rest is cultivated by colored people.

Q. How much land do these tenants have to the family?—A. It depends on the size of the family.

Q. Do they run a 1-horse, a 2-horse, or a 3-horse crop?—A. Some run from 1 to 4 horse crops. I believe the largest farmer that I call to mind on the plantation runs 4 plows.

Q. How many acres does he cultivate in cotton to the horse?—A. About 20 to 25.

Q. Does he plant grain besides?—A. Yes, sir.

Q. He generally raises his own foodstuffs, meat and corn?—A. Yes, sir.

Q. Cotton is the money crop?—A. Cotton is the money crop; yes.

Q. What does that plantation yield per acre?—A. I could not give the exact quantity of cotton. I should think a very safe estimate would be one bale of cotton—500 pounds of lint cotton.

Q. That would be an average crop?—A. Yes; on this particular place.

Q. Some years it would be less and some more?—A. Some years it might be more, rarely less than that on that land about Friars Point. It makes more than that sometimes.

Q. Could that be taken as a criterion of the productiveness of the land around there?—A. In Mississippi?

Q. Yes.—A. No, sir; out in the hills we produce less.

Q. That is what you call the Delta?—A. Yes, sir. I own land out in the hills also.

Q. That is not nearly so productive?—A. No, sir.

Q. How do these hands or tenants run themselves during the year? Are they able to provide themselves with food?—A. They are generally fed from the plantation store.

Q. From the commissary?—A. Yes, sir.

Q. They get that on credit?—A. Yes, sir.

Q. Do they give liens on the crop?—A. No; the statutes of Mississippi give the landlord a lien on the produce of the place to secure him.

Q. These advances are made by your chief tenant who rents from you?—A. Yes, sir.

Q. He makes his arrangement with the subtenants?—A. Yes, sir. I own lands out in the hills where I live that I manage myself. I supply that labor myself.

Q. Do you pay them wages?—A. No, sir. Some of the colored people I have work on shares and some are renting land.

Q. What is the custom about renting on shares?—A. The landlord owns the land and furnishes that, and he furnishes a mule or horse, or mules and horses, and implements; the laborer cultivates it, and they divide the products equally.

Q. Do you use any fertilizer in the hill country?—A. Very little.

Q. You do not use it at all in the Delta?—A. No, sir.

Q. (By Mr. RATCHFORD.) Who furnishes it?—A. I have never used any. I do not know who furnishes it.

Q. (By Mr. SMYTH.) Is that general in Mississippi; no fertilizers used?—A. In southern Mississippi I understand they use a great deal, but we do not use any at all except such as is gathered on the farm—homemade.

Q. Compost piles?—A. Yes.

Q. Coming in on the train we noticed tremendous washes and gullies in the land on either side of the track. It looked like a quarter of an acre in some places had been scoured out for 10, 15, or 20 feet. What causes that?—A. In the first place, you came through a very sandy section of the country. From here to Holly Springs is a very sandy country, and when the water scours its way through the soil and cuts to the sand, it washes very rapidly; the soil is fertile, and the people here have never learned to protect it with sidehill ditches and terracing, as they might. They are learning to do that.

Q. A system of terraces would prevent the washing, you think?—A. I am not sure that it would where it is very sandy, but generally I think it would. I was raised on a farm, and I know something practically about that. I know that when I was a boy my father used to prevent his land from washing by a system of terracing and sidehill ditching, and the old home place on which I was raised is yet in a good state of preservation, owing, in my opinion, to the practice of sidehill ditching; though it is not so sandy there as it is in the country through which you came on your way to Memphis.

Q. Is farming land in this county owned in large tracts principally?—A. Which county?

Q. The county which we are in.—A. This is Shelby County, Tenn. I could not speak about that. The lands in Mississippi are owned in large tracts; in many instances, though, not so large as before the war. You know, perhaps, that our section of the country was owned by large planters who owned large numbers of slaves, and the land was operated and cultivated by that sort of labor. Since the war, from time to time, as the years have gone by, these lands have been divided up, and are now held by small holders in comparison to what they formerly were.

Q. Has there been an increase in the value of land in your county in Mississippi since the war?—A. I can not speak since the war; I know there has been in the last 8 or 10 years, and there is now a very perceptible strengthening in the prices of real estate in our county in the last year or two.

Q. That has shared in the general prosperity?—A. Undoubtedly so. You see, for instance, we have been getting a much better price for cotton. Cotton seed has gone beyond what anybody ever expected it to go in price. I can remember when it was a great source of bother to get rid of the cotton seed that accumulated about the ginhouses. We threw it out and got rid of it in anyway we could. People would complain about the hogs getting in and eating it.

Q. (By Senator KYLE.) What does the cotton seed sell for?—A. From 30 to 33 and 34 cents a bushel.

Q. (By Mr. SMYTH.) That is bought by the oil mills?—A. Yes.

Q. Then the farmer can buy the meal back if he wants it?—A. Yes; but he pays pretty well for it.

Q. (By Mr. RATCHFORD.) How many bushels of seed will an acre yield?—A. I suppose that on an average we make a bale of cotton to 3 acres, and there is about 33 bushels of seed, to the bale.

Q. A bale to 3 acres?—A. Yes, sir.

Q. You were speaking of making a bale to the acre?—A. Yes, sir; in the first instance I was speaking of the delta country. I do not live there; I own a plantation there.

Q. You make how many bushels of seed to the acre?—A. Ten or twelve to the acre.

Q. (By Senator KYLE.) Worth 33 cents?—A. Thirty to 33 cents.

Q. About \$6 or \$7 per acre for seed?—A. Yes, sir.

Q. And in the delta country you raise a bale to the acre?—A. Yes, sir; that is a safe calculation.

Q. And make about \$10 there an acre for seed?—A. Yes, sir.

Q. That is in addition to the cotton?—A. Yes, sir.

Q. Adding immensely to the value of the cotton crop?—A. Yes, sir. We have got the greatest country in the world, if we only knew it.

Q. I want to get at the actual product of an acre of ground, money value. You say it is about \$10 an acre for seed. How much cotton is taken off an acre in the delta country?—A. It is worth about \$40 to \$45 a bale.

Q. It sold for 9 cents the other day. The average then is about \$10 for seed and \$40 for cotton, making \$50 off an acre of ground?—A. Yes, sir. That is only a recent condition. We have been getting until recently about 5 cents for cotton.

Q. (By Mr. SMYTH.) That was only for about 2 years?—A. Yes.

Q. (By Senator KYLE.) What does it cost to grow cotton?—A. I have figured some on that. It varies. I have discussed that with cotton growers, and they do not agree about it. I suppose it costs from \$20 to \$25 a bale to make it.

Q. Whether on the upland or lowland?—A. I think it would cost more on the upland.

Q. (By Mr. SMYTH.) It would cost 4 or 5 cents a pound to raise it?—A. Yes, sir.

Q. Of course conditions vary on different plantations?—A. Yes, the conditions are more favorable in some instances than in others.

Q. More intelligent management?—A. That helps. It costs some men more to raise the cotton than others. Some understand the cultivation better. Some know what sort of plow to use better than others. Some know how to prepare the soil, plant and handle the crop better than others; but on an average I should say it would cost from 4 to 5 cents a pound to make cotton.

Q. (By Senator KYLE.) So when you are growing cotton at 5 cents you come out about even?—A. I think just about even, not much more than that.

Q. You would not say that it costs 8 or 8½ cents to raise cotton?—A. No, sir; I would not.

Q. We had that testimony from some man over in Georgia. A. I do not think that. Of course, being called up here without having thought about this, I have not reflected on it as I should like to if I were going to try to get at these facts accurately.

Q. (By Mr. RATCHFORD.) You spoke of the seed being a waste formerly; how long has it been since the seed has been a source of revenue to the farmer?—A. I suppose 25 years.

Q. Has that change from the previous condition improved the farmer's condition?—A. I think so. I hear this sort of talk among farmers, that the selling of the seed impoverishes the soil and that they do not make money by that course; but formerly when they did not sell the seed, they did not utilize it much for fertilizer.

Q. Do you believe the decline in the price of cotton for the last few years has been due to any extent to the revenue derived from the seed of the cotton?—A. No, sir; I do not think so.

Q. That has come about as a natural consequence?—A. The price of the cotton?

Q. The decline for the past few years?—A. Yes, sir; that is my idea about it.

Q. (By Mr. SMYTH.) Rather due to the law of supply and demand?—A. I think so. I think that is one rule you have to observe in almost any industry when you come to pass on a question of economics; you have to consider the law of supply and demand.

Q. The crop has been constantly increasing?—A. Yes; and we had been accumulating, and in my opinion there was an accumulation of manufactured goods, and we had two immense crops right together. Now the shortage of this crop and the increased demand for cotton goods has put the price up. I might say further that in my opinion while cotton was so cheap the price was so low that people found a great many uses for it that they never knew before. I have seen cotton used in Mississippi in clothing of recent years that we never had before, and I think it was because cotton was cheap and those who were handling it were seeking something to put it into.

Q. That is undoubtedly true; it was used in place of shoddy?—A. That is true. You see it stated in these manufacturers' journals that cotton is mixed with silk. It is mixed with flax, and you see people wearing blouses and overalls now which were never worn in our country before. Cotton got so cheap you could buy these garments for such a very small price.

Q. Do you not think the depression in business existing for 2 or 3 years, covering the period of low prices of cotton, had its natural effect in lowering the price of commodities?—A. I think so. I think the lowering of the price of cotton increased the demand to some extent.

Q. Do you not think the lowering of the price was caused by the depressed condition of business?—A. Yes.

Q. And since business has revived there has been an increased demand for everything?—A. I do not know that I should be willing to say. That would be mere venture without being informed about it—to say that people wear less clothing than they did. I do not know that my observation is that way.

Q. What causes, do you think, led to this revival of business?—A. That leads out into politics a good deal. I think the revival of business in the country is to some extent attributable to the fact that people became reconciled to the condition as it was, and had more confidence in the stability of our conditions, and all that sort of thing, and the shortness of the cotton crop increased the demand for that commodity in the South here, increasing the price, I mean, and that revived business with us, and there were circumstances that increased the demand to some extent for the products of the Northwest—the war has had something to do with it.

Q. (By Senator KYLE.) One other question as to the cost of growing cotton. How much cotton can a man make?—A. With reference to the cost of growing cotton, I do not know that I was as accurate about that as I might be. I stated the cost of growing cotton was 4 or 5 cents. That price was fixed with reference to other conditions; for instance, when corn and mules and farming implements and labor were in proportion to the price of cotton cheaper than now. I do not believe you can grow cotton for 4 or 5 cents now. Mules and horses are worth a great deal more. Plows and all kinds of hardware are worth more.

Q. (By Mr. SMYTH.) What caused the advance of the price of mules? An increased demand?—A. I think so. There has been a demand for mules abroad in the war; and with the increased price of cotton of course almost every farmer that owns land is anxious to put it into cotton and get the best results from it, hence he wants mules. Heretofore he has been a little indifferent about planting so much cotton.

Q. (By Mr. RATCHFORD.) Is an increased price paid to agricultural labor as compared with 2 or 3 or 5 years ago?—A. I will answer that in this way: Where the laborer works for part of the crop, of course his price is increased to the value of the part that he gets.

Q. (By Senator KYLE.) You do very little hiring by the month?—A. Very little. I can not say that there has been very much advance in the price of that sort of labor. The tenant system is almost universal.

Q. (By Mr. SMYTH.) Under that system the laborer shares in the advanced price of the farm product?—A. Yes; and we grow down in our country a great many things besides cotton. He participates in the fluctuation, advance, and decline in price.

Q. (By Senator KYLE.) How much cotton can a man and his wife and 2 or 3 children—boys from 12 to 18 years of age—grow?—A. I think they can work on an average 15 acres to the hand in the section I live in.

Q. Just the family?—A. Each hand in the family.

Q. Fifteen acres?—A. Yes, sir; that means old and young, all that go to the fields. Take a steady, able-bodied man, he can cultivate more than that.

Q. Forty dollars an acre is the gross profit, making about \$600?—A. No, sir; I do not think they can make \$40 an acre out in the hills. They would make about one-third of a bale to the acre.

Q. In the delta they make about \$40 to the acre?—A. Yes, sir. We also grow out in the hills sorghum, sweet potatoes—sorghum is a great crop. It is used on the plantation generally. We raise some sugar cane, not a great deal. We raise sweet potatoes and some Irish potatoes.

Q. (By Mr. SMYTH.) Do you raise your own meat?—A. Yes, sir; more than formerly.

Q. Are the colored people acquiring land to any extent in Mississippi?—A. Not a great deal.

Q. Has there been any advance in the general condition of the race, socially and in intelligence?—A. Yes, sir; I think so.

Q. Have they improved as laborers since freedom?—A. No; there is not much change.

Q. Do you think they have increased in value as farm laborers?—A. Of course, as you increase the intelligence of the man, if it does not go to the extent of putting him in a position to abandon farm labor altogether, it increases his efficiency as a laborer.

Q. You consider them first-class labor do you not?—A. I consider them the best we ever had in the South.

Q. You spoke of Italians. Do you consider them successful cotton farmers?—A. Very.

Q. How do they compare with the colored?—A. They are more energetic and

more successful. The Italian does not stay on these fertile lands long until he has money enough to engage in some other sort of business. He is not, therefore, as desirable as a laborer as the colored man who stays there. The idea of the Italian is temporary employment, and he drifts away to the city.

Q. Is there any disposition in the colored man to drift to the city?—A. A good deal, yes, sir.

Q. What do they do?—A. They get places as servants and about hotels.

Q. Is there much of the vagabond loafing class among the colored?—A. I do not think so. That is not my observation.

Q. What school facilities have you in Mississippi?—A. In what respect?

Q. Public schools.—A. In some of our towns we have now what are known as separate school districts where they run schools about 9 months in the year. That is under a system by which a tax is levied on the particular district to supplement the amount contributed by the State. For instance, in the little town I live in they run the school 9 months for both white and colored. There is no distinction except that the white teachers are paid more than the colored teachers. The colored do not hold as high grade certificates as the white.

Q. (By Senator KYLE.) They would be paid the same for the same certificate?—A. I think so.

Q. How about the country schools?—A. They run about 4 or 5 months in the year. They are supported out of the State funds equally with those of the whites. The schools are kept separate and the races do not mix.

Q. What proportion of the taxes are paid by the whites?—A. I could not answer that. I have recently seen a statement showing exactly what that was.

Q. The bulk of it is paid by the whites?—A. Yes, sir.

Q. (By Mr. RATCHFORD.) What is the proportion of the colored and white?—A. About equally divided, I think.

Q. (By Mr. SMYTH.) Do you know how much the State contributes each year?—A. Our legislature, which has recently adjourned, appropriated \$1,000,000 for public schools, and in the separate school districts there is an additional amount raised by a special tax on those districts, which goes to supplement the amount contributed by the State. That is a local tax.

Q. The \$1,000,000 fund will run the schools for 4 or 5 months?—A. Yes, sir.

Q. And where there is no local tax to supplement that fund the school stops?—A. Yes, unless there is a contribution made by the citizens.

Q. (By Senator KYLE.) Have you a compulsory law?—A. No, sir.

Q. How do the negro children attend, pretty regularly?—A. Yes, sir, generally, I think so. I have not been to a negro school recently. I used to be a trustee of the public schools and would occasionally go to the negro school, but I have not had my attention called to it of recent years. I think the attendance is generally pretty good; they are anxious for an education.

Q. (By Mr. SMYTH.) More than the poor class of whites?—A. No; I think not.

Q. Do the white parents as a rule encourage their children to go to school?—A. I should judge so. It looks to me in our little town as if all the children within striking distance must be in school.

Q. Do we understand that in respect to this State money expended on public schools there is no partiality shown, no distinction between races; that it goes equally to the white and the colored?—A. Not equally.

Q. In proportion to attendance?—A. Yes, sir; it goes equally in this way; there is a system of grading the certificates held by the teachers, and the colored teachers do not generally hold as high grade certificates as the whites, and the salary is based on the grade of the certificate.

Q. (By Mr. RATCHFORD.) There is no discrimination in the school term as between the colored and the white?—A. No.

Q. (By Senator KYLE.) As to hi, her education, you have a State University for the whites?—A. Yes, sir.

Q. What provision is made for the colored?—A. We have a State University for the colored at Rodney.

Q. Is that well attended?—A. I am not informed about that.

Q. We learned that in Georgia they nearly double the attendance of the colored?—A. I have never heard but it is well attended. At Holly Springs there is the Shaw University that the State has been contributing to. The money with which it was built was contributed by some charitable Northern people, as I understand. The practice has been to supplement that with money out of the State treasury every year. I do not know whether they did it this year or not. I know when I was a member of the Mississippi legislature that was done. I think there is a school for colored girls at Jackson. That, however, is not a State institution, but the money is contributed by Northern people. We have an

industrial institute or college for girls at Columbus for whites; that is a State institution. Then we have an agricultural and mechanical college at Starkville, Miss., which is well attended. We have the State University, which is largely attended; that is kept up by the State. In its early beginning there was donated by Congress a township of public land for seminary purposes. That was sold and the proceeds put to the credit of the University of Mississippi. Recently, while a member of Congress, I got a bill through donating another township of public land to the State for seminary purposes, on the theory that heretofore only one township was granted to the State, and when these other States came in they got two townships. They gave us another township 2 or 3 or 4 years ago to put us on an equality with the other States. These lands are located in the southern part of the State.

Q. (By Mr. SMYTH.) Is there much land in Mississippi owned by the State?—A. Yes, a good deal, but not nearly as much as formerly.

Q. Is it the practice to sell that land out?—A. Yes, sir.

Q. Is it in forest mostly?—A. Yes, sir.

Q. (By Senator KYLE.) These negroes attending the universities, do they take a professional course, as a rule, after completing the college curriculum?—A. No, I think not much.

Q. The students of that university—do the graduates become professional teachers, ministers, lawyers, and doctors?—A. Yes, some of them do. There are not many colored doctors; very few; occasionally you find a lawyer.

Q. What is the disposition of the colored people to patronize their own race in a professional line?—A. They do not do that much. I have lived in a town where there were two or three colored lawyers, and I never knew the colored people to patronize them much with legal business. I have lived in a town where there were colored physicians, one at least, and I never knew his people to patronize him very much, and he finally went away; and these colored lawyers have largely gone away.

Q. You consider that the future of the negro is along industrial lines?—A. More than any other, if he has any future.

Q. Of course we are looking to the best good of the negro race as regards education and in other ways. You think there is more hope for him in education along industrial lines than any other?—A. I should say so; yes.

Q. Do you think he is improving as a farm laborer to any great extent?—A. If I said no, that would rather imply that I did not regard him as efficient. I think he is efficient now, as much so as he ever was. I do not think he has made much advancement.

Q. During the days of slavery he was a good workman, a continuous workman?—A. Yes, sir.

Q. In the first days of freedom I presume he was just as good a workman, but not as continuous?—A. Yes; that is true now.

Q. He has more disposition to loaf than formerly, and take a holiday?—A. I do not want to say that the darkies put in much time loafing. I do not think they do that, but they do not work as closely and as diligently as they did when they were slaves, of course.

Q. (By Mr. SMYTH.) Nor as intelligently?—A. Nor as intelligently.

Q. (By Senator KYLE.) They do not seem to have an ambition to own property?—A. Some do, but the great mass do not.

Q. These men, you state, are farming on the tenant plan. Do they ever get to own their own farms?—A. Occasionally they do.

Q. Free from mortgage?—A. Yes.

Q. Do they get into debt and lose these farms?—A. When they get the land and get it free from mortgage they are very loath to encumber it.

Q. These are small farms?—A. Yes.

Q. Do they raise other things beside cotton?—A. Yes; sorghum and potatoes and corn.

Q. So they get their living from the land independently of the cotton crop, which is the money crop, do they?—A. They could do it, but they do not do it. Some of them do; the most do not.

Q. Of course, the happiest condition of the agricultural class is where they own their own homes free from mortgage, whether white or black, and it seems to me that is the ideal situation to look forward to with reference to the renting class. What percentage of the people on farms in Mississippi own their own homes in fee?—A. I could not answer that, because I am not well enough informed about it. I should say the white people generally own their own homes.

Q. The white people?—A. Yes.

Q. The statement was made in Georgia that only 20 per cent owned farms and 80 per cent rent lands.

The WITNESS. Of the white people?

Senator KYLE. Yes.

A. I should not be willing to make that statement, even upon opinion, about Mississippi. I do not believe that is true.

Q. (By Mr. SMYTH.) In Mississippi you think a majority of the white people own their property?—A. I should say so.

Q. What is the condition of the cotton planter now, this year, as compared with former years?—A. I think it is better.

Q. What has been the custom heretofore in regard to the spring crop? Would they have to borrow money from the factor?—A. They would either have to borrow money or get their merchant to supply them.

Q. You are speaking now of the white landlord?—A. Yes.

Q. Then he in turn would supply the tenants?—A. He in turn would supply the tenants.

Q. (By Senator KYLE.) Did the good prices for cotton this last year help them out in that regard?—A. Yes; no doubt about it—good prices for everything else we have had; cattle have been sold at good prices, and sheep have been realizing pretty good prices. Cattle are a commodity that has never been worth much with us until recent years.

Q. (By Mr. SMYTH.) Do the tenants in Mississippi generally hold the cotton to get the benefit of advances?—A. No, sir. I think not; it is just as it used to be.

Q. Quite a number of them hold, I suppose?—A. Yes.

Q. (By Senator KYLE.) What percentage of the farmers are compelled to sell their crop immediately after harvest?—A. I do not know. I should not suppose, however, to guess at it, that over 25 per cent of them do.

Q. Were compelled to sell?—A. Yes.

Q. A good many of them could hold?—A. Yes.

Q. (By Mr. SMYTH.) That class is, of course, an independent class?—A. Yes; I think so. There are a great many people, of course, that, no matter what the prices are, are improvident people. Of course there is a large per cent of that sort of people who do not take advantage of higher prices or anything else and lay by anything for a rainy day. My observation is that more people in the country have money than I have known to have it before. My business is such that people come to me seeking an opportunity to make a little loan of money. I have had people approach me in that way that I would not have thought had any money. Of course that is just the neighborhood around there.

Q. That wanted to loan money?—A. Yes.

Q. (By Mr. RATCHFORD.) From that you judge the condition of the people generally is improving?—A. Yes. Of course there are a great many of these questions that I have not thought about before. I will answer them as they come to me, and put in my opinion of the different matters as they appear to me around home.

Q. Now, about the mortgages on the farms. Have you any reason to know as to the number of farms in your county that are covered with mortgages?—A. No, sir; I have but little information on that. I know a good many people give mortgages.

Q. (By Senator KYLE.) For what purpose do they give mortgages?—A. They give mortgages and borrow money to carry on their business.

Q. (By Mr. RATCHFORD.) Mortgages are not always the sign of hard times, are they?—A. I think not, sir.

Q. You spoke about the plantation store. I should like to have you explain the details of that more fully.—A. Well, sir, a plantation store is a store on the plantation. The landlord generally owns and operates the store and advances the laborer his supplies.

Q. (By Mr. SMYTH.) It is a general store?—A. Sometimes it is a general store, but I would say, strictly speaking, a plantation store; it is just simply to furnish people on the place.

Q. (By Mr. RATCHFORD.) Does the laborer get credit there for his necessities until the crop is marketed?—A. Yes.

Q. Without a mortgage?—A. Yes.

Q. Or any other security?—A. Yes.

Q. Is he obliged to deal at that store? For instance, can he go to the next plantation store and deal there if he wants to do so without any interference on the part of the landlord?—A. I suppose he could if he had outside security. The statutes of Mississippi give the landlord a lien on all crops produced by the tenant to secure the supply dealers, rents, and so on. That gives him credit with the landlord at all times, and he would not have that credit were he a man who was not with the landlord.

Q. For instance, if the landlord should for any reason raise the price of flour, meats, or other necessities of life, would the tenants feel obliged to deal there because of these reasons?—A. I do not know whether he would feel obliged to do that or not, but his environments would be such that they would almost compel him to go there.

Q. As to prices: What can you tell us concerning the cost of staple articles, for instance, flour, meats, coffee, in those plantation stores?—A. I could not tell about that. I do not know what anybody does. I can tell you my practice with reference to my own people.

Q. Tell us your practice.—A. I furnish my people on my lands I work at home at cash prices, just what I have to pay for the goods, and they pay 10 per cent on that.

Q. Cost price, you mean?—A. Cost price; yes.

Q. Are these prices cheaper than the prices generally prevailing in the city?—A. I can not tell you about that. I generally buy as cheaply as any man could, of course.

Q. (By Mr. SMYTH.) You buy wholesale?—A. Yes—I would not say that. Sometimes I can do better at country stores than in the city. Wherever I can buy stuff for my people the cheapest I get it, and then add 10 per cent to the cost of it for interest on the capital. That keeps me even with them, and occasionally a fellow slips out and there is some loss. I do not attempt to make a profit.

Q. (By Senator KYLE.) You have got to do that in order to get a man for your land?—A. Yes.

Q. (By Mr. RATCHFORD.) So far as you know, is that the practice that is generally followed in your neighborhood by other landlords?—A. I do not know, sir. I do that.

Q. There is not any system of issuing rations by the landowner, is there?—A. No, sir.

Q. (By Mr. SMYTH.) There are not many farm hands in your State hired by the month, are there? It is mostly the tenant system?—A. Tenant system.

Q. You were speaking a while ago about the colored people having a tendency to flock to the towns and cities. Do they accumulate property there?—A. No; I do not think they do, much.

Q. When they do it is very hard to get them to sell it?—A. Yes.

Q. They hold on to it?—A. Yes. Now, in the little town I live in there are a good many colored people who own homes there, small houses, cabins only. They are slow about borrowing any money and mortgaging their little homes when they get one. That is my observation with them.

Q. (By Mr. RATCHFORD.) Do the farm laborers, as a rule, school their children between the seasons of crop raising?—A. Yes. The schools, I think, are taught so much in the winter time and so much in the summer, when it is convenient for the children who are on the farms to go to school.

Q. (By Mr. SMYTH.) When the crops are laid by?—A. When the crops are laid by.

Q. (By Mr. RATCHFORD.) And in that way they have opportunities in the country to get a common-school education?—A. Yes.

Q. And at the same time assist on the farm?—A. Yes; that is right.

Q. (By Senator KYLE.) What is paid by the month to farm helpers when you hire that way?—A. I should say from \$6 to \$15 a month.

Q. And found?—A. Yes.

Q. (By Mr. RATCHFORD.) Do the wages vary as between white and colored men where the skill is equal? That is to say, will the colored man receive the same rate of wages on the farm as the white man, where all other things are equal?—A. Yes. If there is any difference, I do not know it. There may be some little difference in favor of the colored man. I think as a general thing people had rather hire colored men.

Q. (By Mr. SMYTH.) As a rule he makes a better tenant?—A. He makes a better servant.

Q. Do you have cotton mills at Wesson?—A. Yes; and at Natchez, Meridian, and then the Stonewall Jackson mills—I do not know what the name of the little town is that has grown up around it there. Some Northern people came down there and started a mill, and a town has grown up there. The name of the mill is known as the Stonewall Jackson mill—and then the Yocona mills.

Q. (By Senator KYLE.) Are you acquainted with the operation of these mills?—A. I am not.

Q. You do not know how much cotton they consume?—A. No, sir; I do not. I have a general idea about it that I gather up in a general way, but I know nothing about the details.

Q. (By Mr. SMYTH.) Have you any laws in Mississippi regulating the hours of labor, or ages at which children should be employed?—A. No, sir.

Q. (By Mr. RATCHFORD.) Have you compulsory school laws?—A. No, sir.

Q. Do you believe such laws ought to be in existence?—A. Oh, well; I do not think I do. I do not believe I am—

Q. (Interrupting.) Have you any shop or factory inspection laws?—A. No, sir.

Q. (By Mr. SMYTH.) Do you think these laws tend to decrease the building of mills?—A. No, sir. I do not know why they should. If there is any reason why I should have an opinion of that sort I do not know it.

Q. You do not think capital is attracted to Mississippi because of the absence of these laws?—A. No, sir; I do not.

Q. (By Senator KYLE.) The factory can operate as many hours a day as it wants to under the present law—14 hours if it wants to?—A. Yes.

Q. In the cities and towns of the State are the hours observed for the working men 10 hours a day?—A. Yes; 10 hours a day.

Q. (By Mr. RATCHFORD.) In the cities of your State?—A. Yes.

Q. Are you acquainted with the number of hours worked in your State?—A. No, sir.

Q. (By Senator KYLE.) You don't know what the hours are in connection with factories?—A. No, sir.

Q. (By Mr. RATCHFORD.) You are not acquainted with the ages at which the children are usually admitted into the factories?—A. No, sir; I am not. I only see them there at work. I suppose they are from 10 years old upward. Some of them are quite small I know.

Q. White labor is employed in factories, is it not?—A. Yes. I do not know any factory in this State that employs colored labor.

Q. Do you think that labor and confinement for 11 and 12 hours each day is injurious to the physical growth and development of the child?—A. I think it would be. I think that is too long.

Q. You think it should be regulated by law or otherwise?—A. I believe it should be regulated by law. Of course, as I have said before, these economic questions I have not thought about much. I believe, though, that there ought to be some restrictions about the length of time children are worked in factories.

Q. But no restrictions as to age?—A. I do not know but I would have some restrictions about the age, too; but I should not be as much in favor of that idea. I think the children in the factory ought to have some time for recreation outside and some mental and moral training.

Q. (By Senator KYLE.) They ought not to be allowed to work more than 6 months a year, for instance?—A. Not so close.

Q. (By Mr. RATCHFORD.) At present the children have little or no opportunities for education, have they?—A. I think not.

Q. Unless they attend night school or something of that sort?—A. Every man, in my opinion, is interested in every child growing up in the community in which he lives. I do not believe that idea is consistent with putting them into the factory and working them all the time that it is possible for them to work. I think they ought to have some time for advancement and mental training, moral training, and physical training.

Q. That also applies to the other sex, does it?—A. Yes.

Q. (By Mr. SMYTH.) Then you would favor a compulsory school law, wouldn't you, so as to force children to go to school, and to compel parents to send them to school under the working age?—A. I do not know. I do not believe I would say that exactly.

Q. (By Senator KYLE.) You think if they had a law forbidding them to work over half a day, or part of a year, they would probably go to school the rest of the time?—A. Yes; that is about the idea I have had.

Q. (By Mr. RATCHFORD.) Have you formed any idea as to the proper length of a day's work for children in the factories? Should it be 8 hours, 9 hours, 10 hours, or should it be even 11 or 12 hours for part of the year, and during the school term no work at all for the children?—A. I have never had any experience in working children in any sort of work, but just from my feelings of humanity and my general interest in children I should say that children ought not to work more than 4 or 5 hours a day—5 or 6 hours, or something of that sort.

Q. (By Mr. SMYTH.) But you have no plan to suggest?—A. No, sir; I have not, but that opinion is not worth anything, because I have not had any experience that would give me any intelligent opinion about it.

Q. You are not well advised about the conditions?—A. No, sir; I am not.

Q. (By Mr. RATCHFORD.) In a general way, have you formed any idea as to the age at which they should be admitted to work?—A. Well, no, sir; I have not.

This is an offhand opinion about it. I would not admit a child into these factories under 12 or 14 years old.

Q. (By Senator KYLE.) There is one other point you have not covered yet; that is the raising of cereals and stock by the farmers of Mississippi. I notice from the reports of the Secretary of Agriculture that there has been a falling off for the past 10 years in the amount of cereals and stock raised by farmers, and that you import some of the things that might be grown by the farmers. Is that because the people have given their attention entirely to cotton growing?—A. I think so; yes.

Q. Depending upon the money derived from that to purchase these other things?—A. The idea is that they can make cotton to buy mules easier than they can raise mules.

Q. Is it not possible for the farmers to diversify their industry in such a way as to make it very profitable?—A. I think so. I do not think the idea that raising cotton to buy mules is easier than raising mules is correct, but it seems to prevail.

Q. What is a mule worth when it is raised?—A. Generally with us we are paying all the way from \$50 to \$100 for mules. You pay \$125 for an extra good mule.

Q. What does it cost to raise a mule? I think Colonel Livingston gave as his practical experience that it cost \$15 to raise a mule ready for the plow?—A. I should say \$20 to \$25. Colonel Livingston, I fear, put the price a little too low. You see, unless a man owns his own jack, it takes \$8 to \$10 to start with.

Q. Suppose it cost \$25 to raise a mule ready for the plow, it seems to me it would be a profitable industry for the farmer, aside from the cotton crop.—A. I think so.

Q. Is the land adapted to wheat and corn?—A. It is adapted to corn, but not to wheat. We can grow wheat some; oats is a surer crop with us than wheat.

Q. Oats and corn can be raised successfully?—A. Yes.

Q. And can not the farmer also have a few milch cows and steers?—A. Yes. As I said a while ago, the cattle industry is looked after a good deal more now than formerly, because cattle are bringing a good price. They are being introduced in our country—the Durham cattle. Jerseys were brought in there years ago, and our country is well stocked with them. You will find milch stock all through Mississippi as often as you will find them anywhere. But in recent years farmers have gotten onto the idea that they want good steers, beef cattle, also, and stock to get a larger breed of cattle; and Durham is being introduced there.

Q. The complaint of the agriculturalists is that after disposing of the money crop there is not more than enough left to settle grocery bills and living expenses of the family. I can readily see how that is the case when a man raises nothing but a money crop, but we have passed through the same experience in our Northern country, of course depending entirely on the raising of wheat, and from that buying oats, corn, and all food and necessities for the family.—A. There is this about it. There are so many engaged in agriculture in all competitive crops that they do not generally make a great deal over what it costs to produce the stuff, and there is not much to lay by anyway.

Q. But I refer to cotton as a money crop, and to raising enough on the farm to supply food for home use?—A. I think we had throughout my section of Mississippi about as good a cotton crop as there was anywhere in the United States this year. I think it was better there than almost anywhere else. Our crop was made with less money than ever. We made that with the idea that we were only going to get 5 cents. Our cotton hands and all labor was furnished upon the idea that we should have to sell the crop at about 5 cents. Some of my own laborers came in and bought a year's supply with a bale of cotton; food was cheap; flour was not high; meat was—well, I do not know; we bought meat mighty cheap, and we did not give them much in the way of luxuries, and the result was when that went we found that we had a crop that was paying us from 6¢ up to 9 cents that we expected to sell it at 5 cents, and the result was there was a somewhat prosperous condition with us.

Q. (By Mr. RATCHFORD.) Do you sell your cotton direct to the manufacturers?—A. No, sir.

Q. It is sold to the middleman or agent, is it?—A. The cotton is now generally sold to exporters. No, sir. It goes to New Orleans. We sell at home to anybody who will come and buy. Sometimes the mills will send a man to these interior towns and buy cotton and ship directly to the mills. Sometimes it is shipped here to these cotton factors.

Q. Is it sometimes sold to agents or middlemen?—A. Yes.

Q. (By Mr. SMYTH.) You sell to the highest bidder?—A. We sell to the man who gives the most money for it.

Q. You are not interested in what he does with it?—A. No, sir.

Q. On this share system does the landlord settle with his tenant at a certain period of the year and then take the crop and dispose of it later?—A. Some of them do. I never do that. I sell my crop as soon as I get it and settle up with my laborers, but some of them do the other way. They will pay the laborer market prices for the cotton.

Q. And either hold or sell it?—A. Either hold or sell it. I have never held any cotton—never did in my life.

Q. You are not getting 9 cents?—A. I got 9 cents for some of it because I could not get rid of it any sooner.

Q. (By Senator KYLE.) The rule is, you think, to get as good prices at the beginning of the season?—A. Yes.

Q. (By Mr. SMYTH.) Are we to understand that the conditions in Mississippi are better?—A. Than they have been for several years. I would not say ever, because when we got 20 and 25 cents a pound we did very nicely by raising it. We are paying a pretty high proportion now on all sorts of supplies for the advance in prices.

Q. But still there is a general improvement?—A. Yes; I think so. I do not think anybody will deny that proposition.

Q. (By Mr. RATCHFORD.) Where the farm labor is paid by the month, are his wages advanced in any proportion to the advance in cotton and the necessities of life?—A. I do not think so. I do not know about that. I do not know of anybody working for wages.

Q. (By Mr. SMYTH.) All working on the share system?—A. All working on the share system.

Q. (By Mr. RATCHFORD.) I understood you to say a little earlier in your testimony that they received from \$6 to \$15 a month.—A. Yes.

Q. (By Mr. SMYTH.) That is not generally done?—A. No, sir; it is very rarely that you find men working for wages on the farm. That is my observation about it.

(Testimony closed.)

MEMPHIS, TENN., March 22, 1900.

TESTIMONY OF MR. J. R. GODWIN,

Planter, Memphis, Tenn.

The subcommission of the United States Industrial Commission met at the Peabody Hotel at 10.07 a. m., Senator Kyle presiding. Mr. J. R. Godwin, planter, Memphis, Tenn., was introduced as a witness at 11.22 a. m., and, being duly sworn, testified as follows:

Q. (By Senator KYLE.) You may give your name, address, and vocation.—A. J. R. Godwin, Memphis. I will have to give my vocation as a farmer now.

Q. (By Mr. SMYTH.) Where do you live?—A. My home is out 7 miles from the city. I am really living here at the hotel now.

Q. You live in Tennessee?—A. Yes; I live in Tennessee.

Q. What do you plant—cotton? A.—Well, I do not plant cotton for my own crop; I am running a stock farm out there, and my surplus land, what I don't want to cultivate in corn and hay and grass, I rent out to tenants, and the bulk of that is planted in cotton.

Q. How many tenants have you?—A. I think I have about 18.

Q. (By Mr. RATCHFORD.) How many acres of land?—A. About 1,600 acres.

Q. (By Mr. SMYTH.) How much land do these tenants cultivate to the family?—A. Well, they cultivate from 25 to 50 acres.

Q. How many acres to the plow?—A. Well, I can not tell you so much about the plow as I could about mules—that is, 1 and 2 mule crop. A man that cultivates from 20 to 25 acres will have 1 plow animal. If they cultivate 40 to 50 acres they have 2 plow animals.

Q. How many acres of cotton to the plow?—A. Well, I say about 15 acres.

Q. What will that land yield?—A. We calculate an average of about a bale to 8 acres.

Q. (By Senator KYLE.) Where is your land located?—A. About 7 miles east of the city, in Shelby County. It is on the Wolf River.

Q. Not as rich as the Yazoo bottom?—A. Not quite. I have some land that will produce as much as the Delta.

Q. (By Mr. SMYTH.) You plant cotton in the bottom lands?—A. Yes, and on the hills, too; a portion of the land on the bottom and a portion on the hills.

Q. You rent land to tenants on shares?—A. No, sir, I rent for cotton; never rent any other way.

Q. Is that cotton land based on the acre?—A. Yes; it is based on the acre or on the place. If I have a place of 20 or 25 acres, and the character of the land is pretty good, they pay me 2 bales of cotton, and if it is 40 or 50 acres of pretty good land they pay me 4 bales of cotton. I have 1 tenant there that has about seventy-five acres of land; it is pretty fine land, but he only pays 4 bales of cotton. It varies according to the character of the land that they rent.

Q. (By Mr. RATCHFORD.) In your case, then, you do not supply the implements or materials with which to work the farm; the tenant supplies it, does he?—A. Yes; they supply everything.

Q. You supply the houses to live in?—A. Yes.

Q. (By Mr. SMYTH.) And firewood?—A. Free water and free wood; all the wood they want. Of course they have to cut the wood and haul it. They have acres of timber land where they get an abundant supply of fuel.

Q. Now, how do they get advances? How do they supply themselves for the coming year?—A. Some of them have credit at the stores. Some of them have credit in the city. They come here and get what supplies they need. I prefer that, if they can do it.

Q. They pay in the fall after the crop is gathered?—A. Yes. Of course the law of Tennessee gives me a lien on the crops for renting to them, and they have credit where they can get it and get the supplies elsewhere. Of course it gives me less trouble. I only have to collect the rent then.

Q. You generally do not waive the lien?—A. Rather than waive the lien I prefer to furnish the actual necessities of life—that is, I will furnish them meat and meal while they are at work on the crop. Then there is a great deal of work on the place that I pay for.

Q. You hire hands by the month to do that work?—A. No; mostly by the day. I have most of that work done by tenants on the place.

Q. That is, on the stock?—A. Yes; we have corn and hay crops.

Q. (By Mr. RATCHFORD.) What rate per day?—A. Fifty cents.

Q. And this 50-cent-per-day labor finds itself, does it?—A. Yes.

Q. (By Mr. SMYTH.) Mostly colored?—A. All colored. I have no white labor on the place except the superintendent. I have 2 white men there, 1 to look after the dairy business and 1 for the general business of the plantation. But my plan with those tenants is first to let them supply themselves, if they can do it, over here or at some of the neighboring stores. If they say they can not do it, then I furnish them all the absolute necessities. I say to them, "Now, if you have time on your crop to give to work for me I will pay you money every Saturday night, and you can buy what you want to with it." By that means their accounts are very small, and when the crop is made they have a very small account with me, which I want. I do not keep supplies. I do not keep any store. I do not want to furnish anything; do not want to sell anything at all if I can avoid it. I have to sell a plow horse or mule occasionally, but my plan is, if I can, to get a tenant who can supply himself and have his own team and farming utensils. That is what I like.

Q. When the crop is gathered, do they sell enough to pay you your rent?—A. I take the rent in cotton, and they settle the bill they have at the cotton gin and then pay me the rest.

Q. The balance of the crop they sell?—A. Yes; the balance I have nothing to do with.

Q. (By Senator KYLE.) Have they their own gin?—A. There is a gin in the neighborhood.

Q. (By Mr. RATCHFORD.) Is that system more advantageous to the farm laborer than the system of furnishing provisions, or crop sharing, for instance?—A. I like it better. I think there is a little more profit in working on shares. I think it is a little more profitable to me, but it is a great deal more trouble.

Q. (By Mr. SMYTH.) You mean the share system is more profitable?—A. Yes; I think the share system is more profitable to me, but it is a great deal more trouble. I either have to look after it myself or have my man.

Q. (By Mr. RATCHFORD.) You say the share system is more profitable to you. I do not understand that you practice the share system?—A. I say it would be. I have practiced it; some years ago I practiced it. From that experience I may state that it would pay me; certainly when cotton is at the present price, it would

pay me better to work on shares than to rent my land, but it gives me much less trouble to rent it.

Q. From that, then the commission may infer that the system practiced by you is more desirable to farm laborers than other systems?—A. Yes; I think so, yes. I think this country is going to come—people who own plantations are coming—to the tenant system. What I want is to get the best tenants I can get on my place. I am building good houses, supplying them with the best water I can get there—usually good well water, good pure freestone water.

Q. (By Senator KYLE.) What do they have in the way of home comforts, as a rule?—A. It depends a good deal on the tenant. I have some tenants there that I am surprised, in riding around the place, to see the little crop of tobacco, and Irish potatoes, and sweet potatoes; and they have 2 or 3 hogs.

Q. And they have vegetable gardens?—A. Yes; they raise not a great variety of vegetables, because, as a rule, colored people do not care for vegetables.

Q. Poultry, of course?—A. Yes; they raise chickens and geese, and most of them have 1 or 2 cows. Then, again, you may go to a place where you do not find anything.

Q. (By Mr. RATCHFORD.) Their pasture is free, is it?—A. Yes.

Q. Their garden spot consists of how much?—A. Of about half an acre; from quarter to half an acre.

Q. That is also free?—A. That is also free, and I furnish them the timber and nails to put the paling around the garden; but I am sorry to say they very often burn it in the winter.

Q. And your profits from the land consists of the 3 bales of cotton, as described previously in your testimony, for a farm of 40 or 50 acres?—A. Twenty-five acres, 2 bales, and 40 or 50 acres, according to the character of the land, 4 bales of 500 pounds weight.

Q. (By Senator KYLE.) At the end of the season do they get out even, as a rule?—A. Yes; they do on my place. This last year they have made money.

Q. Are they compelled to sell the crop immediately on harvesting it?—A. I do not think so.

Q. They can hold it, some of them, if they choose to, for higher prices?—A. Yes. I had one tenant who sold the last bale, I think, last week. They, of course, are very much like other people about that. A great many white people, not pressed for money, as Mr. Kyle told you, will take the cotton to market and sell it. They do not care to take the risk of having it about home. They know about the cost of cotton, and they sell as soon as it comes in.

Q. (By Mr. RATCHFORD.) Do you ever buy cotton crops?—A. No, sir; very rarely. I have sometimes bought a bale of cotton if I had some interest in it and they come and insist on my buying it; but I do not like to do it, because it is hard to arrive at. In all of these arrangements with labor we guarantee that the laborer will have good treatment, as labor is not so plentiful, and the best labor is somewhat difficult to get on all these places, even as near as I am to Memphis. It is difficult to get good tenants even where I am.

Q. (By Senator KYLE.) Colored tenants?—A. Yes.

Q. You never had white tenants?—A. I never had white tenants.

Q. Have you ever had an influx of colored tenants from other States?—A. We never have had here. They do not come in here, unless they may come across Mississippi. We are near the Mississippi line, and they come across sometimes, I think, from the northern portion of Mississippi; but the labor here in the city, you know, is our best labor. Young, strong men come here; they can get better pay here than we can afford to pay them on the farm. We get the old men and the boys and the women and the children.

Q. The school facilities are the same as in Mississippi, are they? What are the school laws of Tennessee?—A. I think the school laws are very nearly the same as in Mississippi, but I am not positive on that.

A. Are colored schools provided?—A. Yes, colored schools are provided, but I do not see much interest taken in them. I do not think, out of the 15 or 18 families on my place, children from more than 3 or 4 families attend school any time during the year.

Q. They have the privilege if they want to?—A. Yes; they have schools.

Q. Four or five months in a year?—A. I think they have schools five or six months.

Q. Taught by colored teachers?—A. Yes.

Q. Do the children as a rule engage in farm work?—A. Well, in the spring, at what we call chopping cotton, after cotton comes up, and next cultivating; women and children work until the hoe work is done; they do the hoe work mainly of the cotton, and then they do not do anything else. There is no other work they can

do then until the cotton matures and is ready to pick in the fall; say about the middle of September they commence picking cotton, and then they work until the cotton crop is picked out.

Q. Then the work is light on the farm?—A. Yes; they do not hurt themselves, white children or black, either. They do not need any law to keep them from work.

Q. Do you have a disposition among them here to acquire land in fee?—A. I do not know of but one man in my own country out there who owns land.

Q. Why is this; no desire on the part of colored people to own land?—A. I suppose they would take the land if you would give it to them, but they do not seem to do it; they do not seem to purchase land.

Q. (By Mr. SMYTH.) Is there any objection to selling them land if they were willing and able to pay for it?—A. Well, I can not tell you that. I would not sell any part of my tract of land for them to settle on. I may say that very frankly?

Q. (By Mr. RATCHFORD.) Will you sell it to the white man?—A. No, sir; I do not care about breaking it and cutting it up unless I should cut it up and sell all.

Q. If you had a single farm and wanted to dispose of it you would as soon sell to one as to the other?—A. I think so, unless there was some local objection to it; unless there was some tangible reason in the neighborhood why I should not sell to a colored man; but as a rule my information is that these, where they own their own land, make better citizens than where they do not.

Q. (By Mr. SMYTH.) More conservative?—A. Yes; do not get into trouble with the neighbors as frequently as colored people who do not own land and are ready to move at any time.

Q. (By Mr. RATCHFORD.) Do the colored farmers as a rule work for less money where they work by the day or month than the white man?—A. I think not, sir. There are so few white men who work out in my country that I am not well prepared to answer that.

Q. What are your principal reasons for employing colored men exclusively?—A. Well, the class of white men that offer for hire out there as a rule are a very sorry class of men.

Q. You employ colored men because you believe them superior on the farm?—A. I think they get along better working together. Now, I am running a dairy out there; about 75 cows. I have 3 men that milk and do nothing else, and occasionally I have 4 men. I have been trying for a year and a half to get a white man to take charge of that and look after it and assist in milking, and I brought 2 men from Nashville, but I could not get men to fill the place.

Q. What wages do you offer for such men?—A. Thirty dollars a month.

Q. And found?—A. No, sir. I have homes—I have got a free house, a very comfortable house—for him to live in; free fuel and everything of that kind. He furnishes his own provisions.

Q. (By Senator KYLE.) Now tell us something about the cost of growing cotton, and how much the producer gets out of it.—A. I have figured it time and again. I never did figure to my own satisfaction very clearly, but in my country I figure it costs me \$5 an acre to cultivate cotton. That is, the cultivation of it from the time you commence plowing, breaking your land, until the cotton is laid by in July or August.

Q. (By Mr. RATCHFORD.) Costs \$5 an acre? Is that based upon the present rate of wages paid to farm labor?—A. Yes.

Q. (By Senator KYLE.) Five dollars an acre for cultivation? Now, how about planting and picking?—A. In this cultivation I figure planting; I figure everything; I think \$5 an acre will pay for the seed and pay for all tillage of the soil from the time you commence the preparation.

Q. Up to the time of picking?—A. Up to the time of picking.

Q. (By Mr. RATCHFORD.) And including picking?—A. No, sir.

Q. (By Senator KYLE.) How much is that?—A. The average price of picking out there is 50 cents a hundred. We calculate \$8 a bale for picking 1,600 pounds of seed cotton.

Q. Fifty cents a hundred?—A. Yes, sir.

Q. How much to the acre?—A. In these uplands about 3 acres to the bale. Some land will make a half bale to the acre, but the average of Shelby County upland will require 3 acres to the bale.

Q. (By Mr. RATCHFORD.) That would increase the cost of raising cotton about \$2.50 in addition to the \$5 for cultivation, would it not?—A. You mean the rent of the land?

Q. (By Senator KYLE.) The picking is how much an acre?—A. The picking, we calculate that by the 100 pounds. They pick out the cotton, and we weigh

it and we pay them by the 100 pounds—50 cents for 100 pounds of cotton in the seed.

Q. (By Mr. SMYTH.) One-third of that will make lint?—A. Not quite. We calculate 1,600 pounds of seed cotton to make one bale. That would be 1,100 pounds of seed and 500 pounds of lint; sometimes it will take a third.

Q. (By Mr. RATCHFORD.) How many pounds of seed cotton to the acre? You pay 50 cents a hundred for picking seed cotton; how many hundred pounds of seed cotton to the acre?—A. About one-third of 1,600—533 pounds of seed cotton to the acre.

Q. At 50 cents a hundred that would be \$2.66 to be added to the \$5 an acre, cost of cultivation, making \$7.66 the cost to raise a crop and pick it.

(No answer.)

Q. (By Senator KYLE.) It has to be ginned after that?—A. Yes.

Q. What is the cost of ginning?—A. The customary price, if I do not furnish the bagging and ties, is \$2.50 a bale—one-third of that to the acre.

Q. Eighty-three and one-third cents more?—A. Yes, sir.

Q. That would be \$8.50 an acre?—A. I think you may add to that—you may make that \$9 to cover the hauling of the cotton. You have to haul it from the field; furnish a team and driver, and if you have many pickers you have to send a wagon to weigh the cotton, and in all probability you have to haul it again to the gin.

Q. It is about another dollar?—A. I think so.

Q. That would be \$9.50?—A. Make it \$9.50 an acre.

Q. That is the net cost?—A. Yes.

Q. That does not include the expense of horse feed?—A. Yes, sir; I think it does the way I figure it. I figure by the day's work.

Q. How much do you get off the acre?—A. We get one-third of a bale.

Q. That is 177 pounds of lint cotton for the acre, based on 1,600 pounds of seed cotton to 3 acres?—A. That is right.

Q. That would give the cost per pound, five and a fraction cents. You have about the same as Mr. Kyle gave us as his estimate?—A. It will do that. I have figured a hundred times in the last few years.

Q. (By Mr. RATCHFORD.) Then there is the seed. You sell the seed?—A. Yes, sir; we sell the seed.

Q. (By Mr. SMYTH.) At what price do you sell the seed?—A. At an average of 20 cents a bushel.

Q. Then on an acre of land on which you raised 533 pounds of seed cotton there is 177 pounds of lint and 356 pounds of seed; and allowing 33 pounds to the bushel of seed, at 20 cents a bushel it would net \$3.40 per acre for seed; and deducting this from the cost of cultivating the acre in cotton, which you said is \$9.50, it would leave \$7.10 as the cost of raising of 177 pounds of lint cotton to the acre, or an average cost of 4 cents per pound. But, I understand, in this calculation you have allowed nothing as interest on the investment or rent of land?—A. Yes.

Q. Now, in the delta district where cotton is raised about a bale to the acre, or 500 pounds of lint to the acre instead of 177, and where the yield of seed is greater, the cost of raising that lint, I suppose, is lower than it is in the hill country from which we have made this calculation?—A. Yes, sir; that is so. I have never had any experience in growing cotton in the delta, but I have had a great deal of experience with people that do grow it there. I was 20 years here in the cotton commission business.

Q. It costs less to raise cotton per pound in the delta than in the hill country?—A. I think, unquestionably.

Q. Therefore if 4 cents is a fair average of the cost of raising cotton in the hill country, without taking into consideration the rent of the land, it is less than 4 cents to raise it in the delta?—A. I would say so. We have always figured this way. There is a world of extravagance about that delta country that we do not have in the hill country. It seems to cost the people more to live. Whether they pay the labor higher prices—I think they do some—or in some way or other it costs more to run a plantation than on the hill.

Q. If men are employed on the share system, they do not pay more, but they get more because the profit is larger?—A. Yes, sir; and they spend more.

Q. Does the delta cotton sell for any higher price than the cotton raised in the hill country?—A. Yes, sir; it is longer staple and better export cotton.

Q. How much higher?—A. From one-half to three-fourths cent. You have a gentleman coming before you who is a cotton buyer here.

Q. (By Senator KYLE.) Tell us something about the average price of cotton for the last 4 or 5 years.—A. I do not remember the figures.

Q. What did you get as a grower?—A. I got about the average price, because I

sold my cotton as I got it. If the man working on shares came in with 2 bales of cotton, I could not get a satisfactory settlement without sending and selling it.

Q. You sold last fall?—A. Yes, sir.

Q. What did you get?—A. I got 6½ cents for the first I sold and 7½ cents for the last.

Q. The year before what did you get?—A. I got an average, I think, of about 5½ cents.

Q. That is for 1898 cotton?—A. Yes.

Q. How about 1897?—A. For 1897, about the same price.

Q. Ranged about the same for several years?—A. No; only 2 years. Prior to that, in 1896 it was higher, and in 1895 it was still higher than in 1896, because it was a smaller crop.

Q. So it has not fallen any one year to the cost of production?—A. No, sir.

Q. It has left you a little margin each year between the cost and the selling price?—A. I think so.

Q. You think you could afford to raise cotton at 6 cents, if you were assured that price?—A. It would make a reasonable rent for my land at 6 cents. I have not pretended to try to cultivate cotton with hired labor for the last 4 years. Four years ago I did a little, but I have since abandoned it altogether. You can afford to cultivate cotton with hired labor and sell it at 5 or 5½ cents.

Q. You think the best system is the share system?—A. I think the best is the tenant system; better for the tenant and better for the landlord.

Q. You think it should be generally adopted?—A. I think so. I do not think there is any real sense in any other system. One reason I say that is this: You mix up less with the people when you rent the land than on shares. If you rent on the share system, you undertake a supervision of cultivating the crop, and you watch how they are managing it; they feel as if they are partners in it, and it sometimes brings up friction. They feel as if they are going to make a good crop and ought not to be interfered with, and you feel they are not doing it just to suit you. You are more likely to get up friction on either side than when you rent the land, and they know just what they have to pay and you know what to expect. All you know about is to see that they do not abuse your land or allow it to wash away, and that is a small thing. If you treat a tenant right and he wants to stay on the place, he will cheerfully do what you want him to do. If he is not a good tenant and is worthless, the only remedy is to get rid of him at the end of the year. I have no trouble. I have not been inside the fields of some of my tenants in growing season for 5 years. I ride along the road and if I see them I say "Good morning." That is all I have to do with them until they bring their rent in. I have other tenants that I have to look after and see whether they are going to make the rent and take care of the ground and the family. I do not want a tenant on my place that will not take care of his family pretty well.

Q. Under your tenant system you have families who are able to save a neat little surplus and take care of their families in good circumstances?—A. I do not know whether "good circumstances" would express it, but they supply them with food and shoes and clothing and keep them comfortable. I should say they are in a condition to keep their families comfortable.

Q. As if they were laborers on the street in cities?—A. I think so. When they are in the city they get more pay, but they have to pay for everything in the world that they consume, fuel and water and everything else, while in the country they do not pay for anything of that kind.

Q. Do you know anything about the manufacture of cotton? Have you manufacturers of cotton in Tennessee?—A. We have one factory here, which has been very unfortunate. It has been a failure most of the time, and the investors in it have lost a good deal of money. I never was interested in it.

Q. Not running now?—A. No.

Q. (By Mr. SMYTH.) What was the cause of the trouble?—A. I think they located it wrong; away over where they had to cart fuel and everything, and I do not think the management was as good as it ought to have been. They had a gentleman here who had no experience in cotton spinning—working that particular class of labor—and they had to educate the men in the first place to manage it. That is a bad scheme, to invest capital in educating men to manage capital.

Q. The labor was all white?—A. Yes, sir; they never attempted to work colored help.

Q. From this locality?—A. No, sir; I think they brought it from elsewhere. I talked with the superintendent, and he told me he was bringing labor from other localities where they had more or less training in that particular kind of labor.

Q. How long has the mill been shut down?—A. I think it has not been running

for the last 2 or 3 years. I really do not know how long it has been shut down—6 or 8 years. My judgment is it was altogether the fault of the management. If the mill had been properly located out here on the railroad where they could have had switching facilities—

Q. (Interrupting.) They used coal?—A. Yes, sir. If they had a switch so they could run the coal right up to the boiler room and had the raw material run right up to the mill without carting, I think it would have been a success, with average intelligence and managed by some person who had had experience and was educated in that industry.

Q. How many hands did it employ when running?—A. I do not know how many.

Q. (By Senator KYLE.) Where do you sell your cotton?—A. Here.

Q. To whom?—A. I could not tell you that. I send it here to cotton factors, commission merchants, and they sell it sometimes to one and sometimes to another.

Q. Where do they sell as a rule?—A. I think they sell a portion to Eastern spinners and a portion to exporters.

Q. (By Mr. SMYTH.) How many bales are sold here?—A. About 675,000 bales brought here last year. I am not positive I am exactly correct in that.

Q. That naturally brings a large number of buyers?—A. Yes.

Q. So there is every competition in the sale of cotton?—A. Yes.

Q. (By Senator KYLE.) What has been the average selling price of these factors?—A. For what time?

Q. This past winter and spring.—A. I think it opened here at about 6 cents.

Q. Last fall?—A. Last fall; yes. It has gradually increased in value until now I think they are getting it at 9 $\frac{1}{8}$ —middling cotton.

Q. (By Mr. SMYTH.) Good middling would be worth about what?—A. About 9 $\frac{1}{8}$ or 9 $\frac{1}{4}$.

Q. (By Senator KYLE.) What does the commissioner usually charge for selling cotton?—A. About 2 $\frac{1}{2}$ per cent, \$1.25 for a 500-pound bale. For a bale that would bring \$50 the commission man would get \$1.25, in round figures.

Q. (By Mr. SMYTH.) Could cotton be sold here by the farmer without employing commission merchants?—A. Oh, yes.

Q. Sold on the street?—A. Yes, sir.

Q. Buyers will bid right off the street?—A. Yes, sir.

Q. (By Senator KYLE.) Get enough for a carload almost any time?—A. I should think so; yes. They rarely do that. The cotton bought on the street here is as a rule bought by people who do nothing else but that, and they will take the cotton and put it in a warehouse; and sample it regularly and put it on some factor's table to sell to the consumer. That is the way it was done when I was here 6 or 7 years ago. They buy a little under the market. If a man sells off the wagon he expects to sell at one-sixteenth or one-eighth less than if he turned it over to the factor and went into the warehouse and let the factor have time to sell on the market. The factor sells to your advantage. He sells to people who can pay full price to get what they want. The man who buys on the street will usually get 40 to 50 bales together and put them on the factor's table and sell to the exporter or the agent of the eastern spinner or somebody who buys in larger quantities.

(Testimony closed.)

MEMPHIS, TENN., March 22, 1900.

TESTIMONY OF MR. E. W. PORTER,

Cotton Broker, Memphis, Tenn.

The subcommission of the United States Industrial Commission met in the parlors of the Peabody Hotel at 10.07 a. m., Senator Kyle presiding. Mr. E. W. Porter was introduced as a witness at 12.12 p. m., and, being first duly sworn, testified as follows:

Q. (By Senator KYLE.) You may give your full name and post-office address.—A. E. W. Porter, Memphis, Tenn.

Q. What is your business?—A. Cotton broker.

Q. Will you tell us something about the cotton business you are connected with? You are a broker. Have you been employed as such many years?—A. My business is buying cotton here for shipment to other points.

Q. You buy from farmers?—A. From factors almost entirely. They are the commission merchants, you understand, and I buy from them for the consumer.

Q. (By Mr. SMYTH.) You do not buy from the street?—A. No; I would, but it is more trouble.

Q. (By Senator KYLE.) The farmer sells to the factor?—A. He ships to the factor for sale on commission; the factor takes the samples and spreads them out on his table in lots, and buy by sample from him.

Q. Your business is that of broker?—A. I buy here and sell to mills in the East and in Europe.

Q. The advantage, then, to the farmer selling to the factor is, he bunches it in large quantities?—A. Naturally.

Q. You have orders for 500 or 1,000 or 5,000 bales, and you can take it in large quantities from the factor?—A. Exactly.

Q. You prefer doing that to buying at retail from the farmer?—A. Yes.

Q. And he reaps an advantage in getting a larger price for the load?—A. Yes.

Q. Then it is an advantage to the farmer to employ the factor?—A. I think so; beyond question.

Q. So, if a farmer has only 1 or 2 bales, he may be able to consolidate it into a 500-bale lot?—A. Yes.

Q. You buy more than you would do in picking up 5 or 10 bales here and there?—A. You understand the situation as well as I do. That is exactly right.

Q. Where do you find a market?—A. We find a market in all the cotton-spinning sections of the world—all through Massachusetts, Rhode Island, Connecticut, Canada, Liverpool, on the Continent, and we would have a great outlet for cotton over in North and South Carolina if it were not for the prohibitive freight rates.

Q. (By Mr. SMYTH.) Tell us about that—about the Carolinas and Georgia.—A. The freight rates are 59 cents a hundred.

Q. What is it to Lowell?—A. 55½ cents.

Q. So it actually costs more to transport to the Southern than to the Northern mills?—A. I have seen the time when I could send cotton right through Charlotte, N. C., and export to Liverpool for 42 cents when it would cost 59 cents to stop in Charlotte.

Q. (By Senator KYLE.) You mean 42 cents to Liverpool from here?—A. Yes.

Q. (By Mr. SMYTH.) What point of shipment? Pinners Point?—A. Pinners Point.

Q. Shipped from Norfolk?—A. Shipped from Norfolk.

Q. (By Senator KYLE.) How do you explain that?—A. I do not know how, but the Liverpool rate is competitive and the rate to these other points is not.

Q. If you shipped to Carolina points it would be entirely local over the Southern Railway?—A. Yes, sir. And we have here a physical division of the railroads which makes the rate here noncompetitive on everything except export, where the ocean rate comes in.

Q. There would be no reason, then, for not building up business among the Carolina mills if you could get a fair rate of freight?—A. Nothing in the world to prevent it. You see these mills over there have all begun to run on finer numbers of yarn than ever before, and we do ship some cotton there.

Q. Then it would appear the increase in the spinning capacity of the Carolinas is so great that the local supply of cotton is inadequate?—A. Entirely so.

Q. And they have to go abroad for cotton?—A. Yes, sir. We have been working on that freight rate for 2 or 3 years, but have not succeeded in getting it reduced. We can not get any redress at all. For a little while we had it down to 42 cents.

Q. Is there any way you can suggest in which influence can be brought to bear so that the rates of freight to the Carolina mill points can be brought to compare with export or New England rates?—A. The freight bureau has had a good deal of correspondence, and it was suggested by Mr. Culp, of the Southern road, that we get the spinners in the Carolinas to join with us in an effort to have the rates reduced. His idea is that if the pressure comes from that end as well as this, something may be done; but as it is coming from this end only, there is nothing done.

Q. What is the comparative distance between Lowell and the Carolina mills?—A. I would have to guess at that to some extent. I should say probably 1,000 miles from here to the Carolina mills and 1,500 from here to Lowell.

Q. (By Mr. SMYTH.) How far from here to Atlanta?—A. I do not know the distance exactly.

Q. Not over 400?—A. Between 400 and 500.

Q. About 700 to the Carolina mills?—A. I should say about twice that to the Lowell mills.

Q. The rate is 55½ cents to Lowell?—A. Yes.

Q. And 59 cents to Carolina points?—A. Yes, sir; and it is 50½ cents to New York.

Q. You have shipped to Liverpool for 42 cents?—A. Yes, sir; 42 cents, in the past.

Q. (By Senator KYLE.) This concession is made in behalf of Lowell and New England points for what reason?—A. Because the Carolina mills are noncompetitive points, and the cotton has to go out of here over the Southern system—one road only.

Q. If you can suggest any way in which there can be a combined effort between the Carolina spinners and the cotton sellers in Mississippi and Tennessee, we would be glad to have it.—A. If the spinners would join with us in pressure on the Southern Railway to have the rate reduced, and would lay the situation before the road, showing that it is to the interest of the spinner over there as well as of ourselves to have this rate reduced. I think perhaps we could do something. Does not the long and short haul of the interstate-commerce law come in there?

Q. I am afraid that has been locked up by the Supreme Court.—A. I believe we could do that. If the spinners would join with us to bring pressure to bear, we could obtain good results, but I have been working for some two years on it from this end without any satisfaction.

Q. Such an arrangement as that would be of mutual benefit to the raisers in this section as well as the spinners in Carolina?—A. Decidedly, and I should think to the railroad, because they would get so much more cotton to haul.

Q. As it is, the Southern only hauls cotton from this point to Norfolk for shipment?—A. Exactly.

Q. And it would otherwise take some for its local points which it would otherwise not haul?—A. Exactly. I think the freight rate from here to Norfolk is 42 cents, and if you stop it short of Norfolk it is 59 cents, and all we have ever asked is to have the Norfolk rate apply.

Q. Is it not a fact that cotton taken to the Carolina mills would be manufactured into goods and given to the railroad again in that shape as additional freight going out?—A. Yes, sir; certainly.

Q. Have you a fixed brokerage charge?—A. No, sir; we sell on firm offers. For instance, we sell some at 9 cents landed at the mill, and we make what we can out of it.

Q. (By Mr. SMYTH.) Your profit comes in between the price you pay and the price at which you deliver?—A. Yes, exactly.

Q. You have to calculate freight, drayage, and everything?—A. Yes. Competition is so keen that it makes it practically a fixed brokerage.

Q. Is all that cotton shipped from here compressed?—A. All to the East and for export is compressed. When we ship to your country (South Carolina) we frequently ship uncompressed.

Q. Is that because the mills would not receive it?—A. The mills prefer it uncompressed. They will not refuse to receive it, but would rather have it uncompressed.

Q. Still if a fair rate was offered, that might be overcome?—A. Unquestionably.

Q. In compressed cotton you ship about 75 to 85 bales to the car, do you not?—A. It will run hardly that much.

Q. What will it average?—A. They generally figure 50 to the car. It will run from 55 to 60.

Q. I was only speaking from my own personal experience—cotton I bought last year. It ran from 75 to 80 bales. The uncompressed cotton runs about 25?—A. About 25 to the car; yes.

Q. So by compressing the railroad can easily double the amount of tonnage they get in the uncompressed condition?—A. Yes, sir; extra density.

Q. Who pays for that?—A. That is included in the rate. The railroad pays for it.

Q. Seeking the advantage in the less number of cars necessary?—A. They make a rate of 55 cents to Lowell; or compressed they take it at 45¢.

Q. The compressed is about 9¢ cents a hundred lower?—A. It is 10 cents a hundred.

Q. (By Mr. RATCHFORD.) Does it make any difference in the value of the cotton to the mill as to whether it is compressed or not?—A. None whatever.

Q. (By Mr. SMYTH.) Is much cotton sold here in the round-bale shape?—A. Very little.

Q. Do you consider it any advantage, from your standpoint as a broker?—A. No, sir; I consider it a disadvantage.

Q. Is it hard to sample?—A. It is utterly impossible to examine to establish false packing. You can not bore it, you know.

Q. Very hard to extract a sample?—A. Very hard, indeed.

Q. Do your customers object to buying round-bale cotton?—A. Almost without exception. They will not allow us to ship them a bale.

Q. They think it would be harder to handle in the mill?—A. Harder to handle in the mill and more chance of false packing.

Q. What advantage is claimed for it?—A. They claim economy of room and saving of compress. They claim it is put up with sufficient density at the gin to do away with the necessity of compressing again, which is all true; but that is more than offset by the utter impossibility of examining that cotton and seeing whether it is falsely packed or not.

Q. Is it a fact that a higher price is paid for cotton in the round bale than is paid for it in the square bale?—A. They claim so. When I was in Liverpool last spring I asked a firm if they would accept a round bale. They said they would accept it at one-eighth pence off—one-fourth of a cent cheaper; and they claim 45 points on, which would make a difference of nearly three-fourths of a cent.

Q. Their claim that it would sell for 45 points additional is not borne out by experience?—A. Not as far as I have been able to find out.

Q. Do the farmers have any preference about putting it up in round or square bales?—A. I could not answer that; I know so little about the farmers.

Q. How many round bales do you suppose were sent in here this season?—A. I have no way of knowing. It is all bought by one man—the agent of the round-bale people.

Q. As a general practice, brokers avoid it?—A. I think they all have instructions, as I have, to avoid it.

Q. Is there any rate of freight offered by railroad companies in favor of the round bale?—A. I think they make the compress rate of 10 cents less than on the uncompressed bale.

Q. (By Mr. RATCHFORD.) Do you have much difficulty about false packing?—A. We do have more or less; not very serious.

Q. False packing is putting yellow or colored or bad cotton in the center of the bale and good cotton around it, or else putting sand or iron bars or water—A. (Interrupting.) Water is the great trouble. Understand, I do not say that it is done with criminal intent. It may be in some cases and doubtless is. In a great many cases where the cotton is very dry they dampen the gin box to make it hold, and frequently they use very poor judgment in that and get too much water, and it water-packs the bale.

Q. Have you ever had experience where you had reason to think there was criminal intent?—A. Yes, sir.

Q. That leads to reclamation from the customer?—A. We generally catch that here. We bore it and find that here; that is the advantage of the square bale.

Q. You would either reject the bale or claim on the factor?—A. We reject it.

Q. What becomes of the bale when you reject it?—A. If it is water-packed, it is sent to the cotton picker and the water is taken out. If it is a mixed-packed bale, it is sold at a reduced price as such.

Q. It generally sells at the value of the lowest grade?—A. It generally sells at about the price of low middling cotton when mixed-packed.

Q. Memphis is one of the largest shipping points in the South?—A. Yes, sir; the largest inland cotton market in the world.

Q. (By Senator KYLE.) Do you ship via New Orleans?—A. Frequently; by New Orleans, Pensacola, Brunswick, Norfolk, Boston, New York—almost anywhere.

Q. You ship for Liverpool to Norfolk over the cheapest road?—A. We get our rates from the cotton committee, and all the roads will meet that rate. So when the rate is posted you can take your choice of the road.

Q. You have to arrange for the tonnage with the vessel, do you not?—A. Yes, sir; you arrange it here with the road.

Q. They provide that?—A. They provide that.

Q. Were the rates lower this year to the Continent or Liverpool during the fall on account of the slow selling of the crop?—A. They were lower for a little while.

Q. Vessels were waiting for cargo?—A. Yes.

Q. What are your selling rates since last fall?—A. The prices?

Q. Yes.—A. Started in about 6 cents and ran all the way up to 12½ cents, depending on the staple and the condition of the market.

Q. These are the prices at which you sell to Eastern factories?—A. You would add to that about seven-eighths of a cent to get the price in the East.

Q. You are furnishing cotton to the Eastern factories?—A. Yes.

Q. You buy from the factors at 6 cents and sell at 6½ cents?—A. That is what we hope to make; frequently we do not.

Q. About one-eighth of a cent a pound?—A. Yes.

Q. And the factor makes how much?—A. The cotton factor here?

Q. Yes.—A. His commission is $2\frac{1}{4}$ per cent.

Q. (By Mr. SMYTH.) He makes more than the broker?—A. Frequently; his is certain and the broker's is very doubtful. I think we could have better rates if we could do away with the physical division of freight we have here; that does away with any necessity for competition among the freight agents. When the Southern road has as much as it is allowed by the physical division, it has to turn the cotton over to some other road.

Q. That is practically pooling?—A. Absolutely. It is pooling.

Q. Are you in favor of pooling?—A. No, sir. I wish we were able to break it up.

Q. (By Mr. RATCHFORD.) By that do you understand each road is prorated?—A. Yes.

Q. And is allowed its percentage on the cotton freight whether it hauls that cotton or not?—A. That is the exact idea. As I understand it, each road is allowed a certain percentage, and you can readily see how it does away with any competition at all.

Q. You are opposed to it?—A. Yes. We had a lawsuit about it last year, but the supreme court of the State decided against us.

Q. Have you any reason to know whether that is a question of jurisdiction for the Interstate Commerce Commission?—A. I am not sufficiently posted to answer that, but I should think it would be. It is pooling pure and simple.

Q. If not, do you believe it ought to be?—A. Certainly.

Q. (By Mr. SMYTH.) There was an absence of orders for cotton during the fall from the Continent?—A. There was from the Continent and Europe; orders from the East were very liberal in the fall.

Q. That absence of orders tended to keep the market down?—A. Yes.

Q. That is, there was an oversupply for the time being?—A. There was an oversupply, and the result was the domestic spinner got his supply very nearly at the bottom of the market this year.

Q. (By Senator KYLE.) To what do you attribute the high price of cotton this spring?—A. To the short crop.

Q. Nothing else?—A. No.

Q. (By Mr. RATCHFORD.) You speak of a cotton committee. Is this cotton committee representing the carrying companies?—A. Yes, sir.

Q. Appointed by the carrying companies?—A. As I understand it, they have a secretary appointed and paid by the different railroads, and he promulgates all the cotton rates.

Q. (By Mr. SMYTH.) You have nothing to say about the rate?—A. No, sir. These railroads, as I understand it, get telegrams in the morning naming the rates to Liverpool, say. If the Southern has a lower rate they put that rate in to the committee first and then to the shipper, and that cotton committee promulgates this rate, and I can go and tender the cotton to the Illinois Central or any other road and get the same rate. Every bill of lading—a copy of it—must be filed with the cotton committee.

Q. (By Mr. RATCHFORD.) Would you recommend an extension of the powers of the Interstate Commerce Commission in any other respect?—A. It is the only one I am familiar with.

Q. (By Mr. SMYTH.) Would you favor giving them power to fix rates and classifications?—A. At first blush, I think I would.

Q. The railroads, as it is now, submit their rates to the Interstate Commerce Commission, and if the commission objects to a rate, says it is unfair, it remains in force until the courts pass on it, and if they are favorable to the contention of the Interstate Commission, then the railroad would have to make the rate unless it appeals and keeps up the fight in the courts. Now, would it be better for the Interstate Commerce Commission to have the authority to institute the rates which are to be in force from a day fixed and then let the appeal come from the railroad company?—A. I hardly know how to answer that; it had not occurred to me before. I would have to think about that before answering it.

Q. You see in one case the Interstate Commerce Commission would promulgate a rate that would go into effect and be in operation until the courts decided it was too low or unfair. As it is to-day, the railroads inaugurate the rate and the Interstate Commerce Commission has to appeal to the courts to annul it, and the rate is in force while the appeal is pending.—A. I think all that could be arranged if the Interstate Commerce Commission had the authority—if they do not have it now—to handle matters just exactly like this here.

Q. (By Mr. RATCHFORD.) You believe in giving them greater powers as a general proposition?—A. I do. Since you asked the question a while ago, whether or

Not we could suggest some plan by which we could get the rates reduced to the Carolinas, I believe if we could get a committee of spinners there to meet a representative body from the buyers and shippers here and go to Washington and lay this matter before Mr. Culp we might accomplish something.
(Testimony closed.)

MEMPHIS, TENN., *March 22, 1900.*

TESTIMONY OF MR. F. M. NORFLEET,

Cotton Factor, Memphis, Tenn.

The subcommission of the United States Industrial Commission met at the Peabody Hotel at 10.07 a. m., Senator Kyle presiding. Mr. F. M. Norfleet, cotton factor, was introduced as a witness at 12.37 p. m., and, being duly sworn, testified as follows:

Q. (By Senator KYLE.) State your full name and address.—A. F. M. Norfleet, Memphis, Tenn.

Q. And also your vocation.—A. I am a cotton factor; that means, we are cotton commission merchants, and sell cotton.

Q. You buy directly from the farmer?—A. I am a farmer myself. We do not buy from the farmer. I farm in the Yazoo Basin, and also on the hills of Mississippi.

Q. How long have you been growing cotton?—A. Well, for 30 years.

Q. So you are familiar with prices during all these years?—A. Yes. I have grown it myself on plantations, and have had it grown since I have been in the cotton commission business.

Q. How have prices ranged during the 30 years of your actual experience?—A. They have dropped along down from 12 cents, perhaps, as a maximum price—in 30 years, you mean?

Q. Yes; in 30 years.—A. I thought you had referred to a later period. Well, going way back to 1870, cotton has gone, I should say, from 16 to 20 cents down to 4.

Q. Down to 4?—A. Yes.

Q. Of course those were days following the war?—A. The high price following the war, in 1870.

Q. How about the cost of growing during these years; that is, when cotton was very high?—A. The cost of producing cotton has been reduced very materially in the later years. Our methods of cultivation are better, and the price of labor has fallen very materially since the war.

Q. During those high-priced days, when cotton was selling from 25 to 35 cents a pound, did you have to pay materially higher for labor?—A. Yes. We paid from \$1 to \$1.50 a day for labor. We paid from \$200 to \$250 for mules. Lands were worth from \$15 to \$25 an acre.

Q. So that you really would not make any more money than now, when cotton is selling at 8 or 9 cents a pound?—A. No, sir.

Q. (By Mr. RATCHFORD.) You said that the planter and landowner is making as much money now as when cotton was selling at 18 and 20 cents a pound. This has been a very profitable year in the South. Do you not believe that the laborer—farm laborer—should share in that increase? I understand you to say he received \$1 or \$1.50 at that time. Now he receives, when hired by the day or month, in the neighborhood of 50 cents, according to the testimony.—A. In the uplands the price is about 50 cents a day; in the delta about 75 cents, 50 per cent more in the Mississippi bottom for labor than on the hills.

Q. From that, then, it seems that the laborer is not remunerated for his labor in proportion to the remuneration of the landowner?—A. I suppose labor is getting fully as much in proportion. At that time they paid 15 or 18 cents a pound for meat and from \$9 to \$10 a barrel for flour; \$2.50 for a pair of shoes; everything was very high.

Q. Now what is meat worth?—A. Meat is worth about 7 cents a pound now.

Q. (By Senator KYLE.) Flour is worth what?—A. \$3.25 to \$3.50.

Q. (By Mr. RATCHFORD.) You think on the whole the labor is quite as well off, do you?—A. Yes; in fact I think labor is better off now in the South than ever before since the war.

Q. (By Senator KYLE.) Seventy-five cents a day you pay them and furnish the house and land?—A. We furnish everything, yes; all the ordinary farm comforts.

Q. You use negro labor entirely, do you?—A. Yes.

Q. Have you noticed any material improvement in the condition of the negroes since slavery days?—A. I think so. They are getting to be more or less educated. They understand how to transact business better than they did formerly, and are progressing, as far as my opinion goes, very steadily.

Q. Do they show any disposition to accumulate property?—A. Yes; quite a number of them in the Mississippi—in the delta country—are buying lands now.

Q. Buying lands there?—A. Yes; quite a number of them. I have sold a good many places myself to negroes.

Q. How large farms?—A. Well, from 40 to 80 acres.

Q. What do they pay per acre for this land?—A. They usually buy unimproved Mississippi bottom land at a price of about \$6 or \$8 an acre.

Q. Wood lands?—A. Yes.

Q. Clear them themselves?—A. Clear them themselves. They will live on the adjoining plantations and cultivate the improved land, and during the summer after the crops are laid by will clear up and improve their own land.

Q. You sell under mortgage, of course, to these parties?—A. Yes.

Q. What are the terms?—A. Two, 3, 4, 5 years, usually at 6 per cent interest. The Illinois Central, or Yazoo and Mississippi Valley Railroad, acquired, when they bought this system here from Mr. Wilson, about 600,000 acres of land, and they set the pace. They fixed a uniform price at first, about \$6 an acre, and gave about 5 years to pay for it in, in equal payments, 6 per cent interest, and where the white man or colored man was disposed to buy land, he had the privilege of buying from the railroad—their lands were scattered everywhere—or from private citizens who owned land, at about the same price.

Q. What is the down payment in this case?—A. Usually about 10 or 20 per cent.

Q. Farms cost probably \$300?—A. Yes; sometimes there has been a disposition to sell that character of land without any payment down at all, because every blow that was struck with an ax, every move made on the place, improved its condition or value.

Q. And what per cent for deferred payment?—A. Well, say 20 per cent in 4 years, or if it was bought on time, 20 per cent a year for 5 years.

Q. Twenty per cent a year for deferred payments?—A. Yes. On a place worth \$500 perhaps they will collect \$100 cash, for instance; and then for 4 deferred payments they collect \$100 at 6 per cent interest a year.

Q. (Mr. RATCHFORD.) Can a negro farm laborer maintain his family ordinarily on 40 acres?—A. Yes.

Q. On cleared land?—A. Yes; splendidly.

Q. (By Senator KYLE.) Quite a large-sized cotton farm?—A. Yes. They do not cultivate quite as much in the delta as on the hills.

Q. What has been your experience in dealing with those men? Do they pay promptly?—A. Yes.

Q. Some come to own the lands?—A. Yes; quite a number.

Q. But after they possess the land they show a disposition to mortgage it?—A. Well, they are getting more and more careful along those lines—in placing their business, for instance. We have a good many applications for business from that class of trade, but ordinarily we avoid taking any. Our business is mostly with merchants, with what we call large planters, running from 100 bales a year up. They are disposed to find people who they think would not care to traffic any with them in any way, so as to get their places. They are very careful about that.

Q. They own their implements and mules?—A. Yes.

Q. Do they ordinarily own implements and mules in case they are renters on other pieces of land?—A. They get to own them pretty soon. The delta farmers in later years have gotten to sell mules on time. They furnish them a mule, for instance, at \$100 or \$125, and if they can pay for it, all right; and if not they take it back at an agreed rate at the end of the year. The disposition now is to rent land very largely at so much per acre. I think it is likely to prove very injurious to this country, especially the upland section in the South. The tendency is to get rid of the management of the labor, to furnish them cheap stock and cheap utensils and improve as little for them as possible and get rid of the worry. The white people as a result will move into the little villages and stations, towns around; and it seems to me it will be only a few years until the larger part of the upland section of the country, especially this section of the country, will be occupied by negroes. The lands, of course, under their management as tenants, will wash away and wear out, fences go down, improvements become dilapidated. I have regarded that particular feature of the case here as being rather a gloomy one.

Q. (By Mr. SMYTH.) Do you think the leaving of the colored people together and alone so much tends to have bad results among them?—A. Well, I think it is wearing out the country.

Q. I mean their moral and physical condition?—A. I think it has some effect that way.

Q. The negro is very imitative?—A. Yes. They get along pretty well as far as that is concerned. For instance, Mr. Coleman, who owns a large place in Panola County, Miss., bought a little home in Como, a nice little town, to carry his family there, so they might have school facilities and social advantages that they could not have in the country. I said to him: "When your last wheel dropped over the mud sill of your gate, moving your household goods away, I am sure the valuation of your place was lessened \$5 an acre." Well, he said he did not know whether that was the case. I said, "Yes; it is several miles out there, and you are getting to be 40 or 50 years old now, and you are perhaps going for the first year twice a week out to your place, the next year once a week, and the following year once in two weeks, and finally it will be abandoned to the labor on the place, and it will never look like the same place again;" and it will not.

Q. All the white people left?—A. Yes; and they are doing it in thousands and thousands of instances.

Q. (By Senator KYLE.) The negroes are not good managers, then?—A. Not in the way of keeping up repairs.

Q. (By Mr. RATCHFORD.) What is the land worth where it is rented for cash consideration?—A. It is worth from \$2 to \$4 an acre for hill land. Lands on the Mississippi bottom are worth \$3 to \$6 an acre.

Q. (By Mr. SMYTH.) That is, arable lands?—A. Yes. The others do not rent at all except for pasture.

Q. So the rent is fixed simply on cultivation?—A. Yes.

Q. A great deal more land is occupied by the tenant?—A. Yes; he could occupy a quarter section of land and there would not be over 20 acres cultivated, the rest being timber land.

Q. (By Mr. RATCHFORD.) Does he not pay for that indirectly? Is not the value of that added to the value of the land that is workable?—A. It depends on the locality. In the delta it has nothing at all to do with it. There might be 1,000 acres in it of timber lands and it would not affect the 20 acres of open land.

Before we leave the labor question I would like to say that this disposition to rent that the negro has chiefly in this country is due to a desire to have charge of his own affairs without being hindered. That being the most pleasant arrangement for him, is the one he insists on in making his arrangements for the year with his landlord. The landlord himself would prefer the share system. It is the best because then the negroes operate under his supervision and the farm as a rule is kept up better but on account of the scarcity of labor the landlords through this section of the country have to pursue largely whatever plan suits the labor best. There is a scarcity of labor here.

Q. (By Mr. SMYTH.) Has there always been a scarcity of labor?—A. Yes; some.

Q. What has become of labor?—A. Well, you can take my plantation, for instance, in Tunica County, Miss. I suppose there are 150 colored men at work on public works around about the place within a space of 2, 3, or 4 miles.

Q. As mechanics?—A. No, sir; as levee builders and working at various public work.

Q. Common labor?—A. Common labor, but not on the farms.

Q. Have they withdrawn from the farms?—A. Yes; and there is more or less of that kind of work going on throughout this entire section.

Q. Paid better wages?—A. They are paid from \$1.25 to \$1.50 a day.

Q. (By Mr. RATCHFORD.) Is there any form of social organization among the farmers—alliances, for instance; any organization of that kind?—A. No, sir. There are school privileges around where I have been farming which are very good, were they disposed to take advantage of them.

Q. (By Senator KYLE.) Do they show a disposition to attend there?—A. Yes; the farmers all over this section of the country are very much disposed to afford all the school and church facilities they can. For instance, on my place I have helped to build two churches, one Baptist and another Methodist. I am willing to help them to have good buildings, and make them attractive, so that they shall have preaching and school facilities, and so on, and improve their condition as much as possible.

Q. Can you notice a tendency toward thrift among the colored people as a class?—A. Yes; I think they are improving in that respect. Of course, they have not made rapid strides at all. They have been very slow. They are paying debts better and are making more money than they have for years. It has been better

every year; even with the low price of cotton they begin to figure on what they can pay. They are more intelligent in making contracts in their trading.

Q. Now, as as a cotton factor, you buy directly from these farmers?—A. No, sir; we do not buy at all. We advance money and supplies to farmers—to the larger farmers and planters, you may call them—to make their crops.

Q. To white as well as black?—A. We advance to very few colored people, and then they, as a rule, do not come to a market like Memphis to get advances. The colored people trade in their locality.

Q. Is that the custom for years for the white farmer to come to the factor to get money to make crops?—A. Yes; for the last 50 years.

Q. What can you say as to that during the present spring?—A. There has been less demand for help this spring than for 15 years before.

Q. Why is that?—A. On account of the higher prices of cotton.

Q. They made money enough themselves to tide themselves over to make a new crop?—A. Yes.

Q. (By Mr. SMYTH.) Better condition than formerly?—A. Very much. I had a case on my books. I was down in Mississippi Saturday. My bookkeeper reported on my return that a gentleman had called and seemed to be disappointed in not finding me present, and stated that he was anxious to see me. I thought a good deal of his business and was a little worried about it, and on Monday I wrote him a letter that I was very sorry I was not at home, and wanted him to let me know if there was anything I could do for him; I got no answer to my letter. I felt a little bit put out from the way the bookkeeper described his actions in the office on Saturday, so I wrote a letter to a neighbor of his who is very friendly to me, to see him in a day or two and find out if there was anything the matter. I did not want him to slip out of our hands and go somewhere else. This gentleman called on him in his desire to help me out if he could, and learned that he thought us the best people in the world, and had nothing against us. After a few days I had our bookkeeper make out what I call a plantation ledger footing of the accounts from our books showing debits and credits of various parties doing business with us. I got along down to this party's name, and to my surprise, I found about \$3,500 dollars to his credit. Now, I said, I understand what is the matter with that fellow; he has not any more use for us. When he came up he said, I had no particular need to answer your letter. That is just an illustration of the condition of the country. He began by paying perhaps \$2,000 rent, and had commenced on a 3 years' option, and had bought nearly all on credit; I was surprised to find the condition of his account.

Q. Landlord?—A. No, sir; renter.

Q. (By Senator KYLE.) Money in the bank to begin the new year?—A. Money in the bank; yes.

Q. This is the customary method of renting in this section of the country, is it?—A. Of renting. Now, this is a white man I had reference to.

Q. The landowner, landlord, rents to a party who is called a white tenant?—A. Yes.

Q. He subrents to his tenants?—A. Yes. There are different classes of people. You would hardly call men of that sort in a general way tenants. He is a man of means himself. Some own as much as 50 head of mules, and have plenty of money to operate their business on, and still rent land.

Q. (By Mr. SMYTH.) Not own the land?—A. Not own the land.

Q. (By Senator KYLE.) Come to be owners by and by?—A. Sometimes, and sometimes not. We have had parties rent land and pay as high as \$6,500 rent a year.

Q. (By Mr. SMYTH.) Prefer that to owning land?—A. Yes. The lands in the Yazoo Basin are operated pretty largely by parties who rent in that way.

Q. How much cotton does the large farmer make now?—A. Well, the large planter I should say makes to-day about 600 or 700 bales of cotton; 600 bales to 2,500.

Q. A single individual can not make as much as 2,500 bales?—A. Yes.

Q. How many plows would he run?—A. Well, in this vicinity, that is, in the Delta, they will make an average of about 10 or 12 bales of cotton to the mule. I should say to 1,000 bales of cotton they would use something like 70 odd mules; 2,000, 140; in that proportion.

Q. Are there many large planters like that?—A. Quite a good many.

Q. (By Senator KYLE.) What have you to say in regard to taxation; the rates in Mississippi and Tennessee?—A. Well, of course, we always complain of taxation.

Q. (By Mr. SMYTH.) Always too high?—A. Always too high. As a citizen of

Memphis, we have a high rate of taxation here. It is something over 3 per cent—the municipal, State, and county tax.

Q. (By Senator KYLE.) How is it with the agricultural lands?—A. In the Delta we pay about 3 per cent; about 17 mills of that, in the front counties, is levee tax, and the remaining 13 would be State and county tax.

Q. Three per cent on full valuation returned?—A. Three per cent on assessed valuation.

Q. Generally about one-third?—A. The lands are assessed \$8 to \$12 an acre for open land.

Q. Considered about one-third valuation?—A. Well, I expect that is about it in many instances.

Q. About 1 per cent of the real valuation of the land?—A. Yes.

Q. (By Mr. RATCHFORD.) That also applies to this land you speak of being worth \$8 an acre?—A. Yes. Then we pay an acreage tax of 5 cents per acre on the entire acreage.

Q. (By Senator KYLE.) That land is particularly susceptible to overflow?—A. That is all land susceptible to overflow and protected by levee system, and, as I say, we pay in the front counties 17 mills and in the back counties about 12 or 13.

Q. (By Mr. RATCHFORD.) Do I understand you to say you reside in this city?—A. Yes.

Q. Is the burden of tax higher on the farmer of Mississippi than it is in the city?—A. The burden of tax is heavier in that portion of Mississippi subject to overflow.

Q. Than in this city, Memphis, according to the value of the property assessed?—A. I think the assessment would have all to do with that, and I think it is on the same proportion.

Q. (By Mr. SMYTH.) In addition to that State and county tax, you have a city tax to pay?—A. Yes.

Q. A farmer living in the country has no city tax to pay?—A. No.

Q. And your taxes in the city are higher?—A. Yes; about 3 per cent higher.

Q. In the city alone?—A. No; that covers all the taxes, State and county included.

Q. (By Mr. RATCHFORD.) Property is also higher?—A. Yes; property is assessed, I think, on the same basis—say 40 per cent of value, 40 to 60—according to the conscientiousness of the party giving and the particular friendship with the assessor.

Q. Then you do not concur with the claim that has been made by agricultural people in general that they bear a greater burden of taxation than others who own real estate?—A. Well, now, as between parties owning real estate in the country and in towns, I do not think there is any ground particularly for any such claim. I think, however, that the personal property of the agricultural class, as a rule, is more exposed, and that they pay more fully on what they own than the ordinary citizen of the city and those pursuing other occupations.

Q. The advantage that may be taken of our tax system is not in real estate, but rather in personal property?—A. Largely. You can arrive at it and collect tax with much more ease when you see the property.

Q. The farmer can not hide any of his?—A. Yes. It has been my opinion for several years that it would pay the State and our municipalities very much better to fix a very low rate of taxation on personal property, so it would come to the surface and be assessed, and would contribute a certain proportion of the funds necessary to carry on the affairs of the State.

Q. (By Senator KYLE.) Do you know what the cost of raising cotton is? Can you tell us experience in that line as a planter?—A. Yes, I suppose. I can give it to you both from an upland and river standpoint. I am farming both ways. In the Mississippi bottom we pay from \$4 to \$5 an acre to the tenant and the laborer where we work cotton by the acre; that is called the acreage plan of cultivating a crop. That is what the labor gets.

Q. Does that include the seed?—A. That does not include anything but labor. The landlord then furnishes the seed, the team, the implements, and the feed for the team. I have not figured out that lately. It is very easy to get at.

Q. The seed is how much per acre?—A. It is according to the price of seed. The seed now, I suppose, you might figure—

Q. On 30 cents?—A. Yes; something over a bushel of seed to the acre. That, though, is a long ways above the average for seed.

Q. Five dollars for cultivation?—A. Five dollars for cultivation.

Q. How much for the picking?—A. I think you have got along too fast, going to the picking. Don't you want to put the rent of the mule, and the feed of the mule, that goes into the cultivation of the crop, the use of the tools, and so on? They are all figured in addition to the \$5.

Q. How much is that now?—A. Well, we estimate the use of the mule—such mules as we have in the Delta—at \$25 to make a crop.

Q. That is not for the acre?—A. No, sir; they will cultivate about 20 acres.

Q. (By Mr. RATCHFORD.) What items of expense go to make up the \$5?—A. That is what is paid labor.

Q. (By Senator KYLE.) There is 80 cents for the mule?—A. No, sir; more than 80 cents for the mule; that is something over \$1; 20 into 25 gives \$1.25.

Q. A dollar and a quarter for the mule?—A. Yes. Then I should say that the use of the gear and plows we might figure at 50 cents an acre.

Q. Fifty cents an acre?—A. Yes.

Q. Rent of the land?—A. No, sir; not yet, I reckon. We will get through with the mule. Then we usually estimate about 7 bushels of corn per month for the mule.

Q. How many months?—A. Well, now, it is merely a question as to whether you are keeping a larger part of the mules for the cultivation of the cotton, and derive no other benefit from them, or not; if it is purely a matter of cotton, then you have got to feed them 12 months, I should say 75 bushels of corn.

Q. For a mule?—For a mule—to keep him a year.

Q. That is worth what?—A. I would put it at 40 cents.

Q. A bushel?—A. Yes. That is \$30 for the feed.

Q. Thirty dollars for the 20 acres?—A. Yes.

Q. (By Mr. SMYTH.) One dollar and fifty cents?—A. One dollar and fifty cents for the feed of the mule.

Q. (By Senator KYLE.) Now, we have got to what?—A. Now, that mule, of course, eats something besides corn. It is fed hay. I expect we may put that at \$1.60, fodder or hay. Now, then, we have rent of the land.

Q. Yes, how much an acre?—A. I should say \$6 an acre. We might put that at \$5; that would be an average.

Q. Five dollars?—A. Yes.

Q. An acre?—A. Yes.

Q. (By Mr. RATCHFORD.) Can not a mule be used for any other purpose than raising cotton?—A. Yes, and to some extent they are.

Q. (By Senator KYLE.) Now give us the picking.—A. We usually pay 50 cents a hundred for picking.

Q. You figure that at how much?—A. About \$8 a bale.

Q. A bale to the acre?—A. No, it would not make a bale to the acre; a great many acres will, but taking the usual cultivation, I should say two-thirds of a bale to the acre; not over three-quarters.

Q. You pay \$8 for that?—A. No, sir; we pay \$8 a bale. Two-thirds of \$8 will be—

Q. Six dollars?—A. Yes.

Q. Per acre?—A. Yes.

Q. (By Mr. RATCHFORD.) It wouldn't reach \$6.—A. No, sir; not for two-thirds of a bale.

Q. (By Senator KYLE.) About \$6?—A. Yes, in round numbers. The expense of hauling to the gin and handling would be something like \$1 a bale. That would be two-thirds of \$1—66½ cents an acre.

Q. Seventy cents in round numbers.

Q. (By Mr. SMYTH.) Where would that expense come in, provided you had no mule to haul it to the gin?—A. Well, you have got to get somebody to go after it and attend to it. By the time you employ 2 or 3 hands to go with a wagon and get a bale of cotton in the field and weigh it up—

Q. (By Mr. RATCHFORD.) I understand labor is necessary to load and unload it?—A. Yes.

Q. (By Senator KYLE.) Now, ginning and tying it?—A. About \$2.50 a bale; that would be two-thirds of \$2.50 per acre.

Q. That brings it right up to market?—A. Yes.

Q. That is the total cost?—A. Yes.

Q. That makes \$22 an acre?—A. Yes.

Q. As the cost of raising cotton?—A. Two-thirds of a bale.

Q. Raising what?—A. Two-thirds of a bale.

Q. Raising two-thirds of a bale in the Delta region?—A. Yes. Now, then, you want to give yourself credit by selling cotton and seed.

Q. That is very nearly the figures given before—between \$20 and \$25?—A. I should think that figured more than 5 cents per pound for the cotton. Our country can not raise cotton for 5 cents and prosper. My experience is that when our people have to take low prices for cotton their losses are made by failure to make any further improvements on their places; their fences, their houses, their teams, utensils, and everything run down.

Q. (By Mr. RATCHFORD.) What is seed selling for now?—A. About 26 cents now.

Q. (By Senator KYLE.) How many bushels of seed to the acre?—A. Two-thirds of 30 bushels—20 bushels.

Q. Five dollars an acre?—A. Yes, the seed estimate on the plantation. Then you have to haul it to stations, and pay freight—\$1 to \$2 a ton.

Q. That gives exactly 6 cents as the price of raising cotton?—A. Yes; that is what it costs parties renting land and buying feed to raise it. It takes seasons like this past year now to give people in cotton-growing regions enough spare money to reinstate themselves on their places, and there is some of that being done now. It has not been done before to any extent for 15 years in this section.

Q. You have met these men, from time to time, bringing in cotton, and have had time to converse with them?—A. I am actively in connection with it myself.

Q. The men come in to borrow money to make cotton with, and you understand when they come to pay this money back whether they have come out even or not?—A. Oh, yes; our connection with them is very close, so that we are in touch with almost all transactions.

Q. During years when cotton was selling at 5 and 6 cents a pound, what was your observation?—A. We carried over a large balance on our books, accounts not paid.

Q. Not able to get out even?—A. Many times not able to get out even.

Q. Were some able to get out?—A. Yes.

Q. To what do you attribute that?—A. The supply of labor on various plantations has a great deal to do with the successful operation of the place. It has more to do than any other thing, perhaps, connected with the growing of the cotton.

Q. Some farmers will have the help of their own families?—A. They work largely hired and other labor.

Q. (By Mr. RATCHFORD.) Economy in living has something to do with it?—A. The management, of course, at the head of a plantation has all to do with it. A man may have the best management, and if he is unfortunate in securing a supply of labor he can not farm successfully.

Q. (By Mr. SMYTH.) No man can raise 2,500 bales of cotton?—A. Not unless he has very fine ability, and the more capable the man is the better you can afford to have him, and the more successful he is the more you can pay him. I know plantation managers who get as high as \$2,000 a year for their services.

(Testimony closed.)

MEMPHIS, TENN., March 22, 1900.

TESTIMONY OF MR. WILLIAM A. GAGE,

Cotton Commission Merchant, Memphis, Tenn.

The subcommission met in the parlors of the Peabody Hotel at 10.07 a. m., Senator Kyle presiding. Mr. William A. Gage was introduced as a witness at 3.35 p. m., and, being first duly sworn, testified as follows:

Q. (By Senator KYLE.) You may give your name and address.—A. William A. Gage, 300 Front street, Memphis, Tenn.

Q. Your vocation.—A. Cotton commission merchant.

Q. You are president of the cotton exchange in Memphis?—A. Yes, sir.

Q. Your business is that of cotton factor?—A. Yes, sir.

Q. In that way you have dealings with planters and farmers in this district?—A. Yes, sir.

Q. Will you give to the commission some information as to the condition of these farmers, especially their present condition, as compared with 5 or 10 years ago?—A. Owing to the very low price of cotton which has prevailed for the last 3 years, the farmers have not been in what might be termed a satisfactory condition. This year, however, while they did not raise as much as for the past 2 years, the advance in the price has enabled them to realize more net income from the proceeds of the crop.

Q. So their condition financially is better than for the past 3 or 4 years?—A. At this time I think it is better. There is more money in the country and in circulation. People, as a rule, are not asking so early for advances, and are not asking for such large advances as for several years previous to this.

Q. Your customers are mostly white?—A. Nearly all.

Q. Do they nearly all own their land or are a large number renters?—A. Nearly all own their land. We do not do business with renters to any extent unless the landlord waives his rent. In this State rent is a statutory lien on the crop, and unless that is waived the landlord can come in and get the proceeds of the crop—all crops, whether corn, cotton, or any other product of the land—and take priority over a commission merchant or anyone else the renter may be indebted to. Where a man does rent land, and we furnish him, we generally take a mortgage on the crop and whatever live stock he has to aid the waiver of the landlord.

Q. From your business relations with the customers, which I take it are intimate, do you find that many of the landowners are mortgaged?—A. The greater part are mortgaged, I think; some for a small and some for a larger amount.

Q. Some to a dangerous extent?—A. Yes, sir; the mortgage loan companies very frequently find they have loaned too much on a tract of land and have to own it. For that reason there are quite a large number of loan and mortgage companies with agencies in this State that have acquired the ownership of land and are renting it out themselves—in some instances renting it as a matter of business as landowners.

Q. Has the value of land increased in the Memphis district in the last 5 years?—A. A great deal; particularly in Arkansas, Mississippi, and in what we call the bottom land of the hills—we mean rich land, fallow land, creek bottoms.

Q. Are they planted in cotton or corn?—A. Mostly in cotton, some in corn. A good farmer is always supposed to make corn enough to take care of all the stock and his family. Corn is used a great deal as a matter of food. All these little country towns have places where they grind. Of course, where they are able they buy flour to a great extent, and sell their corn; one is about as cheap as the other.

Q. Your customers who are landlords cultivate their land through a system of tenants?—A. Sometimes through croppers and sometimes through what is called day labor.

Q. Will you describe in detail these two plans?—A. The share cropper is one who makes a bargain with a landlord to make the crop on shares. Generally the landlord puts up the land and a mule against the tenant's labor. He furnishes the tenant such supplies as he may want for the family during the year, and charges him an agreed price for everything. Generally that price is a little higher than the man can get for cash in the market. In other words, the landlord becomes a merchant and supplies these tenants in that way. The tenant goes ahead and makes the crop, with his wife and children, and in the fall they gather the crop and divide the proceeds, or sometimes the crop itself.

Q. Are these tenants mostly colored?—A. Nearly all, as a rule; in the northern part of Arkansas quite a good many are white.

Q. What is the other plan?—A. The other plan is where a man owns his own land and raises his own corn and his fodder and hay to feed his stock, and employs men by the day. Sometimes they give them so much to work the crop and what they call "lay it by." That means that the crop is finished and waiting for the warm sun of June, July, and August for the cotton to mature. Then the owner pays a rate for picking—generally from 40 to 50 cents a hundred pounds.

Q. Are these men employed by the month or simply by the day as they actually work?—A. Mostly by the day as they work. They have mule drivers—men to look after and feed the mules—and have them employed by the month.

Q. What is the scale of wages generally paid for that class of labor?—A. In the neighborhood of 60 or 65 to 75 cents a day in some places; in other places not over 50 cents.

Q. Depending on the locality and the supply of labor?—A. Yes, sir; and ability to work.

Q. No food goes with that?—A. The food is not included in this price, but the owner sells it to the laborers—so much meal and so much meat every week. He generally keeps a storeroom, and on Saturdays they come and get meat, meal, tobacco, molasses, and other things necessary.

Q. Do they live on the farm?—A. He furnishes a place to eat, a good house generally, and an acre of ground for a little garden, or a half acre—generally gives them whatever they want, and they generally have wood furnished, but have to go in the woods and cut it.

Q. In addition they are paid these wages?—A. Yes, sir; and as a rule I am quite surprised to see such nice gardens among the working class of people, particularly the negroes. There is a good deal of pride among them as to what they have to eat, and there are a great many vegetables they can raise that go mighty well with bacon and meat. They generally have coffee, turnip greens, spinach, cabbage, and a great many things. They have snap beans; there are a lot of things that they can cook; they cook grits with the bacon.

Q. Is that tenant or laboring class accumulating property? Are they bettering their condition from year to year?—A. As a rule, I can not say they are. There are some very thrifty men. I think on our books we have about 2 negroes who own their own land and are generally very well able to take care of themselves.

Q. They live near by?—A. One lives in Bolivar County, Miss., and the other in Lauderdale County, Tenn., near by.

Q. (By Mr. SMYTH.) Is there a willingness on the part of land owners to sell land to negroes?—A. I think so.

Q. No prejudice against that?—A. None whatever. I might say there is no class feeling; it is very friendly. If called to town on business the landowner feels his family is safe with some reliable negro man in the quarters near the house where the proprietor lives. I think the relationship is just as friendly as that in large manufacturing towns in the North between the rich proprietor and the working people. I speak now of factories in the New England States. If the negro dies on the plantation, he is assured a first-class burial and funeral from some source.

Q. (By Mr. RATCHFORD.) At whose expense, the landlord's?—A. If he is able to pay it, he pays it himself; if not the landlord attends to it.

Q. Has the landlord any way to recover the amount expended in his burial from his family?—A. Not unless the negro who dies had it to his credit.

Q. The family are not taxed thereafter for it?—A. Not at all.

Q. If the negro who dies had it, could not his family bury him without the interference of the landlord?—A. Yes, sir; very frequently I have them on my books and bury them.

Q. (By Senator KYLE.) Do you have much migration here from the Northern States?—A. Well, there has been a great deal of immigration into the Delta country.

Q. Do these Northern farmers operate their places as they do the grain farms of the Northwest and the Mississippi Valley?—A. I think they do at the start, but they gradually work into the ways and customs of the men they employ.

Q. It is quite customary among the farmers in the grain and wheat growing regions for all the family to buckle into the work and hire no help at all.—A. I spoke of the northern part of Arkansas; there is a great deal of white labor there. I know some towns—we have quite a large amount of cotton from Corning, on the Iron Mountain road between here and St. Louis; not many negroes in that vicinity, mostly white people. But that is north, as you know; south, the negro labor predominates.

Q. (By Mr. SMYTH.) Have the Northern immigrants been successful as farmers?—A. I think as a rule. Of course, there are always some men who make a failure at anything, but as a rule those who come down here, live economically and work hard, make a living.

Q. (By Senator KYLE.) Have they not a double opportunity; they both superintend and do the work?—A. None of the farmers in the South are blessed with too much economy.

Q. (By Mr. RATCHFORD.) It is not natural for a man who works hard and is careful and economical to make more than a living?—A. He can do that anywhere unless the wages be starvation wages, as in some of these mining centers where they grind them down to what it takes to live.

Q. What would you consider 50 cents a day, such as is paid now on the farms where men are employed by the week or month, fair wages?—A. I think 50 cents is a little low; I said from 50 to 75 cents.

Q. (By Mr. SMYTH.) I understand with them it includes house and wood, so in making a comparison between these conditions of 50 to 75 cents on the farm, with house and wood and garden patch thrown in, that has to be considered?—A. Yes.

Q. (By Mr. RATCHFORD.) Even though it is considered, do you imagine there is more than a living in it?—A. No, sir.

Q. Do you imagine there is a living in it such as a white man should have?—A. I can not say it is a fine living, but I know many people who do live on it. I tell you the facts as they exist, not what I might hope that they should be.

Q. We are asking you your opinion on matters of this kind, which is valuable to us as well as the facts in your possession. A man can not send his children to school on those wages?—A. Where they have schools.

Q. Does he not need them in the field?—A. Yes; they stay in the field in the summer time.

Q. And are deprived in consequence of an education?—A. Yes; to a great extent.

Q. (By Senator KYLE.) They go to school in the winter?—A. Yes.

Q. (By Mr. SMYTH.) I think the schools run in the winter months only and in

the spring, and the hands work in the field in the summer time.—A. The children in cotton-picking time pick cotton, but as a rule they do not work in the field. A boy 15 years old is big enough to pick cotton and they generally work there and pick cotton in the fall, but the child is not able to make a crop, not able to hoe it, not able to plow; he has not strength enough.

Q. (By Mr. RATCHFORD.) Is it customary to work children 9 or 10 years old in the field?—A. I have never seen any that I know of.

Q. What public-school facilities have they here in the country?—A. I am not so well posted as to the school facilities they have. In nearly all the towns they have public schools for the colored and white people, but I am not posted on the school system and exact conditions in Mississippi, Tennessee, and Arkansas.

Q. You do not know how long the school term is?—A. I do not now recollect. I think it is possibly about 8 months.

Q. You are speaking for the State of Tennessee?—A. That is my general opinion. I am not able to speak intelligently on the subject because I have not looked into it.

Q. (By Mr. SMYTH.) Your business connections are in Mississippi, Arkansas, and Tennessee?—A. Alabama and Missouri also.

Q. (By Senator KYLE.) Do many of these negro laborers leave the farm and come to the city?—A. Yes, sir; a great many of them do.

Q. To better their condition?—A. They do not. They come and loaf about if there is surplus of labor. You will see thousands on the street idle. I do not know where they come from.

Q. I notice many negroes employed on the street. What is the average wage?—A. I think about \$1.50 is paid by the street-car companies for their laborers.

Q. Per day?—A. Yes, sir; and they have had a large amount of work done in the past year—building sewers I think they have been paying about \$1.25. There is quite a large source of employment for negroes on the levee loading and unloading steamers.

Q. These are paid about the same?—A. They get more; generally paid by the hour.

Q. (By Mr. RATCHFORD.) The city's work is \$1.25?—A. I think \$1.25.

Q. What are the hours of labor; do you know?—A. I could not tell you. I do not know whether it is 8 or 10 hours. There has been a great deal of agitation to reduce it from 10 to 8. I think in the last few days the police force service has been reduced from 10 to 8 hours.

Q. (By Senator KYLE.) These men pay house rent. What is the average house rent a man would pay?—A. These negroes live in all kinds of tenement houses. I reckon they pay from \$5 to \$8 a month rent. I can not say that I am posted on that.

Q. Meat and flour and other things cost them more than in the country?—A. No, they cost less if you buy for cash.

Q. (By Mr. RATCHFORD.) Can you say whether the man who is working for the street-car company, say, for \$1.50 a day, is better or worse off than the man who is working on a farm for 50 cents and his furnished house rent and other small things?—A. I take it a man could save more money in Memphis at \$1.50.

Q. You think on the whole he is better off than the man on the farm?—A. I would think so.

Q. His labor is not hard and his hours are shorter?—A. The labor is harder; the work in the country is very easy; plowing is very easy.

Q. (By Senator KYLE.) How about the continuity of the employment?—A. I think they are about the same. In the country if they work for others they cut and haul wood, get out cross-ties, work in timber, and when there is work in the fields there is always some time to do something else. Sometimes they split rails for the employer for so much a thousand, get them out, or do a great diversity of things.

Q. (By Mr. RATCHFORD.) Like men in the city, they can not work in rainy weather, can they?—A. No, sir; at least they do not.

Q. (By Senator KYLE.) Is there anything else you would like to add to your testimony?—A. I think not. I am sorry I was not aware of the character of your interrogatories.

Q. (By Mr. SMYTH.) Do you wish to say anything about the railroad facilities—freight rates? You are a seller of cotton?—A. Yes, sir.

Q. You are not directly interested in the freight rates for shipping cotton to the mills?—A. Yes, sir; I am one of the board of directors of the Memphis Freight Bureau we have organized here. I have spent a great deal of time at that. I think we have very fair freight rates. We have a great many competing lines. We have a number of lines competing to the seaboard.

Q. (By Senator KYLE.) Have you any competition?—A. Not so much this win-

ter because of the contract they have gone into among themselves. I think it has been very rigidly adhered to among themselves.

Q. (By Mr. RATCHFORD.) A pooling system?—A. Yes, sir; the different railroads agree to carry cotton and cotton goods direct to New York, Boston, or any port where the vessel is loaded, and they make a rate there and on down the coast—Norfolk, Charleston, Savannah, Mobile, and all those points.

Q. (By Mr. SMYTH.) Do you know about the difference in rates between points in New England and the Southern mills—say the mills in the Carolinas and Georgia?—A. The subject came up before us at the last meeting, asking that rates be made to the North Carolina mills. Up to this time they claim the rates have been too high to interior points in North Carolina from interior points in Arkansas and Mississippi, and we must try and get rates. That is a matter which I think will adjust itself.

Q. Do you know what the rate to Norfolk from Memphis on cotton is?—A. I could not say.

Q. Is it true that the rate to Charlotte, N. C., is greater than to Norfolk?—A. I think that has been the case. That was the matter that came up before us. If you are on that subject Mr. Davant, who is our commissioner, can give you all that information.

Q. Can he come before the Commission?—A. Yes, sir; he would be very glad. He is a very intelligent gentleman and is commissioner of the freight bureau.

Q. Not employed by the railroads but by the commissioners?—A. He was formerly a railroad man. We have the organization of a freight bureau, and assess each other a good round sum. While it affects my business less than the grocers and dry goods merchants, I felt it my duty to subscribe to it.

Q. Do you believe it to be a fact that the rates to Charleston are higher than to Lowell, Mass?—A. I do not know it to be a fact, but I know it was before us. We had a case the other day where a party wanted to ship cotton from an interior point in Mississippi to an interior point in North Carolina, and he claimed the rate was greater than when passing right through that point to the seaboard point, and Mr. Davant now has the matter on hand. He can give you more reliable information.

(Testimony closed.)

MEMPHIS, TENN., March 23, 1900.

TESTIMONY OF MR. L. C. BALCH,

Lawyer and Planter, Little Rock, Ark.

The subcommission of the United States Industrial Commission met in the parlors of the Peabody Hotel at 9.15 a. m., Senator Kyle presiding. At that time Mr. L. C. Balch was introduced as a witness, and, being first duly sworn, testified as follows:

Q. (By Senator KYLE.) Give your name, post-office address, and occupation.—A. L. C. Balch, Little Rock, Ark.; attorney and farmer.

Q. How long have you lived in Little Rock?—A. For 18 years. I was raised in north Mississippi.

Q. At the present time you are engaged in what particular occupation?—A. In the practice of law and in farming and raising stock principally, horses, cattle, hogs—

Q. (Interrupting.) Real estate business also?—A. In connection with my business as attorney only. I look after the legal part of it.

Q. Have you something to do with the sale of lands in this part of the country, too?—A. Yes.

Q. What can you say as to the increase in value of farm lands in the South in the last few years?—A. In the last six years there has been a very material advance. In 1893, 1894, and 1895 farm lands went very low in this section of the country, and many very large farms could not be rented even, but such is not the case now, and they are bringing fair prices.

Q. To what do you attribute the rise in farm lands?—A. I scarcely know, except the return to prosperous—what might be called properly the normal—conditions of the country. There is nothing specific I could point to.

Q. You take that inasmuch as the public lands of the United States are rapidly being absorbed by the population, the people must fall back on the lands they

the spring, and the hands work in the field in the summer time.—A. The children in cotton-picking time pick cotton, but as a rule they do not work in the field. A boy 15 years old is big enough to pick cotton and they generally work there and pick cotton in the fall, but the child is not able to make a crop, not able to hoe it, not able to plow; he has not strength enough.

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investing in establishing mills and giving employment to idle labor between laying-by time and cotton picking time, and between cotton picking time and planting time again. Now, all these plants give employment to the surplus labor during the winter and summer and spring, and that and other causes put the people in better condition. As to the cause of the improved condition of the planters during the last 4 or 5 years, much of it is attributable to the improved method of handling the labor, in this, that the colored people can be induced to buy much less than they formerly did in the way of supplies, which for many years in many cases was much more than the value of the crop they produced. Now, they can be kept from buying so extravagantly.

Q. (By Senator KYLE.) You say you are engaged in raising stock. Can you speak of this industry in your State?—A. Arkansas is—the larger portion of it—adapted to the raising of good stock, but our people have not taken to it much. Fourteen years ago I brought into the State a carload of Holstein cattle and a couple of fine standard-bred stallions, and gave the use of them to the public at a nominal fee, but the cotton farmers are not fixed to raise stock much; the two occupations do not go together very well, and except in the northern part of the State there has not been a great deal of attention paid to stock. They raise a good many mules and draft horses in the northern counties, but there they do not raise cotton.

Q. Does the cotton planter raise his own mules?—A. No, sir. A planter here and there will raise two or three mules a year, keeping the mares for extraordinary occasions in farm work when he needs a little extra team work. In that way they get the mules about clear.

Q. The raising of mules would come in the way of diversified farming?—A. Yes, sir. There is a tendency, last year and this, much more to raising mules in the southern part of the State than ever before.

Q. What is the size of an ordinary plantation?—A. My place is 560 acres, and that is about the smallest one that could be called a plantation in my country.

Q. Of that, what proportion is in cotton?—A. About 40 or 50 acres.

Q. The balance is in grass and timber?—A. A little timber, and the balance in grass.

Q. Abundance of pasture?—A. Yes, sir.

Q. So mules and horses could be raised in conjunction with cotton farming?—A. Yes, sir; they can be raised. I have tried to convince our people that they could raise all the mules they would use clear without a dollar of cost by making the mares earn their living plowing. The ground is light and they do not plow deep for cotton, and the cultivation of it is very light, and the mare will raise her colt and make a fair plow animal.

Q. What can you say as to the condition of the negro, and of him as a laborer?—A. It is the best labor that we have, and I hardly see how we could get along without him under present conditions. He is the most reliable, the most docile, faithful laborer that we have ever had—less trouble. It is true that he don't want to work any more than he has to, and you have to have a few more than if you had white men who were trying to get ahead in the world; but with all that the negro is the laborer for a cotton farm.

Q. How would he compare with a good, energetic, strong young man of 25 years, North?—A. If a young man is brought here from the North, for the first 6 months after he gets here the negro will not compare with him, but after that time the negro has got a heap the best of it. I have tried them. I have hired several Michigan young men, and brought them on my place. For a few months they were throwing things around and swearing they could do twice as much work as any negro, but after the hot weather came on, about cotton picking time, and the thermometer stood 102 in the shade, I have heard them say: "We thought we could do as much again work as the negro, but we find we can not do it." No, sir; the negro is the laborer for the South. He is adapted to the climate—enjoys better health.

Q. What would you say as to negro education?—A. We have the same facilities in our States for the colored as for the whites. The teachers are paid the same—a little different from what they are in Mississippi. It is true they grade them there, but we have a great many colored teachers in our country that have first-grade certificates, and they are paid according to the certificate they get. The negroes have the same facilities, the same schoolhouses, the same time and conditions as the whites.

Q. How do the negroes take to education?—A. They are very anxious to send their children to school, most of them. A few of the old ex-slaves rather disapprove of educating a laboring man, they say. My experience has been that when one of the younger class gets so he can read and write and cipher, he wants to go to

town. It is rare to find one who can read and write and cipher in the field at work. They go to town and take positions to shine shoes, wait on offices—as hostlers, body servants, and house servants. Many do not get employment, and go to the bad.

Q. Don't you think the farm is the best place for the negro?—A. I think there is the place for him to get ahead, decidedly.

Q. He has a better future on the farm than elsewhere?—A. Yes, sir; and the same is true of a majority of white men, in my judgment, if they are of the right sort.

Q. That is my view, too. If the negro is ambitious and wants to get ahead in the world, and is thrifty and economical, of good moral character, honest and industrious, he has a chance to accumulate something in the country.—A. Yes; and a much better chance than the white man, for the reason that society does not call for as much of his time and money in keeping up a position in society as it does on the white man. It would not reflect on the negro at all if he did not have a rag on his floor or have anything but a plain, unpainted bedstead. He would be thought just as much of by his neighbors, and would occupy the same position socially that he would if he had them a great deal finer. Really his opportunities for accumulating money are better than the white man's, because his children and his wife work a good deal in the field.

Q. Have you noticed that they accumulate property of their own?—A. Some do, but it is only a small percentage of them. When you do find one with a disposition to acquire a home, he gets ahead pretty fast and is soon quite independent. We have got a number of them scattered about on the farms in various places that have very handsome properties, own their own homes and stock.

Q. Own the land and free from debt?—A. Own the land and free from debt, lots of them—not a great many, but in every neighborhood there are more or less of them that own farms, some quite big ones.

Q. Have they bought these on the installment plan, so to speak?—A. They have usually bought them on 3 to 5 years' time, paying down about one-third or one-fifth cash.

Q. (By Mr. SMYTH.) Very seldom part with it after they once get it?—A. Very seldom.

Q. They hesitate a long time before they will mortgage that real estate after they pay for it?—A. Yes, sir; after they have got it paid for. Particularly the wife is very much averse to joining in any conveyance in the way of a mortgage or incumbrance. They prize lands very highly when they once own them, and it is a mystery to me why so very few of them attempt to acquire a permanent home.

(Testimony closed.)

MEMPHIS, TENN., March 23, 1900.

TESTIMONY OF MR. ALBERT MASON.

Farmer, Berkeley, Tenn.

The subcommission of the United States Industrial Commission met in the parlors of the Peabody Hotel at 9.15 a. m., Senator Kyle presiding. Mr. Albert Mason was introduced as a witness at 10.46 a. m., and, being first duly sworn, testified as follows:

Q. (By Senator KYLE.) What is your name and address?—A. Albert Mason, Berkeley, Tenn.

Q. What is your business?—A. Farming.

Q. How long have you lived in Tennessee? A. Fifty-six years.

Q. Born here?—A. No, sir; born in middle Tennessee.

Q. Were you a slave in the early days?—A. Yes, sir.

Q. Born a slave and brought up on a plantation?—A. Yes, sir.

Q. You were one of the slaves freed by Lincoln's proclamation in 1863?—A. Yes.

Q. Since that time you have lived in Tennessee?—A. Yes, sir.

Q. Have you been farming ever since that time?—A. Yes, sir.

Q. Most of this time you have been farming as a tenant?—A. No, sir; about half the time—about 18 years. I own a farm now, and before that I was renting.

Q. Tell us how you rented a farm during the early years.—A. When I first rented I rented for cotton rent and paid a bale of cotton weighing 500 pounds for 10 acres of land.

- Q. And in addition to the privileges on the farm you got house rent, use of land, and wood and water?—A. Yes, sir.
- Q. Such things as that?—A. Yes, sir.
- Q. Ordinarily, how are you able to prosper under those conditions?—A. I prospered successfully under those conditions.
- Q. Was your farm on upland or lowland?—A. Both upland and lowland.
- Q. On the delta river bottom?—A. Yes, sir; river bottom.
- Q. How many acres do you take to make a bale of cotton?—A. I have some land where 2 acres will make a bale and some won't. Some will take 4, according to land.
- Q. During this year?—A. For the last 5 to 7 years I have raised cotton very little.
- Q. When you were a tenant—this 18 years—how much would your land produce in cotton?—A. From 25 to 30 bales, the whole farm.
- Q. How many acres?—A. I tended 100 acres in corn and cotton and potatoes, altogether.
- Q. So you pursued a system of mixed farming?—A. Yes, sir.
- Q. You generally aimed to raise enough corn, wheat, oats, and potatoes to feed your family and stock?—A. Yes, sir.
- Q. Did you raise any cattle and horses?—A. Yes, sir.
- Q. Hogs also?—A. Yes, sir.
- Q. So you would be considered a mixed farmer?—A. Yes, sir.
- Q. And you say you prospered and were able to lay by a little sum occasionally?—A. Yes, sir.
- Q. When did you buy a farm on your own account?—A. In 1882.
- Q. How many acres in this farm?—A. In the first farm 80 acres.
- Q. Have you more now?—A. Yes, sir; 198 now.
- Q. Where is this farm located?—A. Shelby County, Sixteenth civil district.
- Q. Upland or lowland?—A. Half upland and half river bottom land—Wolf River bottom.
- Q. Pretty good buildings?—A. Yes, sir. Buildings for tenants.
- Q. You have an orchard?—A. Yes, sir.
- Q. And outbuildings generally?—A. Yes, sir.
- Q. How much did you pay per acre for this land—the first 80 acres?—A. Thirty dollars an acre.
- Q. How much for the subsequent purchase?—A. The second, \$20.
- Q. So that land has cost you \$25 an acre on an average?—A. Yes, sir.
- Q. Have you paid for these farms?—A. Oh, yes, sir.
- Q. Not in debt for the land at all?—A. No, sir.
- Q. Did you buy it on time payments to begin with?—A. Yes, sir; on 3 payments.
- Q. And paid for it in cotton?—A. Yes, sir.
- Q. Have you since been compelled to mortgage it in any way?—A. No, sir.
- Q. You do not feel disposed to mortgage it?—A. No, sir.
- Q. Is that the disposition of your people generally?—A. It is with some. Generally my people go in debt.
- Q. When they once acquire a piece of land they like to keep it clear?—A. Some do; it is not a general thing.
- Q. Generally they do not care much?—A. Yes, sir.
- Q. But with yourself, what induced you to secure a home of your own? What was your ambition to own that land?—A. I saw I had to live and went to work honestly and prepared for living. I thought that would be the best plan—to accumulate a home and go to farming and follow up my business successfully and attend to it.
- Q. Have you sons and daughters?—A. I had 1 daughter, but she has been dead 9 years.
- Q. You have been compelled to hire help?—A. Yes, sir.
- Q. How much cotton per acre on an average will your farm produce?—A. On an average, a quarter of a bale to the acre.
- Q. So it is not above the average as to production of cotton?—A. No, sir.
- Q. So if you were able to buy and pay for a farm under your conditions; any colored man could do so?—A. Yes, sir.
- Q. Provided he goes to work?—A. Yes, sir.
- Q. Have you raised mules?—A. I bought the mules; raised everything else.
- Q. Have you raised any steers or milk cows?—A. Yes, sir. I have not raised many steers; I always sell them off and keep 6 or 7 milk cows continuously.
- Q. How many mules do you operate?—A. Only 4. I had 6 and lost 2 two years ago, and since I have only kept 4 mules of my own.
- Q. You rent, do you not?—A. Yes, sir.

Q. What terms do you give the tenants; the same you got?—A. Yes.

Q. What are the terms?—A. The money rent averages \$2 to \$4 an acre.

Q. Have many of the people of your race been as successful as yourself?—A. Not in my neighborhood.

Q. You say the disposition is not to get down and work with the purpose of owning a home?—A. That is not the disposition.

Q. What is the ambition of the negro?—A. It is so bad I would hate to explain it, so far as I know.

Q. We want to know.—A. I could hardly tell, because it takes me all my time staying at home and attending to my business. I see a very bad spirit in that regard. They get discouraged and say it is too hard, when it just lacks going to work and saving what they get.

Q. No disposition to save money; not economical?—A. Not at all.

Q. They do not like to work continuously?—A. No; not from Monday to Saturday, and save half what they make. They want to go to everything that is on.

Q. What about the education in your community. Have you found the educational facilities good enough to satisfy you?—A. No, sir.

Q. Have you colored schools?—A. Yes, sir.

Q. How long has your school continued during the year?—A. For the last 2 terms from 2 to 5 months.

Q. Ordinarily, a colored child can get a pretty good education during his youth?—A. Yes.

Q. What education do you consider a colored man, or anyone, should have to fit him for the business of agriculture?—A. I consider he should be right well qualified for that.

Q. He should have some knowledge of arithmetic, geography, reading and writing, and ciphering?—A. Yes, sir.

Q. Be able to transact his own business?—A. Yes, sir.

Q. That he can get in the common schools very well?—A. Yes, sir.

Q. Your facilities are fairly good?—A. Yes, sir.

Q. Are your schools taught by colored teachers?—A. Yes, sir.

Q. What disposition do you notice among your people to take advantage of the school facilities?—A. I do not see where they take advantage of them.

Q. When a negro young man gets a pretty fair education, does he show a disposition to want to go to town to live?—A. That is the place for him.

Q. You think that is the place he wants to go, you mean?—A. Yes, sir.

Q. Do you think there is as good an opportunity for a young colored man in the city as in the country?—A. No, sir; I would rather take the country.

Q. Don't you think there is a great future for the young colored man who will take off his coat and go to work in the country?—A. Yes, sir.

Q. Don't you think they may be as successful as yourself if they will go to work?—A. Yes, sir.

Q. (By Mr. SMYTH.) You have made all you have by working and saving?—A. Yes, sir.

Q. Any other colored man could have done the same?—A. Yes, sir; he has the same opportunity.

Q. If he works as hard and saves as much, he has the same opportunities?—A. Yes, sir.

Q. (By Senator KYLE.) You would advise mixed farming for all people who engage in agriculture?—A. When they get to be my age; but when younger and stronger, they should not mix the farm unless they have a knowledge of plants. Of course my age has cut my physical strength down.

Q. You have the experience?—A. Yes, sir.

Q. The young man has not that knowledge?—A. He had better stick to cotton and corn.

Q. Corn is diversified farming—and mules and horses?—A. Yes, sir.

Q. You would advise to diversify rather than put all your eggs in one basket?—A. Yes, sir.

Q. You are able to make your living independently of cotton?—A. Yes, sir; I have done that always. About half my crop, except the first planted after the civil war, I put in corn. My master, who rented to me, always advised me that we could buy our bread and meat cheaper than we could raise it. I said, "Maybe you can; I can't." I farmed and rented of him until I bought the adjoining place with my planting one-half cotton and one-half corn. Finally he commenced drifting down on raising cotton only and buying everything else. As he kept drifting down on that and I was going up, after about 10 years he came and acknowledged, "Your plan is the best."

Q. (By Mr. SMYTH.) He adopted your plan?—A. Yes, sir. I find corn is the strength of the farm. It strengthens the stock; fattens the pigs; the cow gives

more milk; hitch your team in, they can do something. If you have it to buy, it makes them weak.

Q. (By Senator KYLE.) It rests the ground?—A. Yes, sir; and improves the ground. Plant pease and corn and all that, and cows and hogs and such as that could be raised.

Q. What is your age?—A. Sixty-eight.

Q. Have you been in Mississippi?—A. No, sir; only twice in my life. I had 2 mules run away about 12 years ago, and I was down there then, but never lived there.

Q. You think a similar success could be made by diversified agriculture in Mississippi, the same as in Tennessee?—A. Yes, sir.

Q. Where you can raise cotton as you do where you live?—A. Yes, sir.
(Testimony closed.)

MEMPHIS, TENN., March 23, 1900.

TESTIMONY OF MR. PETER EDMONDSON,

Farmer, Memphis, Tenn.

The subcommission of the United States Industrial Commission met at the Peabody Hotel at 9.15 a. m., Senator Kyle presiding. Mr. Peter Edmondson, farmer, was introduced as a witness at 11 a. m., and, being duly sworn, testified as follows:

Q. (By Senator KYLE.) Give your full name to the stenographer, please.—A. Peter Edmondson, No. 311 Main street, Memphis.

Q. And your occupation?—A. I am a farmer.

Q. What is your age?—A. My age is 46 years.

Q. Were you born a free man?—A. No, sir.

Q. Born in slavery, were you?—A. Yes.

Q. And was freed at the time the negroes were freed during the sixties?—A. Yes.

Q. Since that time what has been your occupation?—A. Well, part of my time I have worked for wages, until I became a married man, and after that I went to farming with my father and stayed with him until his death.

Q. Where did you work for wages?—A. Out in the seventh district.

Q. By the month, you mean?—A. Yes.

Q. What did you get per month?—A. I got \$15 per month. I was the regular wagoner on the farm.

Q. Were you able to save some money during those days?—A. I did not save much during those days.

Q. How old were you when you were married?—A. Twenty-one years of age.

Q. Did you then rent a farm?—A. No, sir; I remained with my father. I stayed with him until his death, and after his death I took charge.

Q. During this time you were engaged in cotton raising?—A. Yes.

Q. So you understood that business?—A. Yes.

Q. When did you begin renting on your own account?—A. It was in 1884 I began renting on my account.

Q. Where was that?—A. That was over on the Tennessee Midland road, in the ninth district.

Q. Were you able to make good cotton there?—A. Yes.

Q. How much to the acre?—A. I was upon pretty good land there, and I was working for J. C. Rogers. He was a stockman and he would rent it to me, when I would reverse it as the clover died out on it. I made about a bale—nearly a bale—to the acre on clover land—thin land. I made 21 bales of cotton on about 26 acres.

Q. What was cotton worth during 1886?—A. It was staple quality, what we called Allen cotton; it was worth all the way from 10 to 13 cents, according to the grade or staple. The Allen staple was not so large, but was as long.

Q. (By Mr. SMYTH.) This cotton was long staple?—A. Yes.

Q. (By Senator KYLE.) Were you working on shares?—A. Yes; I was giving him a third.

Q. Giving a third and you did all the work?—A. Yes.

Q. Furnished your own team?—A. Yes.

Q. (By Mr. RATCHFORD.) And he furnished nothing but land?—A. Yes.

Q. (By Senator KYLE.) You furnished rations and wood?—A. Yes.

Q. And such things ordinarily furnished?—A. Yes.

Q. Well, were you able to get out even under these circumstances?—A. Yes; that year I got out; then I made on rice \$600.

Q. (By Mr. RATCHFORD.) You were more than even then?—A. Yes.

Q. (By Senator KYLE.) Well, did you have a disposition to save that money then?—A. Yes; I saved up until I bought a good wagon and pair of mules, and when they put up the Tennessee road over there I had the misfortune to lose both. I gave \$125 for a large mare mule I got.

Q. You rented under these conditions for a number of years, did you?—A. Yes; not at that place; he never allowed to but one year, then reversed it.

Q. You have been renting off and on from that time to this, have you?—A. I quit renting. Then I came down here to G. R. Conner, and went to working on shares with him to get a stake again.

Q. You are beginning over, so to speak, now?—A. Yes.

Q. So you think by the same kind of economy practiced in the past that you can get ahead?—A. Yes; that is what I am trying to do. I worked 3 years, and I made 20 bales of cotton a year.

Q. (By Mr. RATCHFORD.) What part of that was your own?—A. Half of that was my own.

Q. (By Senator KYLE.) So you had 10 bales to sell this last year?—A. Yes.

Q. That would amount to how much a bale?—A. All the way from \$36 to \$38.

Q. Nearly \$400?—A. Yes.

Q. During this time were you able to raise some garden truck and keep a pig or two?—A. Yes, sir. I bought two male pigs for \$5, and I just weighed them, and they weigh 213 pounds one and 210 the other.

Q. So you were able to save part of this sum of money each year?—A. Yes.

Q. Well, with ordinary good luck, so to speak, in the course of 3 or 4 years you will be able to buy a piece of land?—A. Yes.

Q. That is your ambition?—A. That is my ambition; yes. I have got a good family, and I work them hard.

Q. (By Mr. RATCHFORD.) How large is your family?—A. I have 8 boys.

Q. All working?—A. I have 3 of age; the balance of them are working.

Q. Your wife work in the field?—A. Yes.

Q. Got any daughters?—A. They are not with me.

Q. Did you work them in the field when you had them?—A. Yes; I worked them in the field to the full extent.

Q. (By Senator KYLE.) That is good education for them?—A. Yes. You will never find any in the workhouse or penitentiary when you work them in the field.

Q. You also sent them to school?—A. Yes.

Q. What about the school facilities?—A. Well, they are pretty good, you might say. I sent them over to Mount Zion, over there; they have a good teacher over there.

Q. Average about 3 months in the year, do they?—A. Yes; the time is pretty well out now, and they must come in.

Q. You think the ambition you possess in regard to yourself and family is a characteristic of your race?—A. Yes.

Q. You think they generally work to get ahead?—A. Well, the majority do, and then there is a part that do not, that just want to come out even, and then start again, but that is not my ambition. I do not like that.

Q. Do you think that the opportunities for a colored man are better in the country than in the town?—A. I would take my own in the country before I would in town; yes. I believe a man can make a better living in the country. If he is a man of my standing, wants to farm and wants to work for a living, I believe the country is his place.

Q. Sometimes in town there is a little more cash return?—A. Yes.

Q. More amusements, etc., for the time being, but in the end they do not save as much?—A. No, sir. The dollar comes this week and goes Saturday night.

Q. (By Mr. RATCHFORD.) What part of your success do you owe to your large family? How much—in other words, would you have been able to accumulate as much as you have accumulated if you had but yourself and wife and a couple of children to support?—A. No, sir.

Q. Has every colored farmer the same number of children—the same opportunities—that you have?—A. They have the same opportunities that I have—the wife and himself, yes, but do not have the children.

Q. The children are a material help to the family?—A. Yes.

Q. That is to say, they are worth more than it costs to support them and clothe them?—A. Yes.

Q. (By Mr. SMYTH.) It is a good investment to have a large family?—A. If a man has children he has peace at home and peace in the field.

Q. Peace with mankind?—A. Yes.

(Testimony closed).

MEMPHIS, TENN., *March 23, 1900.***TESTIMONY OF MR. JEROME HILL,***Cotton Dealer, Memphis, Tenn.*

The subcommission of the United States Industrial Commission met at the Peabody Hotel at 9.15 a. m., Senator Kyle presiding. Mr. Jerome Hill, cotton dealer, Memphis, Tenn., was introduced as a witness at 11.11 a. m., and, being duly sworn, testified as follows:

Q. (By Senator KYLE.) You may state your full name and address.—A. Jerome Hill; Union avenue, Memphis, Tenn. I am located at No. 334 Front street.

Q. Your business?—A. I am a cotton dealer.

Q. (By Mr. SMYTH.) You advance to the planters in the country around?—A. No, not now.

Q. You receive consignments of cotton for sale?—A. No.

Q. You discontinued that business?—A. Yes. I buy cotton and operate ginneries.

Q. What is the general opinion of the condition of the farmers here and planters?—A. I think it has improved in the last few years somewhat.

Q. Did it improve during the condition of 5-cent cotton—during that period?—A. No, sir.

Q. You do not believe that cotton can be raised at 5 cents?—A. I know it can not and pay a profit to farmers.

Q. What do you think it costs to raise cotton in this country?—A. I think the actual cost is about 5 cents, and in the hill country about 6, without any compensation for wear and tear of stock or utensils—I mean farming implements—or interest on investment. I think that would be the cost.

Q. Do they use fertilizers in the hill country?—A. Not in this section.

Q. (By Mr. RATCHFORD.) What would be the cost, including the cost of wear and tear of farming utensils?—A. It depends a great deal, I suppose, on what would be the care taken of them and purchasing the same.

Q. With ordinary care and ordinary use would it increase the cost 1 cent a pound or half a cent a pound, do you think?—A. The profit, you mean?

Q. The cost of producing it.—A. A half cent more. It is well enough to explain that. Two years ago it cost less to make cotton than this year, for all the outlay on a plantation that you have to make now has enhanced a great deal. For instance, I am paying about \$4 for barbed wire that I got for \$1.75 two years ago. That applies to iron and everything in the industrial line.

Q. And cotton is higher?—A. Yes; cotton is higher.

Q. (By Mr. SMYTH.) Well, on the whole, you think the condition of the planters and farmers in this territory is better than it was a few years ago?—A. I think it is; I think it is improving some.

Q. Can you say it is better than at any time since the war?—A. No; a little after the war I think it was a little better. Labor was more regular and more to be relied on.

Q. And the price of cotton was higher immediately after the war?—A. Yes; for probably 5, 6, or 10 years.

Q. Is land owned around here in large tracts?—A. Not so much so as it used to be. It is being cut up into smaller farms.

Q. What percentage, Mr. Hill, of the farmers around here own their own land?—A. I never thought of that very closely. I can not answer that; or I should say—if you mean the white farmer or colored—

Q. The white.—A. Oh, I should say 80 per cent of them own their farms, or 90 per cent.

Q. Now, can you give us an idea of the number of farms under mortgage?—A. No. I want to say the mortgages have been greatly reduced in the last 12 months, owing to the advance in cotton.

Q. Can you tell us something about the colored labor in this section? Is it as satisfactory as it has been?—A. I do not believe it is.

Q. Are they leaving the farms?—A. Yes; too much so.

Q. Coming to the towns and cities?—A. The last reports show it. Anticipating that question, I sent over here to the schools a while ago to find out from Mr. Gordon, superintendent of public schools here, how it was in Memphis. I am sorry to say that there seems to be a disposition to go to the towns amongst colored people, to go off the plantations. I know that to be the case on my own plantation.

Q. What is the custom of hiring labor on the farms here? Is it on the share system or the tenant system?—A. The plantations are run differently; some rent; most of them are run on the tenant system, but some people run them and pay cash for the labor.

Q. Which is the most satisfactory to the landlord?—A. Well, I can not tell you. I think running it, paying cash for labor, the most satisfactory; I have tried them both.

Q. Does the land that is rented out to the tenant receive the same attention as it would under the care of the landlord?—A. No, sir. That is the objection to the tenant system; that is the most serious objection.

Q. The tenant generally objects to taking any advice in regard to the cultivation of crops?—A. Well, he may take advice very well, but he would not attend to the protection of the property as you would if you took care of it yourself.

Q. Is there a disposition on the part of the colored people to buy farms?—A. I do not think the tendency on the part of the colored people to buy farms has very much increased. From my experience I can not tell you.

Q. Do they find it difficult to buy land?—A. No; they can buy land.

Q. And land will be sold as readily as to the whites?—A. Yes. Speaking about this going to town, I want to show you this. The scholastic population of Memphis between the ages of 6 and 21 is 12,353 whites and 13,564 colored.

Q. More colored children in the schools than whites?—A. The scholastic population shows 1,200 more colored children than white children. I do not know whether or not there are that many more in the schools.

Q. That is the school district of Memphis?—A. The city of Memphis. I got this anticipating that question. I wanted to know myself, and I sent over to Mr. Gordon's office, and there is the paper he sent me.

Q. Those schools are supported by the taxes of the people of Memphis?—A. Yes.

Q. What proportion of the taxes are paid by the colored people?—A. Very little; I can not tell you.

Q. Is it 10 per cent?—A. I do not believe it is. Ninety per cent of the taxes in support of the schools are paid by the white people of Memphis, and the colored people are enjoying the privileges of the whites.

Q. So every opportunity is given by the white people of Memphis to educate the colored people at the expense of the white people?—A. Yes, and I think at the expense of the propriety of the colored people; I really think their coming to town is a great injury to them. I think if they will stay out and be farmers—they have district schools in Mississippi, Arkansas, and Tennessee, and they could attend these schools just as well, but they have a great big hobby to come to town to be educated.

Q. That, they think, brings them to social equality?—A. No; I think they become discontented.

Q. Their object in getting an education, you think, is to bring them on an equality with the whites?—A. Well, I do not know what the colored man thinks. Probably he may think it will do it.

Q. You heard the testimony of Mr. Mason?—A. I did not hear the first part, what he said about that. I was very much interested in the last part of it.

Q. You consider him one of the old-school negroes?—A. Yes.

Q. They also learned the best industry during slave days?—A. Yes; it is very marked. On my own plantation, 5 miles in the country, there are a few of the old ones. They are very well satisfied, happy and contented about things, and the younger ones are very discontented and want to be roaming.

Q. (By Senator KYLE.) The old ones have industrial habits already formed?—A. Yes. The others are inclined to be idle.

Q. That was his own testimony?—A. They are inclined to stick their hands in their pockets after making \$2; go to town and spend it. They go out and work a few days and then return to the village and lead a happy, go-easy life until their money is gone.

Q. (By Mr. SMYTH.) The colored man doesn't control the children as well as the old slave parents did?—A. No; they don't.

Q. (By Senator KYLE.) During the days of slavery the children were somewhat under the guidance of masters?—A. Yes.

Q. As regards forming industrious habits?—A. Yes; and moral habits, too.

Q. And since that time they seem to love to drift?—A. Yes. Some darkies work very well indeed, and some of the labor amounts to nothing at all; they won't work.

Q. (By Mr. RATCHFORD.) I did not catch the answer in regard to the method of running a plantation at the present time.—A. I have abandoned raising cotton very largely. I have what I call wage hands. I raise wheat, grain, cattle, and hogs with wage hands.

Q. And pay the hands by the week or month?—A. Pay by the month, or by the week; I hire by the month.

Q. What wages do you pay every month?

The WITNESS. For the men?

Q. Yes.—A. Ten dollars.

Q. And found?—A. Yes.

Q. How many men do you employ as farmers?—A. Six to ten.

Q. (By Mr. SMYTH.) You furnish them houses?—A. Yes.

Q. Wood?—A. Yes, board and everything; have their meals cooked for them.

Q. Furnish firewood?—A. Yes; I furnish everything—houses, everything else.

Q. (By Mr. RATCHFORD.) Do you find that more advantageous than farming on shares?—A. Well, yes. The farm is one of the older ones, which has deteriorated for want of attention, but I am endeavoring to reclaim it. It is 50 miles north of here, near Bolivar, Tenn. It was very fertile during the time of our forefathers and quickly responded to the agriculturalists of the early times. It was a very prosperous country early in the century. Your Mr. Kyle speaks of this country as being broken and thin, but it was a fine country in the early days. Some of the tenants on this place have been there over half a century. The place was one of the first settled in Hardaman County, and there have been three generations of colored people there.

Q. How large is that plantation?—A. Three thousand acres. My wife inherited it. There is one old darky there now who has been there 68 years; was born there; she is around the house now feeding the chickens.

Q. Do you regard the condition of the colored man as improved to-day over that of slavery?—A. I am going to answer that in two ways. I am glad he is free. I do not believe he is improving now.

Q. Do the white people pay the same attention to the family training of the colored people as they did in those days?—A. No, sir; that is the trouble about it. The colored people won't live in the yards with the white people; they want to get out by themselves. It is hard to keep your servants and help on the place.

Q. (By Senator KYLE.) Perhaps he feels absolved from responsibility around?—A. Yes.

Q. (By Mr. RATCHFORD.) The claim that is sometimes made as regards their moral training during times of slavery is correct, is it, that the owner of the slaves, and often his wife and family, looked to them in that respect and exercised considerable care and caution that their morals were preserved?—A. I know that to have been the case.

Q. That is true, is it?—A. Yes; I was raised on a plantation.

Q. Let me ask you another question. Is the cost of colored labor higher to-day on the farms than the cost of maintaining the colored labor during slave times? Do they live better to-day?—A. The colored man doesn't live as well.

Q. The cost, then, is necessarily lower than it was in those days?—A. Yes; take it on the average. I have not been there in a good many years. I was very much astonished to see how things go down. It was their own business; they had absolute control and let things go to waste. Their rations are so much confined to bacon and corn meal. You know—when they were in slave times—they had a cow and they had milk, and they would get different kinds of vegetables and everything to eat, and for a few years after the war they lived very well; but they let down in that; they don't keep up the garden, do not keep up the house, and they have no pride.

Q. To make your answer perfectly clear I will ask the question in another way: Did it cost the slave owner more under slavery to support the darky than he pays him under wages for his labor?—A. I understand what you mean. It cost him more.

Q. During slave time?—A. Yes, in my opinion.

(Testimony closed.)

MEMPHIS, TENN., March 23, 1900.

TESTIMONY OF MR. J. A. MANSON,

Farmer, Saulsbury, Tenn.

The subcommission of the United States Industrial Commission met at the Peabody Hotel at 9.15 a. m., Senator Kyle presiding. Mr. J. A. Manson, farmer, of Saulsbury, Tenn., was introduced as a witness at 11.30 a. m., and, being duly sworn, testified as follows:

Q. (By Senator KYLE.) What is your address, Mr. Manson?—A. Saulsbury, Tenn.

Q. What section of the State is this?—A. It is 57 miles east of this, on the Southern road.

Q. What is your vocation?—A. Farmer.

Q. Were you born in the locality where you now reside?—A. No, sir. I was born in Georgia, about 35 miles from Atlanta.

Q. You were a farmer there, were you not?—A. Well, I was not old enough to farm. I was on the farm there; my father farmed very extensively.

Q. So farming has been your life avocation?—A. Yes. Well, I do not know. I have been in politics a good deal, and have been United States marshal.

Q. You have produced cotton and cereals, I presume, for many years?—A. Yes; for several years now. I taught school a good while, for a while; for several years now I have been producing cotton.

Q. The section where you now reside is especially well adapted to cotton, is it?—A. Well, as well as any section in this country. The lands are not as rich as the bottom lands down here.

Q. You own your own farm?—A. Yes.

Q. And how large a plantation is it?—A. Well, I own 3; I own about 2,500 acres in all.

Q. How much cotton does your land produce, on an average?—A. I think about a bale to 3½ acres.

Q. So you would not call yours one of the best cotton-producing farms?—A. No, sir. Well, say 3 acres—I think a bale to 3 acres. The average in our county, up there, I expect, is about a bale to 4 acres.

Q. Do you produce cotton yourself by hired help, or let out land to tenants?—A. I produce it in three ways. I generally keep about a half a dozen hands. Then I rent two places to negroes; then I have got some working on shares—halves we call it.

Q. What is this share plan?—A. I furnish everything—the mules, feed of the mules, and everything, and get half the profit.

Q. You furnish mules, too?—A. Yes.

Q. Furnish everything?—A. Furnish all plow tools, wagons—everything of that sort.

Q. What wages do you pay the hired help?—A. I pay about \$8 a month.

Q. Men, are they?—A. Yes.

Q. And these men you employ raise cotton, or what?—A. Well, I employ on a place of that size, on my upper farm of about 2,000 acres—a good deal of that I do not cultivate. I allow cattle up there which I keep as range cattle.

Q. (By Mr. SMYTH.) What do they get besides \$8 a month from you? Do you feed them?—A. Yes.

Q. Furnish house-room and wood?—A. Furnish house-room, firewood, everything.

Q. (By Senator KYLE.) Cook for them?—A. Yes.

Q. Well, you find that you can raise cotton at the present prices by this hired help, do you?—A. I do not think I could if I did not need the help for something else, you know. These tenants and other croppers do not want to work to keep the place up, keep the fences up, and everything of that sort.

Q. And fertilizing and so on?—A. Yes. Well, we have never used any fertilizer up there. I am going to use 6 tons this year, and try it.

Q. Except barnyard fertilizer?—A. No; I bought 6 tons of commercial fertilizer this year.

Q. You raise wheat and corn?—A. No, sir. I raise corn, and I planted a considerable acreage of wheat year before last, but the winter of 1898-99 was terribly cold and killed it. Nearly all had a wheat crop last year, but it did not amount to much.

Q. How about cattle, horses, and mules? Do you raise many of them?—A. I have not raised any mules; only I have 1 or 2 young mules there.

Q. You use these animals, do you not, in raising cotton?—A. Yes.

Q. You buy them?—A. Yes. I have 2 mule colts there.

Q. Well, what I want to get at is this: Do you think it is more economical to buy them than to produce them?—A. No, sir; I do not. I have owned that big farm out there but a few years—4 or 5 years—and I know it is more economical to raise them.

Q. And to make a success of agriculture you think diversified farming is the best plan?—A. Yes. I have my sheep and cattle—90 head of cattle—and to those tenants of mine I furnish milch cows and charge nothing for it.

Q. Cattle are profitable, are they not?—A. Yes.

Q. Sheep also?—A. Yes; sheep also.

Q. And you could raise the mules you need for cotton farming?—A. And ought to do it.

Q. And raise all your own meat on the farm, I presume?—A. Yes. I don't reckon my meat cost me 2 cents last year.

Q. (By Mr. SMYTH.) Two cents a pound?—A. Yes. Then I have a range out there. I turned about 25 hogs out last fall when the acorns began to fall and I did not see them from the 1st of October until about the middle of January; they were 3 or 4 miles up on the hills.

Q. (By Senator KYLE.) All fat when you saw them?—A. Yes.

Q. Well, would you call your farming generally successful?—A. Yes. I have not really made any money on the farm since I bought it. It had gone down considerably, being rented year after year. For 4 or 5 years I improved the house and everything on it, and I do not reckon I have gotten any more money than I have paid out on it so far.

Q. But you have made money, barring improvements?—A. Oh, yes; I think so; some.

Q. And the money taken in on the farm you invested in improvements?—A. I have made some this year. I have not sold the cotton yet; I am waiting for 10 cents.

Q. (By Mr. SMYTH.) The place would sell for more than you paid for it on account of the improvements?—A. Yes.

Q. (By Senator KYLE.) Do you find agricultural lands advancing somewhat in price?—A. Well, not much. They would if the price of cotton kept up this way a year or two; but when cotton is down to 5 cents—a great many farmers did not get as much as 5 cents a pound for any cotton sold year before last.

Q. You can not raise cotton at 5 cents?—A. No, sir.

Q. What do you think is the minimum cost of production?—A. If a man hires hands and pays \$8 a month he can not raise it for less than 7 cents on lands that produce what ours do—about 3 acres to the bale.

Q. So, during these years when cotton was 4 and 5 cents, and 5 and 6 cents, the farmer was not really getting out even in cotton?—A. No, sir; and the tenants had to live very hard. Wages had to be held back, and they could not let them go. A family might be more than \$60 in debt and probably would not pay out. Now, a man can not raise cotton at 5 cents in our section. He may do it down in the Mississippi bottom where there is a larger number of bales to the acre, but I doubt that.

Q. How about the school facilities in your region for both white and colored?—A. Well, just the same, sir; but the negro does not take much interest in school. As a general thing, we have about 4 months a year, 3 months in winter and 2 in summer.

Q. Colored teachers?—A. Yes. They do not want anybody else, and we let them have their own way about it.

Q. The white people pay the tax?—A. Yes.

Q. You think there is a disposition among the colored people to accumulate property—mules, horses, wagons, and land?—A. Not much. There are a few up there, good old negroes, as we call them, that have farms; negroes about grown before the war.

Q. Naturally industrious?—A. Yes; but the negroes get worse all the time, and the whole business is more and more immoral every year. It is my opinion there is not one negro girl in our county 18 years old that is virtuous, and the negro men just the same. The married ones are just the same as the others, and the preachers are just as bad as the others. I stayed out on my farm all last year, and my family lived in town, and I talked with the older ones about it, tried to get them to do better. The majority of the church people are on the other side, but I am very sorry to see it; it is just that way.

Q. (By Mr. RATCHFORD.) That is a startling statement, is it not, regarding the virtue of the colored people?—A. It is, yes.

Q. Do you think farm life is conducive to these results?—A. Well, I do not think that.

Q. Are they more moral in the city?—A. I do not know much about them in the cities, but it just seems to be in them—the married men and preachers. There is a preacher there within a mile of me, and he had a sister come there and live with him. Well, she had a baby; then they had him up in church and he was turned out, but is back again.

Q. Are those people who practice this immorality educated to any extent? Have they a common-school education?—A. This man can read and write.

Q. I speak of them generally?—A. Well, a good many of them—no, sir. A boy

gets to be 14 or 15 years old, and he don't want to go to school, and the parents don't make them. They would rather run away and do nothing in the summer.

Q. Do you think that better school facilities and consequently, a better education would tend to improve the morals of those people?—A. I am afraid not, sir; I am afraid not. For 30 years we have given them just the same advantages in the public schools as the whites have had, given a pro rata of all the taxes paid.

Q. (By Senator KYLE.) You think if a man is bad, the more education he has the worse he is off?—A. That is it, and when you get one that can read and write and cipher a little he don't want to work on a farm any more.

Q. (By Mr. RATCHFORD.) Well, I can understand how a limited education will not improve morals, so long as the surroundings remain what they are, but with that higher education, would the tendency not be toward a higher standard, and consequently more decency, better morals?—A. Well, I hope so, sir; but I have almost lost confidence in regard to their morals. There is a preacher out here in this country who said this: "I know you girls are nearly all going wrong, but I want you to confine yourself to the members of this church." A great many of them have syphilis. There is a negro on my place of about 21 years now. I had a man on my place last year that I thought was an excellent man. I was a little surprised at him. Along before Christmas he was picking cotton and he said it was no harm for a married man to monkey with other women if no harm came of it. I found out he had been at it. I thought if there was a straight negro in the whole country that was one.

Q. (By Mr. SMYTH.) Do many negroes that have a little education commit forgery? Do you have trouble of that kind?—A. When I was United States marshal we had a good deal of it in the pension business.

Q. A little knowledge enabled them to commit forgery?—A. Yes, sir.

Q. Are there many in the State penitentiary for forgery?—A. Yes, sir. I do not know about that. I notice that 75 or 80 per cent of the negroes in the Georgia penitentiary can read and write, and that is a very large proportion—much larger proportion than there is among the negroes out of the penitentiary.

Q. That has been cited as a frequent crime among educated negroes.—A. We had a great many when I was United States marshal.

Q. (By Mr. RATCHFORD.) What percentage of the colored people in the penitentiary compared to the total number of convicts?—A. I suppose 75 per cent or maybe 80 per cent.

Q. What is the percentage in the State of the white to the colored?—A. Maybe 33½ per cent colored in the State.

Q. (By Mr. SMYTH.) Two-thirds white?—A. Yes, sir.

Q. (By Mr. RATCHFORD.) Two to one?—A. Yes, sir.

Q. (By Mr. SMYTH.) In the penitentiary they are 3 to 1 colored?—A. Yes, sir. If we were to take up every negro guilty of bigamy there would be 100 in our county. They get tired of one woman and go and marry another, and you can not prove anything.

Q. So it is quietly overlooked?—A. Yes, sir. I am very sorry to see it. Several years ago an old before-the-war negro talked to me. He had several grown daughters, and he talked to me about it, and he said, "They are all gone wrong," and tears ran down his face; he said it was not that way before the war. Soon after the old negro went crazy and died, and I think that is what killed him, the way his family went wrong. Their morals are 10 times worse than before the war. Negro women themselves—if a negro had a bastard child they had nothing to do with him before the war; now it makes no difference. A negro man would just as soon marry a woman with 3 or 4 bastard children as anybody else. It makes no difference now.

Q. (By Senator KYLE.) Does this condition prevail generally throughout the South?—A. I am afraid it does.

Q. In Georgia?—A. I have not lived in Georgia since the war.

Q. You have had quite a wide experience, being United States marshal and traveling over the country, so you are generally conversant with the situation?—A. Yes, sir; and I have had some negroes to bring down from Jackson to work their terms in Georgia, that had syphilis so bad you could not stay in the same house with them.

Q. Jackson, Tenn.?—A. Jackson, Tenn. There are 2 Federal courts in this division, 1 at Jackson and 1 here.

Q. (By Mr. RATCHFORD.) Is it your opinion that the present state of the colored man in the South—his presence here—operates against the investment of Northern capital in your country and the immigration of Northern people?—A. I think so.

Q. Does it operate to a large extent in your opinion?—A. I think it does. The Northern man comes down and settles among us, and he has not as much use for the negroes as we have; is not as patient with them.

Q. (By Mr. SMYTH.) He does not understand their characteristics?—A. He thinks every man ought to obey the law. I think we made a mistake in this country soon after the war in overlooking these things. We ought to have brought them right down to the law, but it was not done. The negro steals a hog and he gets off a heap lighter than the white man.

Q. (By Mr. RATCHFORD.) Do you agree with the previous witness that negro labor was more costly to the planters of the South before emancipation than it is at the present time?—A. Not altogether, when you take into consideration the much better control we had them under before the war. I do not think it was more costly; you could control them.

Q. You think that was worth something?—A. A great deal.

Q. Speaking of labor alone, was their labor cheaper or dearer in those days than it is to-day?—A. I think it was dearer in those days. The negroes were taken a great deal better care of. If a negro got sick, dangerously sick, they took him right in the house and looked after him. Then, on my father's farm every grown negro man with a family had a cotton patch of his own to buy his Sunday clothes with and little extra things. They had plenty to eat and wear and they dressed better than they do now on Sunday. Of course some have prospered and educated themselves, but taking the whole race, I am satisfied they were better off before the war.

Q. Do you believe that it is a mistake for the negro to branch out in the professions rather than confine himself to agriculture?—A. No, sir; not if he is capable.

Q. You think these avenues ought to be opened to him and that he should avail himself of them?—A. Yes, sir; and we have some pretty good negro lawyers here.

Q. It is claimed by some that the farm is the natural vocation of the negro.—A. It is for nineteen out of twenty of them.

Q. (By Senator KYLE.) Have you facilities for the higher education of the negro in Tennessee?—A. Yes, sir; the Fisk University at Nashville.

Q. Supported by the State in whole or in part?—A. In part only.

Q. Have you observed these graduates as they have gone back into private life, as to their habits, their success?—A. I have never seen a great many of them. I was in the legislature several times with negroes who behaved themselves well.

Q. You think these educated negroes who come from the higher schools are elevated in their morals as well as in their educational qualifications?—A. I am not certain about that.

Q. (By Mr. SMYTH.) Do you find that education among the negroes on the farm tends to elevate them in a moral sense?—A. No; and it never will until the preachers do better; they are as bad as any. You can not expect children to be more moral than their parents. The mothers in any nation shape the morals of the children.

(Testimony closed.)

MEMPHIS, TENN., March 23, 1900.

TESTIMONY OF MR. T. F. HUTCHINSON,

Representative of American Cotton Company.

The subcommission of the United States Industrial Commission met at the Peabody Hotel at 9.15 a. m., Senator Kyle presiding. Mr. T. F. Hutchinson was introduced as a witness at 11.57 a. m., and, being first duly sworn, testified as follows:

Q. (By Senator KYLE.) Will you please state your name and post-office address?—A. T. F. Hutchinson, 61 Porter Building, Memphis, Tenn.

Q. What is your vocation?—A. I represent the American Cotton Company, round lap bale system.

Q. (By Mr. SMYTH.) What advantage do you claim for the round bale?—A. From what standpoint? The farmers' standpoint?

Q. Yes, sir.—A. He gets more money from it; for a given grade of cotton in the round bale he gets more money than for the same grade in the square bale.

Q. Is that the fact in Memphis?—A. That is the fact in Memphis territory.

Q. Are any round bales received here at Memphis?—A. Yes, sir; some were received here during past seasons, shipped in here to factors by parties who were mortgaged to the factors; but nearly all the round lap bales are sold direct, and do not have to go to Memphis.

Q. Was that which was sold here sold at a higher price than the square bale?—
A. Yes.

Q. Is there any objection on the part of foreign spinners to the round bale?—
A. None that I know of.

Q. Is it a fact that any of the brokers here or elsewhere have instructions to avoid the round bale and not ship it?—A. Not that I know of. I have had applications from a good many brokers here to buy round lap bales.

Q. Is there any difficulty in sampling or boring into the round bale?—A. No difficulty in sampling, taking out a sample as in other bales.

Q. That is only from the outer bale. Is there any way of sampling into the core?—A. No.

Q. So bales that are false packed could not be detected before shipment?—A. It is not necessary to bore them. The American Cotton Company guarantee the bale to the spinner.

Q. How can they do that if they sell their presses?—A. They have not sold any presses.

Q. They simply lease these presses to ginner?—A. Yes.

Q. On a royalty of how much?—A. Twenty cents a hundred.

Q. Equivalent to \$1 a bale?—A. Yes; if the bale weighs 500 pounds.

Q. The planter has to pay \$1 extra to have his bale put up under the round bale system?—A. Yes; and that is paid back in the premium over the old system.

Q. What is the premium?—A. Forty-five points.

Q. Is that universally allowed?—A. Yes, sir.

Q. Do you believe any round bale cotton has been sold at the same price as square bale cotton?—A. I have heard of none.

Q. How many bales in the Memphis district were put up in the round lap bale last year?—A. I could not quote the figures definitely, but about 75,000.

Q. Why will not your company sell their presses to the farmer?—A. The farmer would not buy them.

Q. Well, to the ginner?—A. He would not buy them.

Q. Why not?—A. Because they are afraid of the compress interest.

Q. Have they been offered to them?—A. Yes, sir.

Q. They refuse to buy them?—A. Yes, sir.

Q. What would be the selling price?—A. I am not able to answer that question. I have nothing to do with the manufacturing department and do not know the cost of the press.

Q. You do not know the price at which it was offered to the people?—A. No, sir.

Q. Perhaps the price was prohibitory?—A. You may take any lessee that we have had for the past 2 or 3 years, and make him a proposition to sell the press at \$500 and take away the protection of the American Cotton Company, and he would tell you that he did not want it at any price.

Q. What is the protection?—A. An agreement guaranteeing this premium.

Q. On every bale sold?—A. Yes; and the American Cotton Company stands ready to buy it any day, if offered, with that premium added. This cotton agreement, however, does not bind the ginner or farmer to sell a single bale to the American Cotton Company. He may sell where he pleases. It is simply a guaranteed market for his round bale with the premium.

Q. If he will pay the dollar extra?—A. Yes, we guarantee the \$2.25.

Q. Does not the farmer, under the round bale system, use much less bagging and ties than on the square bales?—A. He uses no ties at all.

Q. And he uses very light bagging, much lighter?—A. Lighter, yes.

Q. Does not the farmer now on the square bale make a handsome profit on the bagging and ties on the bale?—A. I do not know. He makes something on the bagging and ties. The price of bagging and ties has gone up with the price of cotton.

Q. Does he not make at least 100 per cent profit on the cost of the bagging and ties under the square bale system?—A. I do not think he does.

Q. I think you will find that he makes 100 per cent profit on the bagging and ties on the square bale; he makes almost the premium you offer on the round bale. He loses that on the round bale system.—A. It is very strange then that the farmer should patronize the round system at all, is it not?

Q. Yes, I think it is.—A. As a matter of fact, we do not require the ginner to dispense with his square bale press. It is left in place, and the round bale press is put in the same building, and he gives the farmer his choice as to the round bale or the square bale. The farmer hauls in 1,500 pounds of seed cotton. He gins it, has it put up in the square bale, pays the ginning charges, sells the cotton. He does the same thing with the round lap bale, pays the ginning charge and the 20 cents per 100 pounds royalty. He counts the money derived from the two systems and finds he has more money for the cotton put up in the round lap bale.

The compress people always figure on the bagging and ties, figuring against the round bale. That is the test that you can not figure against. The farmer does his own figuring on that. That is the actual test of the two systems.

Q. Does the round bale enjoy the compress rates of freight?—A. I think it does. I think, however, it should enjoy the commodity rates.

Q. Have you experimented and proven to your satisfaction that more pounds in the round bale condition can be loaded into a car than of the compressed cotton?—A. Yes, sir; beyond any doubt.

Q. You think that fact is established?—A. No question about it. If you take Oakland, Miss., 40 or 50 miles below here, we had a press put in there last year and operated. You can take 50,000 pounds of cotton in the round lap bales and put it in 1 box car and the mill men in the East break the seal. It does not have to go to Memphis to be compressed and sampled, weighed in there, reweighed, and resampled. Take the same number of pounds in square bales: That would be 100 bales weighing 500 each. It takes 4 box cars of the same size and capacity to bring that 100 bales to Memphis to the compress. After it is landed here it is unloaded, trucked into the compress shed, insured, compressed, loaded back into the car, and it then takes 2 cars to carry that 100 bales or 50,000 pounds to the Eastern mills. You have to use 6 cars in handling that 50,000 pounds of cotton, while in our system we use 1 car right from the farm to the mill.

Q. You say the American Cotton Company guarantees the grade of cotton put up under your system. They guarantee the honesty of the ginner?—A. We have a contract whereby the ginner guarantees the American Cotton Company against false packing.

Q. If one-half, two-thirds, or three-fourths of the crop was put up by the American Cotton Company's system would it not become a trust and monopoly?—A. I do not see why it should.

Q. If that became a universal way of handling cotton no one could put up cotton in the round-bale system except by paying tribute to the American Cotton Company?—A. That is right.

Q. It would, therefore, become a trust if they controlled the manner of handling cotton. They will not sell presses?—A. They will sell the presses.

Q. Assuming that one-half or three-fourths of the cotton is put up that way, and suppose the spinners want it that way, the planter is under tribute to the American Cotton Company for \$1 a bale?—A. Yes, sir; 20 cents per 100 pounds.

Q. Would they not become a gigantic monopoly?—A. No, sir; it can never get anything beyond 20 cents per 100. They can not control the cotton crop.

Q. Once they establish the fact that that is the way to put up cotton and convince the buyers that they want the cotton put up that way they can change the terms of the lease and make a higher price?—A. No, sir; the contracts are for the life of the patent. They could reduce it, but could never make it any higher. The only way it could be a trust would be for the cotton company to make a contract whereby the farmer would be forced to sell them all the cotton. There is nothing in the contract that requires the farmer or ginner to sell a single pound of cotton to the American Cotton Company.

Q. What is the capital of the American Cotton Company?—A. \$7,000,000.

Q. Who is president?—A. John E. Searles.

Q. He was formerly treasurer of the American sugar trust?—A. He was treasurer of the American Sugar Refining Company.

Q. Connected with Mr. Havemeyer in the sugar business?—A. Yes, sir.

Q. As treasurer of that concern?—A. Yes, sir.

Q. That is commonly known as the sugar trust, is it not?—A. I think so; yes, sir.

Q. Let us assume that the American Cotton Company's bale will average 500 pounds; assume the crop is 12,000,000 bales, and assume that the American Cotton Company controlled the baling of 9,000,000 bales. That makes an income to the American Cotton Company of \$9,000,000?—A. Yes, sir. If they have increased the value of that 9,000,000 bales \$1.50 or \$2 a bale by this new process, they are entitled to it, are they not?

Q. You think they are dividing with the farmer?—A. Yes, sir. The farmer is the only man we figure with at all.

Q. If they make \$9,000,000 under their capitalization, I suppose they could declare a dividend of 150 per cent?—A. Yes, sir. The round bale is the only competitor that the square bale has. We have never located a round-bale press at any point where it did not raise the price of square-bale cotton from one-fourth to one-half cent per pound. That fact can be proven beyond question by the farmer and ginner.

Q. How was that brought about?—A. The city cotton buyer has an arrangement with some local merchant generally, or in large towns they have special

buyers to buy cotton and ship into Memphis. They are given limits every day—what price to pay during the day. They pay these buyers, I think, 50 cents a bale commission—perhaps 25 cents. Some are paid a salary. When the round bale starts up and puts a premium on, it raises the price of cotton. The Memphis cotton buyer telephones his agent raising the limit a quarter of a cent per pound, and in many cases one-half cent per pound. They have to do that to get any square-bale cotton at that point.

Q. Does that lead to any increase in the price of round bale? Do they still keep the price 45 points above the price of the square-bale cotton?—A. Not always.

Q. I understand they guarantee 45 points above the price of square-bale cotton?—A. Yes, sir.

Q. You have supposed a case where he telephones down and advances the price a quarter of a cent?—A. We have to increase to stay in the market.

Q. You are satisfied with 20 points advance?—A. If he raises his limit we have to raise ours.

Q. Proportionately, a quarter or one-eighth, possibly?—A. We could not do any business with one-eighth above.

Q. You do not always keep 45 points above?—A. Not always. Where there is a stiff fight made to shut the round bale out, and they get the price too high we let them have it until they get tired of it.

Q. Then you do not always carry out your contract or agreement of 45 points above?—A. Yes; because the prices are based on quotations of the regular cotton market. Memphis territory prices are based on Memphis quotations. Because a man comes up and raises the price one-fourth of a cent at Oakland, that particular case does not change the market quotation in Memphis.

Q. It affects the individual seller of cotton at that point. He has paid the American Cotton Company \$1 a bale. He has put up his cotton in the round bale under a guarantee that he is to get 45 points above the—A. (Interrupting.) Memphis quotations.

Q. Then you do not carry out the contract?—A. Yes, sir; because the contract is based on market quotations and not on speculative prices.

Q. The man that is putting up his cotton in round bales does not receive \$2.25 above the square-bale cotton, because he may not get more than 20 points above—hardly get his money back?—A. Whenever he does not get his dollar back he does not patronize the round bale further.

Q. Of course, if he does not get more than his dollar back there is no inducement for him to use the round-bale system?—A. I have one cotton buyer here that used our presses last season. This man buys for Eastern mills; he is an exporter, and I suppose he ought to know his business. He handles cotton both for our spinners and for foreign spinners. He also owns plantations and country stores. He was so well pleased with the round-bale business last year that he is going to put in 20 gin plants this year as an investment, with round bales.

Q. We had testimony yesterday from a cotton broker who buys 150,000 bales of cotton. He has instructions from customers, both East and foreign, to avoid the round bale.—A. Well, that man is interested in a compress, and that same man is now trying to make arrangements with me to handle the round-bale cotton in this town.

Q. He gave testimony that he had instructions from the spinners on the other side?

The WITNESS. Did you ever try the round bale?

Mr. SMYTH. No.

The WITNESS. You are behind the times.

Mr. SMYTH. I am not willing to take a man's guarantee 600 miles away.

The WITNESS. The only trouble we have had with round bales this year is that we can not get enough of them to fill our orders.

(Testimony closed.)

MEMPHIS, TENN., March 23, 1900.

TESTIMONY OF MR. JOHN W. ELDRIDGE,

Hillhouse, Miss.

The subcommission of the United States Industrial Commission met at the Peabody Hotel at 9.15 a. m., Senator Kyle presiding. Mr. John W. Eldridge, Hillhouse, Miss., was introduced as a witness, and, being duly sworn, testified as follows:

Q. (By Senator KYLE.) State your full name and address.—A. John W. Eldridge, Hillhouse, Miss.

Q. And your business?—A. I am retired from the sphere of active life. I am 75 years old. I have been a great deal in public life—foreign countries, as consul, traveling a great deal—and have spent a great deal in seeing progress—

Q. (By Mr. SMYTH.) Are you a native of Tennessee?—A. Born here 75 years ago.

Q. Born in Memphis?—A. Middle Tennessee. I have a brother here, Judge Eldridge.

I see your commission wish to know something about the negro—his condition in the days of slavery and his condition since that time, both educational and moral.

Q. (By Senator KYLE.) Those are very important facts, and what can you suggest for improvements?—A. I begin with the fact, gentlemen, that I have been associated with the negro all my life. Before the war I was a considerable owner of slaves myself. I know his character, his characteristics, his nature, I think, and his possibilities. At the present time I think there has been a very great advance—in the last 5 years. In truth, the more you get the negro out of politics—you understand, the more we can get him away from public assemblages and distract his mind from that—the faster he improves; he gets better; he gets more in harmony with his surroundings, and I think in the last 5 or 10 years I have seen a gradual advance. I have been a great deal on the plantation down there in Mississippi. My son has a thousand employed, I suppose, and I mix with them a great deal, and I think the negro is improving. I sit out there every Sunday morning right in front of the big Baptist Church which my son gave them—they have got a lodge in the upper story—and see men and children and women in that church all dressed as clean as white children here in town. It is wonderful the interest the mothers seem to take in their children in the way of dressing them. They are going dressed a great deal better than formerly. We sell goods down there at the plantation. My son has 2 stores with a large quantity of goods, and we buy as nice goods there and sell as nice goods to the negro; and the quality of goods many of the negro men and women buy when they come in there is very good. They buy the very best class of underclothes, \$3 to \$5 a suit, real lamb's wool. They buy the best hosiery, many of them—not all of them. Of course, in society of all kinds there are leading men and men who will lead the way. There are many leading men amongst the negroes who have much influence. Now, there is another class of negroes, generally coming from Carolina, and back in that section, and I do not find they are as far advanced as our Mississippi negroes. When they have been with us several years, they have been improved. Many of them stay with us 5 or 10 years. My son has some who have been with him, I suppose, 10 or 15 years who came originally from these States, and I find they have improved in the course of 10 or 15 years. Some of them have lived on a very small amount of money.

Q. (By Mr. SMYTH.) The conditions you are referring to when you say "down there," you mean in the delta?—A. Yes.

Q. Are the wages better there—the income of the colored man larger in the delta than in the hill country?—A. Yes.

Q. Gets more money?—A. Yes.

Q. How are the school facilities?—A. They have more in the bottom than in the hill country.

Q. Do you think the condition of the negro in the delta district is better than in the hill country?—A. I think it is far better in the hill country. They have an easy time of it on these old hills and they work just to suit themselves, and they don't care if they only make 1 or 2 bales of cotton. I am acquainted with the conditions in the delta; that is, as far as my information goes; I am familiar with the wages in the delta.

Q. Now this condition you speak of, as existing on your son's plantation, is that general among other plantations in the delta?—A. It is universal, pretty much. The planters have all become very much alike. Now, some gentleman before you yesterday, I believe Mr. Norfleet, stated that the negroes have gotten so they demanded of the landlord that they must rent the land. My son never was taken by that new process until this year. He made a great deal more money by working the plantation on shares, because if a man made any he got half, and he did all the work; he furnished the mule and furnished the tools etc., and land, and he got half, but as it is now he rents the land say for \$5 or \$6 an acre, and that is the end of it.

Morals; that is another very important thing as to what the negro race is doing; that does not read as well as education; of course there is a diversity in that as

in everything else. Some are strict in morals. I find this, however, though I am a little ashamed to confess it, that they are getting further away from the white men.

Q. Is the white men getting away from them in that respect?—A. Yes; don't work them anything like they used to.

Q. We had testimony just now that the white man ceased this on account of syphilis, etc.?—A. Not only that, but because the negro will not let them have it. The negro buck will go down and will stay right around them. It is not a matter of fear of disease as much as that fact; you can not get one of them to go into a store. If a girl goes into a store 4 or 5 negroes will come in and stand around; but the races are further apart in that line. There is one form of evil, that is, they take up with each other. I say the negro fellow will come down there on the plantation and he will say, "Mr. —, if I had a wife I would go to work." "Well, there is a woman up there that just came down from North Carolina; just go and take one of them if you want to." He goes over there and he agrees to it; never saw her before in his life; they just go together and they will stay together and never get a marriage license. But the African preachers are trying to control that; they are turning them out of the church.

Q. Are the preachers moral down in your neighborhood?—A. They say they are not; I do not know. They say they have more contributions almost than any one profession; they have access to all negro families.

Q. In the absence of the men?—A. They have wonderful influence with the women. The negro is influenced largely by his pastor; by the preacher.

Q. By the negro preacher?—A. Yes.

Q. He visits the family in the absence of the men?—A. Yes; or he goes around among the members while the employees are at work. I saw 3 or 4 down there who came during the conference that extended all over the South—the preachers through my district there—and they are very well-behaved men. I always speak with them, shake hands with them sometimes, when they show a disposition to know me, talk with them, and try to make them feel as though they were at home. I want to influence them as well as I can.

Q. Are there many illegitimate births in your section down there?—A. You call them illegitimate where they are not married, but many of the women are not married who have lived with the same man for years.

Q. Do they change women often?—A. No, sir; only a certain class of reckless negroes and women of the same character. They will just take a new one every 6 months and part if they get mad at them, and they will get a new husband or wife in a week.

Q. The law is not invoked to prevent that?—A. No, sir; it don't amount to much. We have nothing to do with their wives or anything of that kind. Now, there has not been on my son's plantation—he has from 4,000 to 8,000 acres in cultivation—and there has not been any such thing as difficulty between the white men managers and negro laborers of any kind.

Q. And you do not interfere with their wives?—A. No; we do not interfere with them, and if a woman comes into a store, and there is a white man standing around, there will be a half a dozen colored men in front of the store waiting for her. I think their morals are in better condition, their education is improving, and they are going to be more respectful in their manner. Many of them can read and write very well. I am postmaster there at Hillhouse and have a great deal to do with their letters, and I find nearly all of them improving. The negro is peculiarly created; as distinct from the white man as a mule is from a horse. He will carry his characteristics with him to the grave and to the heaven, if there is a heaven for the negro. But he is a negro, speaking kindly. He is grateful; he has no animosities; he has no revengeful spirit as a white man has; he is the best labor we could have in the South. Altogether he is the best labor in the United States. I have been all over Europe and several countries, and I have never seen labor as good as the negro. Taken away from politics—I know you are Northern men—

Mr. SMYTH (interrupting). No; I am not.

The WITNESS (continuing). Take him away from politics and let us do all we can to educate him and help him along, deal with him fairly and squarely, which I think we do as a general thing. If we have got to have him here, let us have him in a way—possibly give him liberties and rights and all that—but I find that he does better since Mississippi has limited the franchise and cut off all that turmoil and strife of election.

Q. (By Mr. RATCHFORD.) On that point, does the negro share in the right of franchise to-day equally with the white man?—A. Well, some of them do, sir, just according to the state of advancement. There are a good many like we are, that want to be politicians.

Q. (By Mr. SMYTH.) What is the law of Mississippi with reference to suffrage? What are the qualifications in Mississippi for a man to vote?—A. I should like to be very careful in stating that. He has to be qualified from several points of view; among them is a certain amount of education, enabling him to read and write part of the constitution of the State—of the United States. He has to know the meaning of that paragraph, and others besides—some others besides.

Q. Any property qualifications?—A. No, sir.

Q. Simply an educational one?—A. We have a good many negroes who are buying lands. Yes, large numbers of them, going up to 5 or 10 mules, 40, 50, 60, 70, or 80 acres of land. That class of men don't care much about politics or anything of that kind. They are simply going to start that way to make money, and some of them have credit here in town and can buy a barrel of bacon or barrel of sugar or whatever they want.

Q. Do you know whether the number of illiterates is on the increase or decrease?—A. I think, as far as I can say, in the country districts this is on the decrease.

(Testimony closed.)

MEMPHIS, TENN., March 23, 1900.

TESTIMONY OF MR. MAT W. MOSELEY,

Cotton Dealer, Memphis, Tenn.

The subcommission of the United States Industrial Commission met in the parlors of the Peabody Hotel at 9.15 a. m., Senator Kyle presiding. Mr. Mat W. Moseley was introduced as a witness at 2.23 p. m., and, being first duly sworn, testified as follows:

Q. (By Senator KYLE.) What is your name and address?—A. Mat W. Moseley, 274 Front street, Memphis, Tenn.

Q. What is your vocation?—A. Cotton dealer.

Q. That is, you buy from the farmer, do you?—A. I buy from anybody who will sell to me and sell to anybody who will buy from me.

Q. What would you call a broker?—A. A broker strictly buys on orders, you might say; but I buy and sometimes carry a stock of my own and sell when I see proper.

Q. So you come in contact with the farmers themselves?—A. No, sir; I buy all my cotton in Memphis.

Q. You know little of the condition of the farming class engaged in raising cotton?—A. Yes, sir; I have very little positive information.

Q. The cotton you get comes from what region?—A. I buy it here in Memphis or the Memphis district.

Q. Mostly Tennessee cotton?—A. No, sir; Mississippi and Tennessee cotton.

Q. Have you been engaged in plantation cotton raising?—A. No, sir; I know nothing of the plantation business.

Q. What can you say as to the prices of cotton now as compared with former years?—A. This has been a most remarkable year in the price of cotton—a marvelous season, the like of which we have not had in many years.

Q. So the cotton brokers and factors and all have been prosperous?—A. Yes; I think our country here is in better condition than it has been for a number of years. I think if we could have another 10,000,000-bale crop and get 10 cents for it everybody would get out of debt and have something left. Many mortgages would be relieved; people have paid off a great many.

Q. People have paid off a great many mortgages?—A. Yes, sir; I think our planting section here will be in a position where they will not have to borrow as much money as heretofore and not be so dependent on the commission men.

Q. You are not in a position of a factor who is loaning money to the farmer?—A. No, sir.

Q. What has been the range of prices for the last 10 years in cotton?—A. I believe statistics will show there has been a fluctuation of from one-fourth of 1 cent to 2 cents a pound from the beginning to the close of each season, sometime intervening between the beginning and the end of the season. It will either go up or down.

Q. Between what months?—A. We claim the year begins the 1st of September and closes the 1st of September. As to what time these variations would occur it would be difficult to say, except from statistics, which are kept and filed away.

Q. When is cotton generally the lowest price—what months of the year?—A. Well, I believe, as a rule, it would be difficult to say; but speaking from the impression on my mind, I think the averages would show sometime between the latter part of November and the 1st of January, when the bulk of the crop is being marketed and the showing up, the receipts, are largest, and when, as the people who consume this cotton can see a great deal of it, of course they are in no hurry to buy it; for that reason it is what we call a slow market, a depressed market.

Q. It is at that time the farmers are compelled to sell, as a rule, is it not—during the fall?—A. I suppose that is so. They have a great many obligations out that have to be paid and that compel them to unload their cotton.

Q. What percentage turn off the crop during the fall months?—A. I could not say.

Q. In times like this more could hold over for better prices, you think?—A. That is the great advantage our country would have. The great trouble has been that the planters and farmers here have been compelled to sell their cotton without regard at all to price. It has to be sold for whatever it will bring. For instance, a man has advanced money on a crop, and the farmer ships his cotton here, and when it arrives here, if he has not positive instructions about selling or holding that cotton, as a rule he sells it. The great trouble with the cotton market here is that during September, October, and November the cotton is rushed into the market in immense volumes.

Q. If it could be more evenly distributed during the year the farmer would realize a better price?—A. I think beyond question.

Q. Are you aware of any movement on foot to enable the farmer to store his cotton?—A. I do not know that I am except through the newspapers.

Q. Cotton is very good security?—A. It is considered the best.

Q. Suppose there were country warehouses built?—A. You can take our own town—if the people here, some good strong concern, would build an immense bonded warehouse (we have nothing of the kind) that would give the people who raise cotton cheap storage, cheap insurance, and other advantages, with a good compress attached to this plant, it would be a grand thing for us here. There is nothing of the kind. We have a great deal of storage capacity, but the cotton has to be drayed into the warehouse, drayed from the warehouse into the compress, and it is a useless expenditure of money.

Q. (By Mr. SMYTH.) Are the warehouse receipts taken as collateral by the banks for loans?—A. Yes, sir.

Q. There is nothing to prevent the farmer placing his cotton in the warehouse and borrowing money on the receipts?—A. Yes, sir; that is done all right.

Q. You think a bonded warehouse would have a cheaper rate of insurance?—A. That is right, and would enable him to get cheaper storage, and cheaper insurance, and give a higher valuation to his receipt, as a matter of course.

Q. Being bonded, the warehouse receipt would be taken more readily by banks and possibly at a lower rate of interest?—A. Sure.

Q. (By Senator KYLE.) What rates of interest are charged the farmers by the banks?—A. Now, I do not believe the farmers borrow much money from the bankers. They get the bulk of the money from the commission man, who stands between them and the bank.

Q. (By Mr. RATCHFORD.) What rate is charged by the commission men?—A. I could not say. That is a matter of contract.

Q. (By Mr. SMYTH.) What is the usury law in this State?—A. Six per cent.

Q. (By Senator KYLE.) Anything over 6 per cent is usury?—A. I think so; yes.

Q. (By Mr. SMYTH.) Is much cotton brought into Memphis by railroad?—A. A great deal.

Q. Are the rates high locally?—A. There is a question. It has been a question that has worried the cotton people here considerably, and a great many think there are special favors granted to some people—local the cotton in and reship, and they get—

Q. (Interrupting.) They rebate all the local rate paid in on the cotton?—A. Yes, sir. The cotton may be hauled in here free of charge, provided the road gets the cotton going away.

Q. Used, as the exporters say, as a common point?—A. Yes, sir. I would not like to make the statement. I say there is a feeling of that kind here. There has been no way on earth to locate it.

Q. I suppose the system is the same as in other places where a man is enabled to gather his cotton at small stations, and the road will take it out and rebate the freight paid from these small stations to the compress?—A. Yes, sir.

Q. And no one enjoys that privilege but the exporter shipping out?—A. Yes, sir; that is right.

Q. The effect on you or on anyone buying in Memphis who has to pay that freight in that way, you think, is a discrimination and gives an unfair advantage to the exporter?—A. That is right. Another thing here; a cotton shipper in Memphis cannot route his cotton out of this town.

Q. Explain that. I understand there is a physical division of cotton here, that each road is allowed a certain percentage of the cotton taken out of Memphis, and if the shipments exceed that amount, it has to turn over the surplus to the other road.—A. That is right.

Q. And as a shipper you are unable to positively direct by what road your cotton shall go; you do not know whether that road has received its proportion or not?—A. That is right. Until a few years ago, perhaps a year or some such matter, we had what we called fast-freight lines here. Their agents were here and they would make rates. They would give you an export rate to Liverpool—any export point. They can not do so any more. A shipper is not allowed to go to that man now and offer him cotton for shipment because the initial lines dictate the road that cotton must go over from here to its point of destination. We think as shippers that they have cut off a very splendid competitive arrangement which enabled us to get very much better rates.

Q. If you were shipping 500 bales to Liverpool you can not say whether it is to go by Savannah or Charleston?—A. You can not. You give him the cotton, your compress tickets, and the point of destination, and he hauls the cotton the way he wants it to go. A great deal of business has been lost by Memphis shippers. For instance, take a large spinning establishment like Knight Brothers, of Providence. As a rule, they want their cotton shipped over certain lines for reasons of their own, and they will tell you if you can not ship that cotton over that road to pass the order. We just can not do it from here, and the business goes elsewhere.

Q. You can not enforce your directions as shippers?—A. No, sir.

Q. (By Senator KYLE.) You are not in favor of pooling interests with the railroad?—A. I do not think so. I am against anything that is opposed to the interest of the town and the business of the town, and I think that is.

Q. What are the receipts of cotton at Memphis?—A. Last year we received about 770,000 bales, I think.

Q. That cotton was sold here?—A. I would not say all. That was gross receipts. There was perhaps 50,000 bales more that passed through here that did not stop in Memphis.

Q. (By Mr. RATCHFORD.) You are speaking of bales?—A. Yes, sir.

Q. (By Mr. SMYTH.) There is no competition of water rates either by Cincinnati or New Orleans for points East or the Continent?—A. There seems to be a pretty well understood arrangement and agreement here now that there is not much cutting of rates. They are standing by their agreements pretty well. There is just a little difference in shipping by river in the insurance proposition, 5 or 10 cents a bale, perhaps. There is that much in favor of the river.

Q. Against that you have high insurance to pay?—A. I do not know that you do. You see a great deal of the cotton that goes East is shipped here by people who have their own representatives in the East, who insure their own cotton, and it is rather difficult to tell what advantage they do get out of it.

Q. It has been stated here that the river insurance is higher than the railway insurance; why is that?—A. Would you not rather have a rail risk than a river risk?

Q. Is there more danger from sparks?—A. You know the Mississippi is a pretty rough stream, and there are a great many snags, and other steamboats; and we have lost more cotton on the river than we have by rail. They consider the risk better and safer by rail than river.

Q. How is it with the traveler? Are there not fewer lives lost by boat than by rail?—A. A man could probably take better care of himself than a bale of cotton.

Q. How is it on the ocean?—A. You take the river rate to New Orleans; if you want to ship a shipload of cotton from here to Liverpool, I think the insurance companies would charge more going down the river. The additional risk from here to New Orleans would be unreasonable as compared with the regular ocean rates, and very little of it has been taken from here in that way.

Q. What is the actual difference in shipping by water and by rail as regards insurance?—A. To save my life I could not tell you what the difference is. As I say, I have shipped cotton by river to people in the East, and would ask the question whether there was any objection to shipping the cotton by river, they covering their own insurance, and there was no objection.

Q. If you ship to New York City or Boston by water, it has to be transferred to the ocean-going steamers at New Orleans?—A. There is a great deal of cotton goes from here to Liverpool via Boston.

Q. To the Massachusetts mills, I mean.—A. What is the question?
 Q. Do you have to transfer the cotton from the barges to the steamer at New Orleans?—A. It goes by Cincinnati.
 Q. Suppose it goes the other way?—A. I never heard of it going that way. They could not afford to ship around that way. You see they have the rate from here to Cincinnati by river, and the river rate is a little cheaper than the rail rate. I do not know what the difference is, but not over 5 or 10 cents a bale.
 (Testimony closed.)

CHARLOTTE, N. C., March 15, 1900.

TESTIMONY OF MR. B. O. DUNCAN,

Farmer, Newberry, S. C.

The subcommission of the United States Industrial Commission met in the rooms of the Southern Manufacturers' Club at 10.12 a. m., Mr. Smyth presiding. Mr. B. O. Duncan was introduced as a witness, and, being first duly sworn, testified as follows:

Q. (By Mr. SMYTH.) Will you give your name?—A. B. O. Duncan.

Q. Your place of residence?—A. Newberry, S. C.

Q. What is your occupation?—A. I look after a little farm, but my principal occupation is student and writer of papers on political and economic and financial questions.

Q. The commission have understood that you have partly prepared a paper expressing some views on industrial conditions that you would like to submit to the commission, but that you prefer to complete it and then send it to us.—A. Yes, sir; I did not know in time, until your secretary, Mr. Sackett, wrote me from Washington the other day, and his intimation was that I might write, but I did not have time to finish up my writing until it was time to come.

Q. You prefer to write it?—A. I prefer doing that because I can do it with more care.*

Q. (By Mr. RATCHFORD.) Are you interested in manufacturing?—A. I am interested in industrial matters in general.

Q. Not personally interested?—A. No; we have quite a successful cotton mill in Newberry that I am familiar with.

Q. (By Mr. SMYTH.) You are not connected with the management or employment of labor?—A. In no way, except in the employment of farm hands to some slight extent.

Q. (By Mr. RATCHFORD.) There is no objection to Mr. Duncan's sending on his statement, which statement, it is understood, is sworn to?—A. Yes, sir.

Mr. SMYTH. You will prepare that statement, attach your affidavit to the bottom of it, and send it to Mr. Sackett at Washington.

The WITNESS. Very well.

Mr. RATCHFORD. With the request that it be incorporated in your testimony.

The WITNESS. There is one point which I wish to speak of—some erroneous statements in the testimony yesterday as to the relative numbers of the two races in South Carolina. It was spoken of as though it was 2 to 1. That is not correct. It is about two-fifths to three-fifths; about 400,000 whites and a little over 600,000 negroes. Several of the witnesses referred to it as though it was 2 to 1. It is bad enough as it is, but it is not as bad as it was represented. There is one other point that was referred to—that is, the question of the migration of the negroes and sending the negroes out of the country. Colonel Orr very emphatically referred to his opposition to it. I should like to say that I entirely agree with all he said on that point.

Q. (By Mr. RATCHFORD.) In that connection he was asked as to his opinion on colonization.—A. Yes.

Q. It does not follow that the colonization of the negro means the sending of him out of the country. We have some people who favor colonizing him in our own country.—A. Yes; I know that. We certainly have a surplus of negroes in parts of South Carolina, and it would be well to send out a colony of these, perhaps—that surplusage—but nothing like the idea that has been advocated by some, especially by ex-Senator Butler. While I generally agree with General Butler's ideas, on that point I do not agree with him at all. I think the negro is a necessity in the South as a farm laborer; we have no other in our State.

*The statement referred to was not furnished on account of the death of the witness.

Q. (By Mr. SMYTH.) You mean Senator M. C. Butler, of South Carolina?—A. Yes, sir.

Q. (By Mr. RATCHFORD.) You think if the negro was sent out of the South the farms would to some extent go to waste?—A. They would temporarily, because we have not the farm labor in South Carolina outside of the negro.

Q. Would not the readjustment of labor regulate that as it does in the North, for instance?—A. In course of time it probably would, but it would not immediately. I think it would take a good while.

(Testimony closed.)

CHICAGO, ILL., March 27, 1900.

TESTIMONY OF MISS EMMA C. SICKELS,

National secretary of the National Pure-Food Association; also secretary of the National Domestic Science Association.

The special subcommission met at 7.15 p. m., March 27, 1900, in the Auditorium Hotel, Chicago, Mr. Clarke presiding. At that time Miss Emma C. Sickels was sworn as a witness, and testified as follows:

Q. (By Mr. A. L. HARRIS.) You may state your name, your post-office address, and the name of your association, and the official position that you hold in the association.—A. Emma C. Sickels, 5435 Washington avenue, Chicago, secretary of the National Pure-Food Association, and also secretary of the National Domestic Science Association. These are two distinct corporations. They are two affiliated bodies.

Q. You may make your statement now in your own way, touching upon such points as you desire.—A. A Congressional report of an inquiry which was made a few years ago, into the unbalanced industrial conditions, gave as one of the causes, the crowding of women into all fields of men's work and the neglect of the home. It is evident, therefore, that inquiry might be well made into the reasons for this desertion of the home and the attraction which men's work has for women. Statistics show that in the colleges, universities, secondary and primary schools, the ultimate object seems to be for some form of professional life. Comparatively small opportunity is given for education in performing to the best advantage, the normal, healthful vocations of life, such as agriculture, mechanics, the best methods of conducting a farm or a business, or the best methods of conducting a home. In other words, education is designed to meet abnormal or diseased conditions of the individual or society, while the means for best promoting the normal conditions are neglected. Abnormal conditions are actually developed by the facilities provided for meeting them. Normal conditions suffer from neglect, and the social and industrial balance is disturbed. This is especially true in all lines of women's work. If women wish to fit themselves for some employment, the only opportunities for a thorough education lie in some field of men's work, some profession, some mercantile or mechanical industry. I can say from my own experience that it is easier for a woman to be a physician, a lawyer, a chemist, or a soldier than it is to be a cook, in the broadest sense of the word. It is easier to learn about anatomy, botany, the heavens above, or the animalculi in the deep sea than it is to learn about the principles of the combinations of food materials and the right use of foods for the best results to the individual and in the family. There is no place in which domestic science—the knowledge of daily living—can be taught in the systematic way in which almost every other science can now be taught.

For twenty years I have been trying to find some opportunity or some opening where I could make as thorough and systematic a study of the laws for the preservation and continuance of health as are now afforded in the schools of medicine for its restoration. In my own experience, finding that the lack of the right food, when I was a school girl, was the cause of a threatened invalidism for the rest of my life, I determined to make a study of this as a science, believing that it was a matter of the widest importance to all individuals. I have found no place, in any school or university, where the simple necessary rules of life are efficiently and effectually taught. After having learned of the report which was made by the Congressional committee and of the importance of woman's relation to this industrial condition, it seemed to me that the legislation which is now being considered in reference to other industries should also apply to this. I have found that it was a new subject to nearly all of the gentlemen to whom I have proposed

it. I have found also, that it seems only to need to have its importance presented to them to have their ready cooperation.

Last year a subcommittee was appointed from the United States Senate Committee on Agriculture to consider the subject of a systematic study into the methods of preparing foods, to be made in the different agricultural colleges, which are now more or less equipped for that purpose; to have these investigations scientifically carried on, and report to the Department of Agriculture. Through this Department these reports would be systematized; the best work of the different colleges could be concentrated, and reports sent out for the use of the different schools and colleges and for distribution in the homes.

There are many colleges which are now giving attention to this subject—a study of the systematic preparation and use of foods. These are handicapped by lack of funds, and are even more handicapped by lack of system. By the carrying out of this plan, which received the cordial approval of the Senate committee, the work which is now being done in a limited way can be broadened and can be made available for the use of the homes throughout the country.

It was with the idea of showing the direct relation of this educational to this industrial problem, which is becoming so important in the social and industrial conditions, referred to in the beginning, that this matter has been brought before the Industrial Commission for your consideration and investigation of the different lines and of the different facts which have come within our observation, with a view to learning on our part in what way legislation can most fully bring about the best knowledge, by industrial education, in the preparation and use of food. In direct connection with this is also the national legislation for uniform standard of food. These are the subjects which the representatives will treat to-night.

Q. In what States have you departments or communications with agricultural colleges?—A. We have not departments, but the different colleges themselves have established departments in Minnesota, Iowa, Ohio, Illinois, Kansas, and I do not know what other States. (To Professor Davenport.) Do you know in what other States?

Professor DAVENPORT. South Dakota and Michigan.

Q. (By Mr. A. L. HARRIS.) Are these schools in a flourishing condition?—A. They are in a flourishing condition so far as the opportunity affords, showing the recognition of the necessity, but they are handicapped by the lack of system and lack of funds.

Q. Do you desire to have other States inaugurate the same system in their agricultural colleges?—A. Yes; and some uniform system should be developed which will be applicable to all of those which are established and those which will be established.

Q. You desire to have some national legislation along this line?—A. That is the purpose. That was recommended by the Senate Committee on Domestic Science last winter.

Q. Have you anything further now that you desire to state?—A. I have nothing further.

Q. (By Mr. KENNEDY.) In the public schools in some cities the girls are given lessons in cooking once a week or twice a week sometimes. Is it your idea to have anything in connection with this science of yours taught to these little children in the cooking schools or the public schools?—A. Yes; that would naturally follow from this work in the universities. It would extend throughout the educational system of the country.

I should speak of a class I had in the Social Settlement, where the women were the wives of laboring men who could not afford the car fare to come, but walked some of them a mile through a blizzard, bringing their own utensils with them; and they said it was "such a great thing to get up in the morning and know how things were going to turn out." It seems as if the means of meeting this should be as extensive as the need, which is an underlying necessity, I think, throughout the whole social system.

In our domestic science work, which was the first phase of this movement which was organized, we found that there were many others who were working along the same line, not knowing of one another's work. A conference was called January 29, 1897. A number who were interested in different lines responded, and from that grew the National Pure Food Association, of which Dr. Jones is the president.

Q. (By Mr. CLARKE.) You spoke of lack of text-books or other instructive writings on the subject which you experienced in your school days. Has that want been supplied to any extent?—A. It has not. I have here a letter, from the president of the Illinois Domestic Science Association, in which she says that the women have organized throughout the counties of the State in connection with the teachers' institutes. They have obtained the literature supplied by the Department of

Agriculture upon this subject, and all others which they can find available, but they find so little of practical use in them that it is very discouraging.

Q. Some hygienic writing will be necessary as a part of the text-books or the literature on the subject?—A. Yes; and this phase of the subject is being taken up by the different schools in agricultural experiment stations, showing the nutritious effect of food.

Q. Have you gathered the pamphlets or circulars on the subject which have been put out from time to time?—A. I have, and studied them carefully. I am supplied regularly with each new publication as it comes out from these experiment stations by Dr. True, with whom I am personally acquainted. Dr. True is in charge of this department in Washington.

Q. Are you familiar with the temperance text-books which have been issued to the schools in some of the States?—A. No; I am not. It has been my stand and argument with the temperance women that lessons in nutrition of food, and the useful application of that knowledge of nutritious food, would be much more effective than lessons on a stimulant, the use of which in most cases is due to the lack of nutritious food. So I have paid comparatively little attention to that phase of the question.

Q. Have any steps been taken by the Pure Food Association toward providing suitable literature on the subject?—A. The Pure Food Association has worked through and with other organizations in the line of this national work, feeling that it would be so much more effective and broader to reach those who are already widely equipped.

Q. (By Mr. A. L. HARRIS.) Is the Agricultural Department at Washington doing anything in the way of nutritious food; making any appropriations?—A. Last year an appropriation was made of \$15,000 to investigate into the nutrition of food. I think the argument will hold which I gave to Secretary Wilson, that although he might know the exact amount of carbohydrates and proteids in the foods set before him, if they were not prepared correctly he would not appreciate his dinner very well; showing that in practical application the methods of preparation have the greatest value and importance. These investigations which are now made are almost solely as to the nutritious effects of the food; the so-called balanced ration of individuals.

Q. Has the Secretary of Agriculture made any recommendations for appropriations along the line of your association?—A. He told me that it was a subject in which he was very heartily interested, and that he would be very glad to yield to the public request; that if he took the initiative he would be accused of making requests personally which were not supported by the public; but that he would second and support any request that was made publicly for it.

Q. You understand, then, he is in sympathy with the work of your association?—A. He so told me, and he has so told others.

(Testimony closed.)

CHICAGO, ILL., May 27, 1900.

TESTIMONY OF DR. SAMUEL J. JONES,

President National Pure Food Association.

The special subcommission met at 7.15 p. m., March 27, 1900, in the Auditorium Hotel, Chicago, Mr. Clarke presiding. At 7.40 p. m. Dr. Samuel J. Jones was sworn as a witness and testified as follows:

Q. (By Mr. A. L. HARRIS.) You may state your name, your post-office address, and your occupation.—A. Dr. Samuel J. Jones, 92 State street, Chicago; physician.

Q. You may state what office, if any, you hold in connection with what is known as the National Pure Food Association.—A. I have tendered my resignation as president of it, but I have not been informed of the acceptance of my resignation. I was elected president when the association was formed, and have been the only president of the association.

Q. When was the association formed?—A. In 1897.

Q. Is it incorporated?—A. It is, under the laws of the State of Illinois, as an organization not for profit; chartered in 1897.

Q. You may state as briefly as possible and in your own way the object of the association and the cause why such an association should exist.—A. Perhaps I had better begin with the initiative which led up to the formation of this organization. In January, 1897, I with others, was invited to be present at a meeting

of the Domestic Science Association held in this city. After a discussion bearing upon the subject of food and its preparation, I was asked to express my views in regard to the discussion which had just occurred. I stated that it seemed to me that it was in the right direction, that the work they were doing was noble work, but that they had not begun at the beginning; that the old maxim, in discussing the best method of cooking a hare, was to first catch the hare. Assuming that they had gotten pure food, their discussion as to the selection of the different kinds of food and the best mode of preparation was all right; but how do you know that you have gotten pure food to prepare? It is a known fact that the best cooking can not purify impure food, although poor cooking may make very bad food out of what is pure. How do you know that your supplies that you get and that you propose to serve as pure food are such? We get them from the dealers who deal in these articles, assuming that they are familiar with their condition and that we get the best we can, and we go on that assumption. I said: The theory is all right, but when it comes to the practical application of it experience has shown that in order to make your work effective you must go back to the starting point. You must secure the pure food, then your practical application comes in well under your domestic science, which is the practical application after having secured this. The question at once arose, and was put to me: How would you suggest that we do this? You have got to reach the producer in the first place, the farmer who supplies us with our vegetable and most of the animal food, and trace it from him through the middlemen to the consumer. How can this best be done? I said, I have not given special thought to the matter, but the first thing that occurs to me is that an organization should be formed, and that back of that should be the law, which is the only thing that will secure the accomplishment of the object that you have in view. Therefore, my first thought would be to secure an organization, incorporated by the State; it can be made national in character, although the charter may be from this State. After discussing the matter pretty fully they decided to form an association and adopt the name of the National Association of Producers and Purveyors of Pure Food.

When the charter was obtained by-laws were adopted for the government of the organization. This was the name given in the original charter. We had nothing to guide us; therefore we had to grope our way along to find out what was really essential to the accomplishment of the aims of the organization. We must secure the interests of the producer, of the middleman, and the consumer, and the more we discussed it the more we were satisfied that those who were dealing in food products for profit should have no say in the management of it, otherwise our object would be defeated. Therefore two sets of membership were formed—the active members, who should not have any financial interest in it, and associate members, who were willing to contribute toward the expenses, but who should be precluded from getting control of the organization and diverting it from the object we had in view. Later, it was decided that as the name was long and that we could not take into active work in the association those dealing for profit, it was decided to change the name of the association to the National Pure Food Association, and that is the name of the organization now. The change was legally made in this State. Why this step was taken was in consequence of assurances we had from different sources, which we believed to be reliable, of the great extent of dilution and adulteration of food, making a distinction between that which simply impaired the efficiency without introducing anything positively deleterious in it, but diminishing the nutritive value of the food somewhat. I do not know whether you desire to go over these by-laws to give you an idea of what they are. I might just read a few of the principal points. [Reading.]

"ARTICLE III, SEC. 1. Every adult person of good moral character may become a member of this corporation upon making application to and being accepted by the secretary of this corporation, provided such acceptance be indorsed by the president of the board of directors; and if not so approved by the president of the board of directors, such application shall be by the secretary rejected, provided such application does not embrace any applicant for membership provided for in section 2 of this article."

That is the distinction we made between the active and associate members. (Continuing to read:)

"SEC. 2. No person shall be eligible for active membership in this corporation who is either a manufacturer or distributor of food products for profit. Except such persons may, by application to and upon approval of the board of directors, become associate members, but without the right to vote at any meeting of the association; and no such person shall be an officer or director of the said corporation."

"SEC. 3. Active and associate members shall pay such an amount of dues, payable at such a time as the board of directors herein or hereafter fix.

"SEC. 4. The board of directors may, in its discretion, name any person or persons as honorary members of this corporation, provided such person or persons shall not be of the class excluded from active membership by section 2 of this article."

* * * * *
"ARTICLE VI.—*Board of directors.* SEC. 1. The business of this corporation shall be intrusted to and transacted by a board of 9 directors.

"SEC. 2. That at the annual meeting of the corporation in the year 1898 3 of the present members of the board of directors, to be chosen by lot, shall retire, and their places be filled by 3 persons elected for a term of 3 years, and the remainder of said board shall continue in office for the succeeding year.

* * * * *
"ARTICLE VIII.—*Officers.* SEC. 1. The offices of this corporation shall consist of a president, vice-president, secretary, and treasurer, who shall hold their respective offices for 1 year and until their successor or successors are elected and qualified."

Then it goes on with the duties of the different officers, beginning with the president, and provides for annual reports, amendments, and so on. Those are the principal points in that. In discussing the matters we found that there were chemists in the city who had been connected with the State board of health and other organizations, who had given considerable time to the investigation of these articles to determine the correctness of charges that were made of the extensive dilution and adulteration of food. After conference with Mr. Harris, which I had a couple of days ago, and in which I suggested that we might be able to have present with us this evening some of those chemists who can not only give statements as to the results of their work, but present some of the articles that they analyzed, with the results. I communicated with two, and others were out of the city, whose testimony would have been valuable, but whom we could not get. Mr. Kennicott is present. He was the city chemist for the department of health for the city. He has an engagement. He is present and would like to get away, so that if I may interrupt my statement at this point, and you give him a hearing now, he might be able to present some matters that might be important and perhaps of interest to you, and that he then be excused and I continue.

(After hearing the testimony of Mr. Kennicott, the commission resumed the hearing of Dr. Jones, as follows:)

Q. (By Mr. A. L. HARRIS.) You may take up the subject where you left off, and then your testimony will appear consecutively.—A. If you will allow me to digress a little in regard to this question of adulteration of milk, it recalled a little experience during our civil war. I was a surgeon in the United States naval service in charge of the naval hospital in New Orleans. The supply of water is kept in cisterns. During the dry season the supply got very low, and the milk supply was very animated. One of my assistants got some milk and turned the can back to the milkman and said, "What proportion of water do you put in the milk?" He said he got this milk of another man, and he added: "These little wigglers in the dry season get into the cisterns and they get into the milk." So you see there are different methods of diluting and adulterating, and different adulterating substances.

In reply to a question that was asked as to whether any literature had been put out by our National Pure Food Association, a circular in this form was issued in an effort to educate the public in regard to the work that we were trying to do and to interest them, on the theory that people are most apt to be interested in those things that they know most about. It is not very long, and perhaps I had better read a part of this as covering the ground that we were trying to accomplish and explain the steps that were important, because we are now groping as was sanitary science a quarter of a century ago. When I began my professional career, we knew practically nothing about sanitary science, and what we know as sanitary science now may be considered as practically the result of the investigation of the last quarter of a century. We are going through that same thing now in regard to food for human beings. As has been justly said, the inferior animals have been taken care of, because they had a market value in dollars and cents; their owners could see directly the connection between nutrition and developing the market value and the money returns. The farmer could see that in his horses and cattle but could not see it in himself or in his family; they were a secondary consideration; they had no market value. Considering matters from that standpoint, it occurred to us that a circular somewhat of this nature might arouse attention and interest, and get cooperation. We were working without money practically paying our expenses for the privilege of working for the public; in other words, meeting expenses incident to this out of our own pockets until we thought

we should interest enough of the public that a sufficient amount of money could be contributed to enable us to put into practical working our ideas, first as to the securing of pure food, supplementing this with domestic science, as the term is understood—a practical application of this principle. (Reading:)

PURE FOOD.

"So well known is the fact that many fraudulent articles are now sold for food that no special evidence is necessary to prove that adulteration of food is a very prevalent and widespread practice; nor does it need any argument to convince one that impure food is unwholesome.

"That 'the best is the cheapest' in the long run is especially applicable to the purchase of foodstuffs. The supposed cheapening of the price of food by fraudulent adulteration is really expensive, inasmuch as it often costs the price of health itself, and in the next place the price necessary for its restoration, even when such restoration is possible.

"The adulteration of food is not always effected by the admixture of deleterious ingredients directly injurious to life and health. The impurity consists in the lowering of its nutritive value. The object of food is nutrition. We eat to be nourished. If the volume and weight of foodstuffs are maintained by the admixture of substances that, without actually and directly causing injury, yet fail to sustain life, impart strength, and repair loss; that is, if the quantity of material taken into the body does not amount to the value of nutrition represented by that quantity of that special class of food, the body will fail to perform the amount of work which is the measure of the work-producing power of that food. In that case the expenditure will exceed the income, and the health of the constitution must break down in consequence. All this is now reduced to an exact science. There can be calculated with accuracy the units of heat produced by the consumption of a given weight of carbohydrates (as sugar, starches, etc.), and hydrocarbons (as fats, butters, etc.), and the mechanical equivalent of a given amount of albuminoids (or food containing albumen, as eggs, meat, pease, beans, etc.) in foodstuffs, just as easily and as certainly as can be estimated the measure of mechanical energy from the consumption of a given weight of coal.

"Thus it is rendered apparent that only pure food should be eaten that the body may be properly nourished with the least possible effort, without unnecessary expenditure of digestive effort that tends to impair health, and without the expenditure of money for articles having less food value than they are believed to represent.

"An association has been organized and chartered to secure these economical and philanthropic ends, without capital and with no intention of financial gain. As every housekeeper and every consumer is naturally interested in the advantages which the association aims to secure, all are invited to cooperate in making the attempt a success.

"It is contemplated to establish an exchange situated in a central and convenient locality, with exhibits of all descriptions of foods tested and found to be of commendable purity, and to employ competent chemists and microscopists to analyze and report upon samples of manufactured and prepared edibles for the information and service of purchasers.

"Lectures and demonstrations on foods and cooking will be given, as well as instruction regarding the influence on the body of different kinds of food.

"Housekeepers, heads of families, and others desirous of joining the association are requested to address Miss Emma C. Sickles, secretary of the National Pure Food Association, room 346, 325 Dearborn street, for terms of membership and other information.

"MAY, 1897."

THE WITNESS. We found that in the stringency of the money market here it was impracticable for us to raise the money that was necessary to carry this out. There being no existing laws to accomplish the purpose, we thought to educate the public and arouse such an interest that we should ultimately secure both State and Federal legislation. Finding that we could not make this exchange a success, we directed our efforts through the press, through social organizations, by public lectures, and other means, to arouse the people in this city. Through the farmers' congresses and different agricultural bodies the matters were discussed, and an interest developed in that way. The domestic science organization was an advantage to them in their practical application of it, and they renewed and redoubled their energies in that direction. We continued to work until we saw the prospect of the passage of the law in this State, and a pure-food commission and officials to see to the enforcement of it. The prospect at the last session of Congress gave us hope that some law would be enacted by Congress when that would reach the result

of attempting to unify as far as practicable the State laws already enacted, and perhaps to encourage other acts, and in that way secure a control between the States where articles were manufactured or prepared in one State and transported into another, somewhat similar to the interstate-commerce act, with possibly the advantage of the power to enforce its rulings when once rulings were made. But with the little progress that was made there, and especially when we found that in consequence of the pressure of work in Congress none of the bills were likely to go through, it occurred to us that perhaps a pure-food commission bill might be passed, and an effort was made in that direct on. For a time, to the outside world at least, it seemed as though that might be practicable. But as it got closer to the end of the session we found that that could not be accomplished, and Senator Mason, as you know, then asked that a subcommittee of the Committee on Manufactures be empowered to sit during the interval between the last Congress and the present one and take testimony in regard to it. So that, having passed into the hands of the State in our own State, and progress seeming to have been made in efforts toward Federal legislation, we concluded that we had done as much as we could do actively, giving our time, efforts, and our own money to the advancement of this, and that we had better wait and see the outcome, so far as the action of Congress was concerned, and, so far as it would be practical for us to do so, to cooperate with our State authorities to secure this pure food. We have not especially advocated any of the bills that have been introduced into Congress. When the matter was up for a pure-food commission—trying to get a pure-food commission—we sent a memorial somewhat of this character to Congress. (Reading:)

"The National Pure-food Association was incorporated in 1897 under the laws of the State of Illinois for the purpose of investigating the subject of food, its production, manufacture, commerce, and preparation, and to disseminate among the people the knowledge thus gained for their benefit. In the belief that this matter would commend itself to the National Government and receive its support, an effort has been made, and it is being made, to properly present the aims of the association to Congress, asking such legislation as may seem best suited to give the movement national character and national support for the good of the people. The highest aim is to secure health and well-being for mankind, with just reward to the producer and economy to the consumer.

"To secure these important results, in view of the present almost unlimited sophistication of food, the National Pure-food Association asks that Senate bill 5375, introduced by Senator Thurston, to create a pure-food commission, be enacted into a law, and it does so in the belief that such a commission would prove to be a practical and an efficient means of securing such facts relating to food for man as are important if not indispensable to a proper understanding of the existing situation as a basis for such legislative enactments, national and State, as may be necessary to remedy existing evils as they relate to the food supply for mankind, and thus to better guard the public health in the future in the interest of the individual and of the Commonwealth."

Then there are some extracts from the resolutions passed by the Domestic Science Association of the Farmers' Congress, and so on. I will leave some of these with you, showing the direction in which we were trying to work.

Q. (By Mr. CLARKE.) If you wish to make them a part of your testimony, I would suggest that you mark those passages, making the selections as brief as you can.—A. They are reprints and I will just leave them—reprints stating what the resolutions were, and so on.

As I stated to Mr. Harris, a chemist was employed by the proprietor of a restaurant in this city, who brought a pie to him one day and said, "I want an analysis made of this, we are selling our pies as cheaply as we can to make a profit; our competitor is underselling us; and I want to know what his filling is that he is putting in, that he can undersell us as he is doing." The man made an analysis and he said the result was of such a character that it led him to buy some articles himself from the same restaurant and analyze those. After he had done that in half a dozen instances he said, "I came to the conclusion that I would bring my lunch down with me. I had taken all the down-town lunches I wanted." And he went on to specify what his experience was, and it was such that I wish he could have been present this evening to relate it to you.

In some of our addresses to the public we have taken up the effect of this upon the human system. Taking man as a human machine, and his productive power, what is the effect primarily upon the individual? As we have seen, if the food is deficient in nutrition, it impairs health, it impairs comfort, it impairs the working capacity of the man as an individual member of the community, and so in that way depreciates his value to his employer. It militates against the interests of the employer and his manufacture or industry or whatever it may be. Take one individual and notice the difference in the productive results of that one

man. Multiply that, as it must be multiplied, many times with many of our large manufacturing establishments. I had occasion to appear before representatives of one of our largest industries in the city a few years ago, employing some couple of thousand of men. I was advocating improvements in the interest of the masses of the people and was in position to give them assistance. To illustrate the subject, you take one man whose health is impaired, who feels that he must go to his work in the morning or he will lose that. He is not capable of doing justice to himself or to his employer. Multiply that as many times as you have to multiply it with the large number of men in your employ, and what is the difference in the productive results to you? That is a question of dollars and cents. On the other hand, what is the effect upon the man and his family? It is not the man that is well fed, well nourished, in good health, comfortably housed, that depends upon artificial stimulants. It is the man that is depressed mentally and physically who wants something that will brace him up, as he expresses it; and as he braces himself, it is like using kindling wood to get up a quick fire. It burns rapidly and burns out quickly. He wants to prevent freezing and he wants to get warmed up, and that is just the way with these men. They are the men that patronize our large number of saloons in this city. The walking delegate will get that man's ear when the temperance missionary will not. The delegate will tell him that his employer is rolling in wealth that he can not spend while the employee is not getting money enough to purchase the food that is necessary to nourish him, and his family is suffering also. He believes that he is a very much abused man. So I tell them that it is a much more efficient temperance work to have that man's body well nourished than it is to send a temperance missionary to him.

Now, take the effect upon the dealer, the man that is selling this diluted food—we will call it sophisticated food, or whatever term you see fit to apply. He may do it against his inclination. He says, "My competitors are doing it and underselling me—that is, by putting in the filling—and we have to meet that competition." He quiets his conscience; it becomes a matter of necessity with him to meet them on their own grounds or to go out of business. Therefore it is demoralizing to the individual himself. It impairs confidence in his business integrity as an individual. When that is multiplied through a large number of individuals it impairs confidence in business integrity at home and abroad. It militates against productive interests, and in that way militates against the interests of the Commonwealth. It is far-reaching in its effect from a physical standpoint, from a moral standpoint, and from a financial standpoint, militating against the interests of the State and the nation.

The question then comes, Can anything be done to stop this practice that is now almost at flood tide? It is with the hope that we might be able to present something from our practical knowledge here in this city, which is regarded as one of the storm centers in this matter, that we have come before you, to see whether we could present it in such a way as to throw any new light from personal observation and experience and our efforts in this direction.

Another feature that I have marked is the question of uniform legislation by the various States—first, to endeavor as well as we can to secure uniformity in laws, and in the next place, in the interpretation of those laws, or, as it is expressed, the ruling. Since our pure-food law has gone into effect the rulings of our commission here have raised the question as to whether it is not going to drive out some of the industries from our State that are desirable. Such laws should be framed to be as definite as practicable, that it may be understood what was intended, and that that object may be properly carried out and not diverted by rulings of the officers. So that question within the last few days has come to my knowledge in regard to a business that has been here for some time and built up a very worthy industry that is likely to be driven from the State under the ruling of our commission. But what shall be equitable to the laborer and the employer and to the producer and the consumer? What I have just said in elaboration of the effect upon the individual as it relates to his employer reaches that industry and affects the credit of the city, the State, and the National Government so far as its results are concerned. As to the protest and the exclusion of many of these things from European markets, those that they adulterate and send over here of course they are not going to raise any objection to, but as it is a poor rule that does not work both ways. It is a question whether, while trying to protect our own industries and not injure those, we shall open the door to spurious importations from other countries. As has been shown here this evening, if they fail to find a market for them in one city they will find it in another more closely in touch with market conditions which concern their business and industry in the United States.

Q. (By Mr. A. L. HARRIS.) Is your association working in connection with the

food and dairy commissioners, as they are sometimes called, in the different States?—A. No; we have done nothing of the kind. Our work was more tentative, confined more particularly to our own city and our own State, hoping through some of the officers and others to bring it before other States and before the Federal Government.

Q. There is no necessary conflict, I suppose, between the work you are doing and the work they are doing along their line?—A. No; on the contrary, we are trying to profit by what they have done, and if they see anything to profit by what we have done they are free to do so. The nearest that we have come to that is to have some of our officers attend some of the farmers' congresses and the Domestic Science Association, and thus give the results of our effort to draw attention to the importance of the work and what we believe to be the practicability of going on in the evolution just as we have done in sanitary science. We are trying to cooperate with everybody without trying to antagonize anyone. We have the same object in view, only working through different channels for the same end.

Q. Have you sent representatives to the National Pure-food Congress?—A. We have done so. I myself did not appear because I had an impression that there were more personal—I will not say wholly selfish—motives lying back of a good deal of the work; and as president of the association I felt that it would be better if I kept aloof from anything that would be even open to question. It was thought desirable that we should have representatives there, and some of our directors were present at the congress. But we felt that we were on broader ground; we did not wish to antagonize and did not antagonize in any way; but we believed that as our association was free from personal bias, no personal ends to be accomplished by it, that we had better maintain that position.

Q. Does your association support the bill that was agreed upon by the recent pure-food congress at Washington?—A. We have not committed ourselves to any bill or proposition. We went so far as to ask for that bill to create a pure-food commission. We have not advocated anything else. We ask simply for the principle; we do not care how it originates, where it originates, or who originates it, simply that it shall meet the object that we have in view—to secure pure food for the masses of the people as the foundation for good health and efficient working force.

Pure food is the first demand of animals, the human animal as well as the inferior. It begins with the beginning of life and only ends with the ending of life; and yet here we are at the closing of the nineteenth century, and how much do we know of most of the food—the masses of the people? I speak of practical value for the nourishment of our own bodies—the nervous and muscular systems. We have gone on all this time and we are still groping in darkness, just as we did in regard to sanitary science up to a quarter of a century ago. With all man's boasted intelligence it is humiliating to us to think how little we know in regard to the character of food, its purity, the effect of different kinds of food upon the system, the methods of preparing it, the injurious effects of certain modes of preparations, being guided simply by our tastes, whether they be educated or perverted. But we do not care how that is gotten so long as we can reach the object that we have in view—of securing, first, good, pure, nutritious, and economical food; next, that the people may be instructed how to prepare and utilize that food to the best advantage from a physical standpoint, from an economic standpoint, from the mechanical force that is produced, considering man as a machine, where we put food in to develop the power instead of putting coal into a furnace to generate heat, steam, and electricity as another means of motive power.

I personally should be opposed to the advocacy of any bill having any selfish object. I think it is the right of people when they want to buy anything, to have the privilege of buying it, and I think it is the duty of the vendor to let the people know what they are getting and what they are paying for, and the law should secure this.

There is another illustration of dilution: A man from an adjoining State was telling me that a miller in his vicinity regulated the amount of dilution of corn meal by a man's promptness of pay, doubtful pay, or prospect of no pay at all. If he was prompt pay, he got corn meal; if he was doubtful pay, he got a certain percentage of corncob along with the corn, and if he was very doubtful he got a very large proportion of cob and comparatively little corn. That man had little opportunity of knowing how much he was being cheated. In many instances a farmer himself might be able to judge of it; others that were using it would know comparatively little of the character of the feed they were getting to feed to their animals. So that it was not only the power of the man that would be diminished, but of his animals that were to be fed upon that. My own impression has been that a man should be at liberty to buy what he wants, and

Dr. Wiley at Washington a great many investigations have been made into the adulterations of food. The records of the Department of Agriculture, division of chemistry, show facts similar to those which I have stated—that adulterations are not generally of a harmful character, but of a character which dilutes the food. I have with me a few samples of such food, which I collected while acting as chemist for the department of health of Chicago. [Witness produces samples.]

Here, for instance, is some ground coffee which contains dried grain. There is nothing injurious in the use of dried grain. In fact, there are now sold many compounds which are substituted for coffee which consist of dried and browned grain; but that was sold as coffee.

Here is a sample of artificial coffee beans. Here is a sample of ginger filler. It looks just like ginger, is not injurious to health, and is used to fill out and make a cheap ginger or to adulterate the ginger, for which they charge the same price as good ginger.

Q. (By Mr. A. L. HARRIS.) What per cent of good ginger is in that?—A. There is no ginger whatever in it.

Q. None whatever?—A. No; these are fillers. This is pepper filler. Here we have cinnamon fillers. I simply brought a few of these. Practically all the spices are imitated in this way. Here is a sample of supposedly cayenne pepper, which contains no pepper. This is nutmeg filler, this is mustard filler, this is allspice filler, and this is clove filler.

Q. Can you state what the filler is composed of?—A. The fillers are composed of dried and pulverized grains. It is stated, although I have never found it, that ground olive stones are used to imitate black pepper, and I know that ground buckwheat hulls are used to imitate black pepper, and are used as so-called filler. Of course, it is practically impossible to find where these fillers are made, but they are on the market and are extensively used. They are also extensively used for filling drugs. I can conceive of no more hollish crime than that of man who will first adulterate the food and break a person's health down by adulterated food, and then sell him an adulterated drug in the attempt to cure him; but that is done, and frequently done. As an example of an injurious adulteration, I might mention pease which are greened with copper. This bottle contains a little piece of platinum foil, upon which is plated copper from a can of French pease. In the process of analysis copper is obtained in that way by plating on a piece of platinum foil.

Q. (By Mr. KENNEDY.) Will you explain the manufacture of these coffee beans?—A. I can not. Those coffee beans I obtained from Dr. Wiley.

Mr. A. L. HARRIS. In appearance they look like genuine beans.

The WITNESS. The only way you can tell is by examining the crack in the bean. It has not that feathery substance found in the genuine. Here is another class of adulteration which is unintentional sometimes, and not classed as an adulteration; that is, the making of filthy foods, either in a careless manner or by people who assume a way of don't care. For example, there is a piece of bread with a young rat baked in it. There is a sample of candy. When I obtained it it was dusted over with flour. It was sold in a department store, and while it appeared to be perfectly good, on brushing away the flour it was found to be in an extremely filthy condition.

These are a few samples of adulterated food. Grocers and men who are selling foods become so used to handling things of that kind that they seem to forget entirely the position that they hold and what they owe to society. As I said before, it is merely a question of what they can get for the goods, and selling them with the hope that they will not hurt anybody. To illustrate this, they tell a story of a grocer who once called down to his boy and asked him if he had watered the oysters, and he said yes; and mixed the tea (?), yes; well, then, come up to prayers. I merely tell this to express the idea that they become so used to things of that kind that it becomes a second nature to a man to sell adulterated goods.

Now, as to the remedy for this kind of thing: We have a great deal of legislation in regard to pure foods, but every State has its own laws. The State of Michigan has excellent food laws. A spice dealer told me recently that they had to be very particular about the spices they sent to Michigan. Illinois has recently enacted a food law which is now in operation. Massachusetts has splendid food laws; also many of the other Eastern States; but until we have some national legislation which will cover the whole country we can do but little. If a man who has a poor class of goods in one State can ship them into another so that they pass, we can do but little. If they do not pass inspection in one State they are very apt to in another. The remedy for that thing would be to force manufacturers to mark goods for what they are. I personally do not object to the use of butterine. I consider it good food, but I do not want to buy it for butter and pay butter price for it; other foods in a similar manner. If a spice is filled and I wish to buy a pepper which is not

as pungent and as full strength as pepper I want to know if it is a filled pepper, whether it contains buckwheat hulls or ground peanut shucks. For instance, a package containing filler should be marked that it contains so many per cent of ground peanut shucks. Then people can take their chances on what they are buying. Nothing can be accomplished unless we have some national legislation in regard to the marking and tagging of goods.

Q. (By Mr. A. L. HARRIS.) Have you any bill in Congress in mind that would give the remedy that you propose?—A. I know of no bill at present in Congress, but I have great hopes that some law will be enacted in connection with the recent investigation of pure food—I believe it was under Senator Mason.

Q. I suppose you have examined what is known as the Brosius bill?—A. No; I have not.

Q. Would you establish a separate department, or would you place it under the control of the Department of Agriculture?—A. I would place it under the control of the Department of Agriculture; they have had more experience with it.

Q. Has Senator Mason introduced a bill along that line?—A. I have been looking for it, but I have not seen it.

Q. (By Mr. KENNEDY.) I should like to have you tell us something about the extent of the use of glucose in food and the effect of it on the system.—A. I place glucose in the same category as butterine. I do not consider glucose harmful. Many of our fruits contain glucose—grape sugar or glucose. It is a good food if properly used. There would seem to be a great prejudice against glucose, particularly a few years ago, because it seemed to hit the sugar business. There is nothing in glucose that is harmful.

Q. Is there anything of value in it as food?—A. Glucose is a valuable food; yes.

Q. (By Mr. CLARKE.) Have you had any experience, when serving the city government, with the difficulty of getting manufacturers of foods and dealers in foods to label them?—A. Yes. We have a law in Chicago requiring milk dealers to mark skimmed milk with a tag—a tin tag upon the can upon which is stamped the words "Skimmed milk."

Q. (By Mr. KENNEDY.) That is simply a city ordinance, is it not?—A. Yes. We experienced considerable difficulty in getting them to keep a tag on the can, but the ordinance has undoubtedly accomplished a great deal of good.

Q. (By Mr. CLARKE.) Do you know how milk is ordinarily adulterated?—A. The ordinary adulteration of milk is by removing the cream. This seems to exclude the right to the word adulteration; it properly comes under the head of sophistication, as it is called. The removal of the cream from the milk produces an unbalanced food. It takes away the larger part of the food from the milk, so the milk then is an unbalanced food. That is the principal way in which milk is adulterated in Chicago.

Q. What is done to restore the appearance of the milk somewhat to its ordinary state?—A. That is done by coloring.

Q. What is used for that coloring?—A. The color which is used in these days is annatto, and also aniline dyes. Annatto is very much used.

Q. Are aniline dyes and annatto harmless?—A. It is an unsettled question as to whether those dyes, a number of them, are harmful or not. Some chemists believe they are harmful, and others that they are not. It is hardly a settled question.

Q. Is it your opinion that there is very little pure milk sold in cities?—A. Yes.

Q. You spoke of the high character of the pure-food laws of Massachusetts. Have you any knowledge as to whether pure milk is obtainable in Boston and some other large cities there?—A. As far as my experience goes, Boston probably has the best milk in the country; in the East, at any rate. The milk is naturally of a high standard in Boston. In Boston, for a part of the year, the standard of total solids in milk is 13 per cent, whereas the standard of total solids of the milk in Illinois is 12 per cent. In Illinois the milk would not stand such a standard as 13 per cent.

Q. What would be the average standard of pure unadulterated milk?—A. Twelve per cent of total solids. The rest, of course, would be water; that would be 88 per cent natural water.

Q. Can you suggest any other law for securing unadulterated food than correctly labeling it?—A. I have given the matter a great deal of attention and I have given it a great deal of study and reading, and I know of no other way that the matter could be handled than by labeling and inspecting goods after they are labeled, in such a manner that the manufacturer may never know when his goods are likely to be taken and inspected.

Q. Is it your belief that there would be any market for adulterated foods if they were so marked?—A. There is a market for them; yes. There is a large market for butterine that is so marked, a very large market.

Q. Do you think there would be for pepper of the character of the sample that you have shown us here?—A. It would be doubtful.

Q. Coffee and ginger?—A. There is a market for adulterated coffee; but unfortunately that is among the restaurants, and the people who use the coffee never would know it. Such a law would prohibit the larger proportion of adulteration.

Q. (By Mr. A. L. HARRIS.) Could not a law be framed to prohibit the use of imitation coffee in a restaurant?—A. I should think it could; yes.

Q. (By Mr. CLARK.) In regard to washing powders—are you familiar with them?—A. Somewhat. Shall I mention any brands?

Q. You can or not, as you choose.—A. You mean similar to Gold Dust, Pearline, and such things as that?

Q. Yes; things of that sort; are they composed of anything that injures the fiber of goods, especially cotton goods?—A. The washing powders—I understand that the first that was put out was made up of a lot of soap which was not of good quality. This soap was ground and sold in a pulverized form as washing powder, and a large market was found for it. Then other manufacturers commenced the manufacture of washing powders. They are practically soaps. A number of them contain free alkali and have the same effect as adding sal soda to the water in which the washing is done. Fabrics which would be injured by the alkali are injured by the washing powder.

Q. Do you know, practically, how much the life of cotton garments is shortened by the use of these powders?—A. No.

Q. If you thought that the evil was general and that garments ordinarily will not wear more than one-half as long when these powders are used as when they are not, do you think it should be a subject of legislation to prohibit the use of such powders?—A. I never have given that subject much consideration. I should prefer to consider that before making an answer. It is not such a vital question as the question of the health of the people.

Q. It is rather more of an industrial question than the food question or health question, perhaps, but of course there can be no economic value to the people at large, especially to consumers, in having their garments destroyed before their natural time.—A. People can find out such things for themselves very easily, but in using such a large variety of foods they have no means of knowing what it is that is injuring them; whereas if a person is using a certain soap and finds that his clothing, which was washed with this soap, was rapidly deteriorating, he would naturally make some change.

Q. Supposing they were unable to make a change, finding that the use of these powders or soaps rendered washing easier, and therefore their domestics would use them on the sly, you would not know how to grapple with that problem?—A. It is rather a difficult problem to grapple with—the domestic problem.

Q. (By Mr. KENNEDY.) A great many people drink beer, and I presume you will agree that if they will drink beer it would be to the advantage of health that they should drink pure beer?—A. Certainly.

Q. I would like to know whether you have ever had occasion to make analyses of beer, and if you can tell us something about the impurities of beer?—A. I have made a number of analyses of beer, but I never have found anything particularly injurious in beer, although I have been told and frequently read of adulterations of beer which are undoubtedly injurious. Some of the foreign beers have been colored with picric acid.

Q. Colored after they come here or before?—A. No; colored abroad. There is a great deal of beer made with impure water, which would come under the head of an adulteration.

Q. Have you learned that in your investigations?—A. Yes.

Q. (By Mr. A. L. HARRIS.) Have you any law in Illinois called the bakery inspection law?—A. I do not know of a bakery inspection law in Illinois.

Q. No law requiring bakeries to be above ground?—A. If there is such a law, I do not know it.

Q. Has there been any adulteration of flour with anything such as flourine since the Federal legislation on that subject?—A. You mean the adulteration with corn flour?

Q. With corn flour; yes.—A. Whether any adulteration with corn flour has been done in this city, I do not know. I know that a friend of mine, who is a chemist, has examined a great many samples of flour without finding corn flour. I have made no investigation of it myself.

Q. Would flourine be deleterious to health?—A. By flourine you mean corn flour?

Q. Yes.—A. No; it would not.

Q. But it would be an adulteration?—A. It would be an adulteration; yes.

Q. And there should be a law to prevent the adulteration so that the consumer could buy what— A. (Interrupting.) Buy what he pays for; what he asks for.

Q. Did you make any analyses of molasses during the time you were a chemist for the city?—A. A few, yes; not more than four or five.

Q. What was the result?—A. I found nothing deleterious in molasses.

Q. Molasses labeled "pure maple molasses?"—A. Yes. I examined some maple molasses and was unable to tell whether cane sugar had been added to it or not, because cane sugar is a natural constituent of maple molasses.

Q. In the absence of national law, what would you recommend to the State in regard to the protection of the purchaser against impurities in food; would you hold the seller liable and make him liable under the law, or would you try to trace it to the wholesale dealer or the manufacturer?—A. I see no reason why the seller and the manufacturer should not both be held.

Q. These samples that you have exhibited to-night, are they all of the adulterations that you found in your experience as a chemist for the city?—A. Oh, by no means, no; these are only a few samples.

Q. You may state in a general way how much adulteration you found during your official term?—A. I found that there were very few foods which are not at times adulterated. There seemed to be adulterations for practically everything. For instance, cream of tartar is sold in Chicago, a so-called cream of tartar, which contains no cream of tartar whatsoever, but consists of soda calcium phosphate, which is similar to the phosphate rock which is sold as a fertilizer. There is nothing unclean about it. And I have analyzed samples of cream of tartar which contained as high as 55 per cent of plaster of paris. Whether it was added as plaster of paris or came in in the manufacture of this soda calcium phosphate, of course, I am unable to tell.

Q. What effect does plaster of paris have upon the stomach?—A. Well, it is simply so much inert matter; it can not be digested; it is equivalent to eating so much sand.

Q. You may state any other impurities that you discovered during the time, that you now call to mind, and what the impurity consisted of, or the adulteration?—A. I found practically all spices adulterated at times. I know of the adulteration of flour with corn flour, of butterine sold as butter, of olive oil adulterated with cotton-seed oil, and many other adulterations that I do not call to mind right at present.

Q. (By Mr. CLARKE.) I wish to inquire if olive oil is not actually improved for consumption by a proper admixture of cotton-seed oil?—A. Do you mean more palatable?

Q. Yes.—A. I have used cotton-seed oil, knowing that it was cotton-seed oil, as a salad oil, and I like it just as well as the olive.

Q. Are you not aware that large quantities of cotton-seed oil are shipped from this country to Italy and Spain and mixed with olive oil to the improvement of that oil for that market?—A. I do not know that it is to the improvement of it, but I have been informed a number of times that cotton-seed oil was shipped to Europe and repacked and sent back as olive oil. As far as its food value is concerned, I should consider the cotton-seed oil just as good food as olive oil, or very nearly so.

Q. You would not deem it necessary, then, to provide by law against an admixture of that character, which really does no harm, would you?—A. Yes. I do not believe in allowing anything to be sold for what it is not. Who is going to decide whether it is just as good as olive oil? Would not that open the gate to allow all sorts of things to be handled in that manner?

Q. Would you extend similar legislation to the matter of fabrics? Take woollens, for instance; would you require that woollen garments should be labeled as to the per cent of pure wool used in them—such a per cent of wool extracts and such other per cent of shoddy?—A. I have never given that matter consideration.

Q. You can see how it might affect the health, as well as the wearing qualities of the garment, can you not?—A. Yes, I can.

Q. (By Mr. A. L. HARRIS.) In the composition of a cheaper product for a pure product what effect does that have upon the production of the pure product, or rather the encouragement of the production of the pure product?—A. Of course if we allow a poor product to be sold as a good product it keeps down the production of the good product, because the poor product can be sold for a lower price; there is more market for it. Therefore, the good product does not have so great a sale and there is not such an incentive to produce it.

Q. What would be the effect eventually, then, without some legislation to protect it?—A. The effect eventually would be that good products would be driven out of the market entirely. When manufacturers find that there is not a sale for the good product, they must make a living, and they will naturally go into the manufacture of the poor product.

(By Mr. CLARKE.) Do you think of any further statement.

that you would like to make?—A. No.

(Testimony closed.)

CHICAGO, ILL., March 27, 1900.

TESTIMONY OF MR. F. M. M'KAY,*Trustee of the University of Illinois.*

The subcommission met at 7.15 p. m., Mr. Clarke presiding. At 9.25 Mr. F. M. McKay, of Chicago, a trustee of the University of Illinois, was introduced as a witness, and, being duly sworn, testified as follows:

Q. (By Mr. CLARKE.) Please give your name, post-office address, and occupation.—A. F. M. McKay; Chicago, Ill.; 61 Alice court; public-school teacher; trustee of the University of Illinois.

Q. (By Mr. A. L. HARRIS.) Are you interested in the domestic science question?—A. Yes; I think that all American citizens ought to be interested in that question.

Q. You may state in your own way such information as you think would be of use to the commission.—A. I think that there ought to be national legislation along these lines for securing pure food for the consumer. That ought to be under the control of the Department of Agriculture of the National Government. State laws are too desultory and conflicting to be very effective or to secure the best results. Inasmuch as the National Government has established these experiment stations in very nearly all, if not all, the States, it seems to me that through these experiment stations they can obtain the necessary information in regard to the food supplies of the various States, and therefore the Department of Agriculture is the proper body, it seems to me, to originate the most effective legislation. I would suggest that a special appropriation be made by the National Government to each one of these experiment stations for carrying on investigations upon this specific subject of pure food.

In regard to the land-grant colleges organized by act of Congress in 1862, that law provided that these institutions' main object should be instruction in agriculture and mechanical arts without excluding other scientific and classical studies. This left an opportunity for the States to organize under that law not merely agricultural and mechanical colleges but universities of the broadest type, of which Cornell University is, perhaps, the best example in this country; and the gentleman for whom that institution was named said his desire was to organize such a university that any person could obtain the best instruction in any branch of human knowledge. Many of these universities have developed into real universities. Congress wisely, I think, left the courses of studies to be prescribed by the various States through their boards of trustees, giving each institution an opportunity to develop along lines that seemed to be demanded in the various communities where these institutions were established. It has been the aim of boards of trustees to meet the demands for instruction in various branches in the communities where their institutions were established, and I believe that these institutions have very largely met the demands for instruction in various branches of human knowledge. If there was a large demand for instruction in mechanical engineering, it will be found that the college of mechanical engineering has developed very rapidly; if there was a large demand for electrical engineering, it has happened that large sums of money have been put into the equipment of the electrical engineering department. If there seemed to be little demand for any specific branch of instruction there was not very much money put into that department. When these institutions were established, back in the sixties, there was not much demand for a scientific instruction in agriculture, especially in these Western States. If a man could go on to the prairies of Illinois and by turning over the soil and cultivating it very indifferently raise a crop of 50 or 60 bushels of corn to the acre, he could not see the necessity of studying the value of fertilizers or going into the analysis of soils and then selling his corn at 10 or 15 cents a bushel, because it did not pay. The time has arrived when it is necessary, to make farming successful, that each acre of land must produce the best possible results. There is now arising a demand for scientific agriculture, and I believe that these institutions are going to meet that demand. It is certainly the intention in Illinois to do that, as the board of trustees has asked for large appropriations for the college of agriculture. I think I may say that when our building now in process of erection is completed we will have the most complete equipment there is in this country. I think that is all I care to say unless there are some questions.

Q. Does the university overshadow the agricultural and mechanical departments of these colleges?—A. No. The literary department is overshadowed altogether, and always has been, in the University of Illinois.

Q. What is the tendency of the farm boy, when he comes to the university and studies the classics in connection with agriculture, to go back to the farm?—A. If you refer to the classics there, as to Latin and Greek, I will say that there are very few students in the University of Illinois studying Latin and Greek, and there has never been any considerable number studying those languages. If you refer to the literary college or the college of literature and arts, including English and the modern languages, such as French and German, I will say that that college has always had a larger number of students, I think, than any of the other colleges. As we are organized there, we have four colleges: The college of agriculture, the college of science, the college of engineering, and the college of arts. Recently we have organized the college of law and the college of medicine; I had almost forgotten those.

Q. Is there any complaint on the part of agriculturists that their sons, after graduating even in the agricultural course at a university, do not come back to the farm?—A. I think I have heard such complaints; yes.

Q. Do you know the per cent of those?—A. No; I could not state the per cent. Q. Do you believe it to be large or small?—A. I should say of those that took an agricultural course, that the per cent who went back to farming was very small, and I think I can state the reason for it. A young man going through the university in a 4-years' course has obtained a fairly liberal education. If he took the regular course in agriculture, he got more than simply the technical agricultural subjects. He had considerable literature, both English and modern languages, and he had a good knowledge of chemistry, physics, and biology. A number of these men are now deans of colleges of agriculture or professors of agriculture; some are directors of these experiment stations. I am speaking of our own graduates, now, from the University of Illinois. They went into these positions because they could earn more than they could on the farm. It was a matter of dollars and cents.

(Testimony closed.)

WASHINGTON, D. C., May 15, 1900.

TESTIMONY OF PROF. ROBERT C. KEDZIE,

Professor of Chemistry, Michigan Agricultural College, and Chemist of the Michigan Experiment Station.

The commission met at 10.35 a. m., Mr. A. L. Harris presiding. At that time Mr. Robert C. Kedzie was introduced as a witness, and, being first duly sworn, testified as follows concerning the beet-sugar industry:

Q. (By Mr. CONGER.) You may state your name and post-office address.—A. Robert C. Kedzie, State Agricultural College, Michigan.

Q. And your occupation?—A. Professor of chemistry at the State Agricultural College, and chemist of the experiment station.

Q. How long have you been engaged there?—A. Since 1863; 37 years.

Q. You may now, if you will, in your own way, give to the commission such information on this subject as you think will be of use and interest.—A. Before entering upon this, I have some specimens here that could hardly be taken down in shorthand, though sometimes done in spoon hand—specimens of the beet sugar itself as produced in Michigan, and a refined beet sugar from Germany; specimens of the beet sugar that is produced in Nebraska at the Grand Island Works, and then some mounted specimens of the sugar—a "study in sugar," as I call it—mounted specimens that give samples of the sugar produced from sorghum in Michigan and sugar produced from sorghum in Illinois. These specimens were prepared for the information of the members of our legislature, mounted in this form for comparison, when they had under consideration the question of offering a bounty for the production of the sugar beet—to encourage the introduction of the sugar-beet industry in Michigan. This is preliminary, and sometimes an object lesson of this kind assists in the understanding of the question more than the spoken statement.

I have written out here to a pretty full extent the remarks I have to make, and have commenced by saying that (reading)—

"The hope for a domestic supply for our people has been cherished in Michigan for years. In 1881 the legislature passed 'An act to encourage the manufacture of sugar,' exempting from taxation for 5 years the apparatus used in making sugar, and offering a bounty of \$3 for every 100 pounds of sugar. Under this

law 10 tons of sugar were made from sorghum and \$404 paid as bounty. It was found that sorghum as grown in our State was not profitable for making sugar, because the proportion of glucose to sucrose was too large to permit profitable manufacture of crystallized sugar."

Q. (By Mr. CLARKE.) Would you pause right there and explain for my benefit, on account of my ignorance, the exact difference between sucrose and glucose?—A. The chemical difference is that there is a little more water in the glucose. The proportions which make up the glucose are 6 equivalents of carbon, 12 equivalents of hydrogen, and 6 equivalents of oxygen; in the sucrose, or cane sugar, we have 12 equivalents of carbon, 23 of hydrogen, and 11 of oxygen. That is, if you will double the equivalent of the glucose and subtract 1 molecule of water, you have the composition of the sucrose. The difference, however, is more than simply the difference of chemical composition. The glucose is very difficult of crystallization in pure, well-defined, sharp crystals like we have here. It is a sweet material, but only about two-fifths the sweetness of the sucrose. But the difficulty, so far as the manufacture is concerned, is that when you have an equivalent of glucose present it will render uncrystallizable another equivalent of the sucrose, so that while the sorghum (Chinese cane) may contain a large amount of sugar—that is, sweetness—you can get from it only a relatively small amount of sugar in the form of clean, well-defined crystals. (Continuing to read.)

"Attention was then turned to sugar beets as a more promising material. In 1890 the college imported 200 kilograms of seeds of each of 4 kinds of sugar beets cultivated in Europe, viz: Klein Wanzlebener, Austrian Wohanka, Vilmorin Imperial Improved, and White Silesian. That was about 1,700 pounds, 800 kilos—200 of each. These seeds were given to farmers with directions for planting, cultivating, and harvesting the beets, requesting a sample for analysis. The seed was sent to leading farmers in all parts of the lower peninsula. Four hundred farmers received the beet seed and 228 reported results and sent beets for analysis. These reports came from 39 counties. The average content of sugar in the juice was 14.20 per cent, the coefficient of purity was above 80 degrees in 200 specimens and below 80 in 27."

This coefficient of purity—I might say a word in regard to that. We take the sugar beet and pulp it and extract the juice, all we can get; then by taking the specific gravity we determine the total percentage of the solids in solution—that is, materials that would be solids but for the water—the matters that are in solution in the water. Suppose we find that the total quantity of the solids in solution in the beet juice is 20 per cent, and then by other analyses we find that the proportion of pure sugar is 16 per cent. That would be 16 parts out of 20 pure sugar, and the other 4 parts would be nonsaccharin materials. That would give us a purity of 80 per cent. The purity means the proportion of readily crystallizable cane sugar present in the juice as compared with the total amount of solids there present. (Continuing to read:)

"The yield of beets per acre (estimated) was 13 tons. The season of 1891 was favorable for the growth of sugar beets; the average temperature from June to September was 64.55° F., and the rainfall 11 inches. September and October were dry and sunny, well suited to ripening the crop.

"Having thus demonstrated the adaptedness of Michigan to produce sugar beets of high quality and well suited to making sugar, the college did not further push these investigations. The agricultural problem was solved, but capitalists and manufacturers were not ready to enter and possess this land of promise."

"In 1897 general interest was awakened in this subject and legislation was secured to promote the manufacture of beet sugar. The lively interest taken in this subject by Secretary Wilson, and the aid from the Department of Agriculture in furnishing beet seed, transportation by mail, ect., greatly promoted the efforts of the college. Seed was sent to many leading farmers who would undertake to raise at least 1 acre of beets, also to a still larger number of persons whose work was of the amateur class. The season was only a fair one for sugar beets, the temperature for May and June being 3° F. below the normal, and the rainfall in July being 5 inches above normal, making cultivation difficult; but August and September were warm and full of sunshine, and October was nearly 5° F. warmer than normal. The beet crop was quite satisfactory. Specimens of beets received for analysis numbered 493 and came from 64 counties. The average content of sugar in the juice was 16.08 per cent, and the coefficient of purity was 80° and above (some went as high as 92° of purity), while in 85 samples the purity was below 80°, ranging from 62° to 79°. In most of these cases of low purity the beets were grown on mucky soil."

That has been a great difficulty with us. The farmers think they can raise beets, and they do raise mangels on mucky soil, and they think that is the soil for the production of sugar beets. It is for beets, but not for sugar.

during the growing season—the most severe for 36 years, from 1864 to 1900—even worse than that of 1871, the year Chicago was burned. The rainfall for the three summer months was 3.96 inches, while the normal rainfall is 9.50 inches. If we add to this the rain for September, 1899, the total is 6.10 inches, while the normal is 12.24 inches. The rain for 1871 for these four months was 8.24 inches, or two inches more than in 1899.

"In localities where the drought was very severe the smallness of the yield from this new crop from which so much had been expected was very discouraging to the farmers, and in some of their meetings resolutions were passed not to plant sugar beets. Other crops had suffered even more severely, notably wheat; but in the case of so well-known a crop as wheat the loss might be charged to an inscrutable Providence. Some of them seem to feel that while the old charter of agriculture given to Noah, 'While the earth remaineth, seedtime and harvest shall not cease,' will hold good for wheat, which has been so long and so favorably known, it can not be relied on for a new crop like sugar beets. Surely a careful study of the nature and habits of a new crop and its adaptedness to our soil and climate, and to the usual methods of farming in our State, is a wise precaution.

"Let me call your attention to the physical basis of sugar-beet raising in our State.

"The physical basis for growing a beet crop is the quality and the composition of the soil. In the lower peninsula the soil is technically known as the drift. The intermingling of many kinds of soil and the porous character of the deposit fit the soil for crops of the tuberous class in particular. The lands adjacent to the Great Lakes and the southern half of the peninsula are adapted to the raising of all crops and fruits suited to our climate, and especially tubers.

"Many years ago an invitation was extended to leading farmers in different counties of Michigan to send specimens of soil for analysis, which would fairly represent the leading agricultural soils of the county. It is probable that the best was sent that the county affords. This is human weakness run into the ground.

"Twenty-eight soils taken from counties that fairly represent the sugar-beet district are here selected to show the chemical composition as specially related to the demands of this crop, giving the average percentage of lime, potash, and phosphoric acid and the physical condition which enables the soil to take up and hold water by capillary attraction, and thus withstand drought, or water-capacity of the soil.

"Average of the most important ash materials:

	Per cent.
Lime (CaO)	1.13
Potash (K ₂ O)	1.36
Phosphoric acid (P ₂ O ₅) .....	.33

"This table shows the Michigan soils rich in the ash materials required for sugar beets. Potash is in special demand for this crop, and these soils are remarkably rich in this chemical.

"The relation of the capacity of soils to hold water by capillarity to their power to produce crops is coming into prominence as the result of recent investigations.

"Prof. Milton Whitney, of the Department of Agriculture, is making extended inquiries of this relation of soil and water in securing the best conditions for the production of special crops. The quantity of water which dry soils will thus take up or hold varies with the kind and texture of the soil. If 100 grams of quartz sand are poured into a funnel with a small filter to prevent the soil running out and water poured on the sand till completely wet, and the excess of water allowed to escape, it will be found that the sand will take up and hold, by capillary attraction, 25 grams of water or 25 per cent of its weight, which is its water capacity. If other soils are treated in the same way, they will take up a different percentage of water. A prairie soil, on the average, took up 62 per cent of water; fine soils from river bottoms, such as the Tittabawassee, or the river Raisin, 57 per cent.

"The less water a soil will absorb the more rapidly it will part with it by evaporation and by filtration. A soil whose water capacity is less than 32 per cent is liable to suffer in dry weather. The average water capacity of these 28 soils is 47.4 per cent, and shows the ability of our soils to withstand drought. The influence of the Great Lakes that surround us on every side except the south will attract the attention of everyone who glances at the map. Our winds receive a moistening and ameliorating touch in passing over these vast 'unsalted seas.' Not in vain has nature thrown her protecting arm around our peninsula.

"An adequate and distributed supply of water is an essential condition in agriculture. The average rainfall in central Michigan, as shown by 36 years' observation at the agricultural college, is 32 inches. Along the shores of the Great Lakes the rainfall is a little larger.

Average monthly rainfall during 36 years for the 6 growing months at the agricultural college.

	Inches.
May	3.23
June	3.50
July	3.23
August	2.77
September	2.72
October	2.44

"This shows on the average an abundant rainfall for May, June, and July, the period when the sugar beet requires plenty of soil moisture, when it is grappling with the soil and sending down the tap root to give it a hold upon the subsoil and derive its supply of food, both liquid and solid, from the deeper soil without absolute dependence upon the surface soil. In August there is an abrupt drop in the amount of rain, and a progressive fall in September and October. This is the season of our 'summer dry spell,' often becoming a veritable drought. This is the season of little cloudiness and abundant sunshine, when the beet is rapidly growing and packing its cells with sugar. If May, June, and the first half of July are warm and moist to establish and strengthen the growing plant, and if the balance of summer is hot and dry (short of drought) we have the ideal season for growing sugar beets. Sugar is essentially condensed air, water, and sunshine. With cloudy and rainy weather during these critical ripening months we would secure large beets and little sugar."

Now, in consequence of some remarks made by Dr. Wiley here yesterday in regard to the sugar beet as an exhausting crop, I have written a little digression that I would interpolate here. [Continuing to read.]

"The sugar beet is an exhausting crop when the whole crop is permanently removed from the land, because it takes off a large amount of potash and phosphoric acid and much organic nitrogen; but none of these materials are removed in the commercial product—sugar—which contains only carbon, oxygen, and hydrogen, a pure carbo-hydrate, the carbon coming from the carbonic acid of the air and the oxygen and hydrogen from the rain, all these combined and organized under the force of the sun's rays acting through plant life to produce sugar; not a particle of potash, phosphoric acid, or organic nitrogen being found in pure sugar. The sugar is essentially condensed or organized wind, water, and sunshine. No amount of sugar removed from the soil can reduce its crop-producing quality. Dr. Wiley charged me to say to you that 'the export of sugar can not impoverish the soil.'

"How, then, can sugar beets be an impoverishing crop? It is because of the removal from the land of other materials in the crop aside from sugar, substances which contain all the fertilizing substances which are found entirely in the leaves, crown, pulp, and molasses of no further use in making sugar. These by-products contain all the fertilizing materials of the crop, the removal of which is the only impoverishing element of beet growing. If these are all returned to the soil, either directly or by feeding to stock and returning the manure to the land, there is absolutely no reduction of the power of the soil to produce crops; on the contrary, an increase of fertility year by year. This is probably the reason why France has increased its wheat acreage from 17 to 28 bushels since the introduction of the sugar-beet industry. In Germany the farmers are not allowed to remove the leaves and crowns of the beet from the field. In both countries the sugar beet is considered the best possible crop to precede a crop of wheat. Another reason for the excellence of sugar beets as a preparatory crop is the kind of cultivation required for sugar beets—thorough and clean tillage, not only subduing the soil but keeping out the weeds—the tramps and bums of agriculture.

"It is only by retaining all the waste products of the sugar-beet factory and keeping them on the farm that the soil can be kept up in fertility and actually made more productive. The leaves and crowns of the beet should never leave the farm; the pulp should be converted into beef or milk by feeding to stock, or by drying the pulp, as proposed at Bay City, preparing it for long storage or transportation to a distance. Even the residual molasses should be fed to stock and not allowed to flow into the Saginaw River."

Q. (By Mr. CONGER.) Dr. Wiley stated that this crop could or should be raised only once in 4 years; what is your idea about that?—A. I think he is right in that. It should not be grown in succession, because any crop that is grown in continuous succession, unless it is weeds, is an exhausting crop, and weeds are the most exhausting of all.

Q. Is it more injurious to the land to raise beets in successive crops than it is to raise wheat so?—A. Yes, because the beets have a wider range for feeding, and the sugar-beet crop removes more of these elements from the soil than does the wheat crop. The wheat is called an impoverishing crop because it is a surface

feeder; the supply has got to be right at the surface, and while wheat is exhausting on the surface soil the sugar-beet crop is on the whole more exhausting for the soil as a whole, both the surface and beneath. It has been found, as a matter of wide experience in France and Germany, that the alternation and rotation of crops very thoroughly carried out is essential for the raising of beets.

Q. You speak of wheat as being a good crop to follow the raising of beets; what other crops would you recommend for the other 2 years, if beets are to be recommended only once in 4 years?—A. I would want to get in a crop of clover, the great catcher of organic nitrogen and atmospheric nitrogen, thus securing a supply of nitrogen for succeeding crops. The inversion of the whole crop is not so essential in the case of grain and potatoes, because the very thorough cultivation that must be had in regard to the beets to keep the weeds entirely out and keep the soil in the very best possible condition for the growth of the crop will assure a good condition of tillage for the succeeding crop. The land is in the best possible condition.

Q. If wheat is to follow the beet crop, what should precede the beet?—A. A barley crop frequently precedes it; some sown crop; what in England they call white crops; that is, some grain crop.

Q. (By Mr. A. L. HARRIS.) Can commercial fertilizer be used to advantage?—A. Unquestionably; but the point I wanted to make was simply in offsetting the, as I thought, a little too strong statement of Dr. Wiley, that it was the absolutely exhausting crop of all crops. It is absolutely the exhausting crop only as it is the crop which is mismanaged so far as the by-products are concerned. Now, you take, for instance, in the case of the growth of crops in China, where, according to the Chinese tradition—which may not be the most reliable—but still it is supposed that their soils have been in continuous cultivation for over 4,000 years, and they are still rich and productive. It is because they return everything to the soil. The excrement of every kind of animal, and human excrement, are saved as you would save gold, to go back on this land, and the consequence of it is the soil has not fallen off in productiveness, but has continued to produce for all time. Where we export the wheat crop we are carrying off our fertility. Sir Humphrey Davy, in his earliest lectures on agricultural chemistry, stated that the continuous production of corn—that is the English term for grain—that the continuous production and exportation of corn leads inevitably to the destruction of the fertility of the country, and instances Sicily as a country which has been thus denuded.

Now, in the case of sugar beets nothing of this kind takes place, because all that is taken off is wind, water, and sunshine, and we can have that in abundant supply. There is no necessity nor call for the impoverishment of the soil so far as the production of commercial sugar is concerned, because it contains no elements of fertility whatever.

After this digression I return to the subject of rainfall, so far as fertility is concerned. [Continuing to read.]

"The distribution of rain during the growing months is a matter of importance. If we assume 2 inches of rain per month as the minimum for most crops we find that during a period of 36 years in central Michigan the months of May and June have each had less than 2 inches of rain for 5 times; July, 11 times; August and October, 14 times, and September, 14 times. If the crop is not a surface feeder, like the grains, but a deep feeder, such as the tap-root plants, even less than 2 inches will suffice for a time. But if the plant is a sunshine feeder the absence of moist weather is a matter of less consequence during late summer and early autumn.

"It must be conceded that by reason of soil, climate, and peninsular position Michigan is well adapted to production of beets for making sugar. Another important condition is the intelligence and energy of our people. Some Europeans are horrified at the presumption of our people in assuming that, without decade after decade of training and drill, our people have the audacity to suppose they can make sugar from beets. What might be called presumption in others may be enterprise with us. After putting their hand to the plow our people are not inclined to look back. One evidence of the tendency to press forward is the bounty law of 1897."

I have introduced here the whole of this bounty law because it is a matter of history. It is an act which was passed in 1897, approved on the 26th of March, 1897. Summarized, it provides for the offering of a bounty of 1 cent a pound for all sugar produced above a certain degree of purity; and for the securing of the data concerning the amount of beets so raised, and requiring a certain amount of payment by the ton of 2,000 pounds for all beets raised, guarding against frauds on the Government and so on. This was the bounty law of 1897 and gave us the great start in regard to our sugar-beet industry, so far as the manufacturing was concerned. (The law above referred to is as follows:)

THE MICHIGAN SUGAR-BEET BOUNTY LAW OF 1897.

[As part of the history of the sugar beet in Michigan.]

[No. 48.]

AN ACT to provide for the encouragement of the manufacture of beet sugar and to provide a compensation therefor and to make an appropriation therefor.

SECTION 1. *The people of the State of Michigan enact, That there shall be paid out of the State treasury to any person, firm, or corporation engaged in the manufacture in the State of Michigan of sugar from sugar beets grown in the State of Michigan one cent per pound upon each and every pound of sugar so manufactured under the conditions and restrictions hereinafter provided.*

SEC. 2. No money shall be paid for sugar so manufactured unless such sugar shall have been so manufactured in this State and from beets grown in the State of Michigan, and unless such sugar shall contain at least ninety per cent crystallized sugar, and the manufacturer shall produce good and sufficient receipts and vouchers to show that at least four dollars per ton of twenty hundred pounds has actually been paid for all beets purchased containing twelve per cent of sugar, said twelve per cent being the basis for valuation of the purchase price of four dollars per ton. The quantity and quality of sugar upon which all of said bounty is claimed shall be determined by the commissioner of the State land office, with whom all claimants shall from time to time file verified statements showing the quantity and quality of sugar so manufactured by them, the price paid the producer for the beets actually produced in this State, upon which said bounty is claimed.

SEC. 3. The persons, firms, or corporations so intending to engage in the manufacture of beet sugar in this State shall, before commencing the same, file a statement with the commissioner of the State land office setting forth their proposed undertaking, the capacity of their manufactory, the number of tons of beets they intend to manufacture per annum, and request said commissioner of the State land office to appoint a suitable weighman and inspector, as hereinafter provided.

SEC. 4. It shall be the duty of the commissioner of the State land office to appoint a resident weighman and inspector and such assistants as may be necessary in each town where it shall appear to him from the application of the persons, firms, or corporations so engaged or intending to engage in the manufacture of beet sugar, that such weighman and inspector is needed, and in all cases where the output of persons, firms, and corporations engaged in the manufacture of beet sugar in this State shall aggregate or exceed two thousand pounds per day, and such weighman and inspector shall weigh all beets received by such persons, firms, or corporations engaged in the manufacture of beet sugar, and keep an accurate account of the same with each and every purchaser of sugar beets and make such examination and test as to the quantity and quality of the sugar so manufactured as he may deem proper in arriving at the standard of sugar in each town so manufactured by such persons, firms, or corporations. The sugar thus manufactured shall, under the direction of said weighman and inspector, be placed in original packages, which shall be examined, weighed, and branded by him by a suitable brand showing the quantity and quality contained in each of said packages, of which an accurate account shall be by him filed in the office of the commissioner of the State land office.

SEC. 5. The compensation and fees for such services, above provided for, to be performed by said weighman and inspector and assistants, shall not exceed one-eighth of one cent per pound for the beet sugar so examined, weighed, and branded by him, nor shall they receive to exceed the sum of three dollars per day for any one day's service actually performed as such weighman and inspector or assistant. He shall give a bond with good and sufficient sureties in the sum of not less than two thousand dollars to the State of Michigan, contingent upon the faithful performance of his duties, said bond to be approved by the secretary of state, and he shall also take, subscribe and file in the office of the secretary of state the constitutional oath of office. The said fees of compensation together with the cost of said brand and all analyses that the said weighman and inspector shall be required to make shall be borne and paid by the persons, firm, or corporation claimant of said money; the said weighman and inspector shall perform all duties pertaining to his position in an impartial manner, and shall furnish and file with the commissioner of the State land office, also with the manufacturer of said beet sugar, a monthly statement in duplicate of all sugar so manufactured by said person, firm or corporation. The said weighman and inspector shall, upon receipt of beets at such manufactory, select such samples of beets as he deems fair and equitable, and shall keep an accurate record of the gross weight of said samples, and shall

estimate the per cent of said gross weight to be deducted therefrom as a reasonable and fair allowance for dirt and dockage, and he shall also test, or cause to be tested, said samples to ascertain the true per cent of sugar they contain, and make a record of the same. All beets from which samples have been taken shall be promptly weighed and an accurate record of the gross weights of the same shall be kept, also of the number of pounds to be deducted for dirt and dockage as fixed by the per cent of dirt and dockage of the samples, and also of the pounds net weight so obtained, and said net weight and the per cent of sugar as determined by the test of the samples shall be the basis of settlement between the buyer and seller, and in order to obtain the bounty provided by this act the buyer must pay at least four dollars per ton for beets containing twelve per cent of sugar, and a sum proportionate to that amount shall be paid for beets containing a greater or less per cent of sugar.

SEC. 6. When any claim arising under this act is filed, verified, and approved by the commissioner of the State land office as hereinafter provided, he shall verify the same to the auditor-general of the State, who shall draw a warrant upon the State treasurer for the amount thereof payable to the person, firm, or corporation to whom said sum or sums are due.

SEC. 7. That the sum of ten thousand dollars be, and the same is hereby, appropriated from the general fund in the State treasury not otherwise appropriated, to be known as the beet-sugar fund and to be expended under the direction of the commissioner of the State land office as herein provided, and the money for payment under this act shall be drawn from the State treasury on the requisition of the commissioner of the State land office, which shall be presented to the auditor-general, who shall draw his warrant on the State treasurer therefor, and the auditor-general shall incorporate in the State tax for the year eighteen hundred and ninety-seven the sum of five thousand dollars, and for the year eighteen hundred and ninety-eight a like sum of five thousand dollars, to be assessed, levied, and collected as other State taxes are assessed, levied, and collected, which sum when collected shall be placed to the credit of the general fund to reimburse it for the sum herein appropriated: *Provided*, That if the amount of bounty shall exceed the amount of ten thousand dollars for the years eighteen hundred and ninety-seven and eighteen hundred and ninety-eight, that the deficit be paid from the general fund not otherwise appropriated.

SEC. 8. Every person, firm, or corporation that shall erect and have in operation in this State a factory for the manufacture of sugar from beets with a capacity of two thousand pounds of sugar or upwards per day while this act is in force shall be entitled to receive from the State the sum of one cent per pound for all sugar manufactured from beets at such factory for a period of at least seven years from the taking effect of this act.

Approved March 26, 1897.

"Under the stimulus of this bounty nine factories have been erected in our State, and more projected in the near future. The comfortable price paid in cash at their very doors made this change in crop rotation very acceptable to the farmers. The addition of another to the three cash crops on the farm—meat, wheat, and wool, and now sugar—was welcomed by intelligent farmers, and the price of farm lands increased in the vicinity of the factory."

All around these factories the average price of farm lands in the vicinity arose \$10 an acre. I thought that was a pretty good barometer to measure the value of the land as influencing agriculture.

(Continuing to read:) "Inquiry was made of a farmer who had just unloaded his beets at Bay City: 'How do you like raising beets?' 'Pretty good. Look at that pass book and you will see my beets average for 9 loads 14 per cent of sugar and I get \$4.50 a ton cash.' 'How many tons to the acre?' 'Twenty.' 'Then you get \$90 an acre for your beet crop. How does that compare with dollar wheat?' 'Dollar wheat ain't nowhar.'"

"Only one factory has received the benefit of this bounty. The Michigan Sugar Company, of Bay City, received in 1898 \$28,451.07. No bounties were paid in 1899 because no money was appropriated for this purpose, but claims for bounty that would call for \$300,000 are pending for the bounty of 1899. So large a demand upon the State treasury, with a large prospective increase year by year, led the legislature to reduce the bounty to one-half cent per pound, appropriating \$200,000 to pay this bounty and repealing the act of 1897 with its 1 cent a pound bounty. The governor vetoed this bill, leaving the State without funds to pay the bounty, yet leaving the bounty law in full force. What will be the outcome of this unfortunate conflict between the legislative and executive powers of the State is yet uncertain. Whether the State shall finally resort to the speedy, respectable, and modern form of repudiation by having the courts declare the act unconstitutional remains to be seen."

Q. (By Mr. CONGER.) Now, touching the possible repudiation of that law or its being declared unconstitutional—repudiation of the bargain on the part of the State—what is your opinion of the necessity of a bounty for the continuation and permanency of the industry?—A. I do not think the 1 cent per pound bounty is necessary at all. I think that for 2 to 4 years a bounty of from a quarter to a half cent a pound would be sufficient to establish these factories and get them in full operation, and that from that time on they will be self-sustaining. A permanent bounty is not required, in my estimation.

Q. It is a fact, however, is it not, that as a result of the enactment of this law offering the bounty, the most of these factories in Michigan were established in 1 year?—A. Yes; they would not have been established without that bounty.

Q. It was the bounty, in your opinion, that induced it?—A. That was the governing cause, yes.

Q. (By Mr. A. L. HARRIS.) What is your opinion in regard to a tariff or national bounty to encourage the industry?—A. That is bringing me to Washington rather than to Michigan. Upon a general discussion of a bounty law, I hardly feel like entering; that is, the tariff law, I mean.

Q. Is the present tariff law satisfactory?—A. If it was declared entirely free—all tariff removed entirely—and we were open to the competition of Europe, which is offering an export bounty, why we would be stuffed with sweetness, to say the least. We would have sugar cheap, but no large production of sugar. I think the tariff law is a very safe thing, and should be continued. I am a tariff man.

Q. (By Mr. CLARKE.) If we did not have a large production of sugar, would it be likely to remain cheap very long?—A. I do not know; I am a little doubtful. I know that when you give one a chance to crowd another to the wall, he is likely to go to the wall.

Q. (By Mr. A. L. HARRIS.) The result would be much less production?—A. Undoubtedly. If we cut down the price of sugar below the cost of production here, I think the effect would be disastrous. But still I do not discuss this question from the political point of view.

Q. From the economical point?—A. Politically and economically we join hands somehow or other or touch elbows at least.

Q. What I was trying to get at is this: Would it be possible for the American sugar industry to sustain itself without some encouragement either in the way of bounty or of tariff?—A. I think if it was very thoroughly established and organized and in successful operation, and with harmonious action between the farmers and factories, that we would not be very dependent on the tariff ultimately. We would ultimately be entirely independent of it, I think, but it would not be in the immediate future. (Continuing to read:)

"With the large number of factories, present and prospective, fear has been expressed that there might be danger of overproduction. Inquiry was made of the director of the Michigan Sugar Company as to how much sugar his factory would turn out in the year. 'Six million pounds.' 'So large an amount will go far to supply the needs of the State.' 'If we can produce 7,500,000 pounds, that will only supply the needs of the counties of Bay and Saginaw.' The use of sugar is constantly increasing and will keep even step with increasing supplies.

"Our factories produce sugar so pure as not to need refining, but is ready for table use just as it comes from the factory. In German parlance, 'Sugar of consumption and not sugar for refining.' It does not have to pass through the hands of the sugar trust, and thus escapes the exactions of that great monopoly. Our only untaxed white sugar is the beet sugar produced of such excellence as not to need refining. This is our only way of escape from the sugar trust. The supply of cane sugar has been cut off from the West Indies and Philippines on account of the Spanish war; none reaches us from the Sandwich Islands, being retained for use on the Pacific coast, and Louisiana makes no more than is required by her people. The question remains. Shall we use our home product or depend upon beet sugar imported from Germany and France by the sugar trust, paying any tax that monopoly may impose?"

It was with reference to that that I brought in these samples of beet sugar for the commission to see that it does not require refining. That from Michigan now is as it comes from the factory without refining.

Q. (By Mr. CONGER.) Have all of the factories in Michigan been as fortunate in producing sugars as fine as the samples you have presented?—A. No. Unfortunately one fellow used German machinery and a German chemist to run it, and they produced some very miserable sugar. When the sugar made by their factories had gone into the market—Chicago, for instance—prior to this time a wholesale grocer told Professor Smith he did not have to open the barrels after the first instance in order to know what the Michigan sugar was. All you needed to see

was on the head, "This is Michigan beet sugar," and it was sold at once. But some of the sugar made from this factory at Caro, made under this German administration and by German machinery, was brought there. It was ring-streaked and speckled like Jacob's cattle, and it hurt the whole business of Michigan, because it destroyed the general confidence in the Michigan product. But the most of it is just like that I have placed before you.

Q. You place the responsibility for the poor product on the machinery?—A. On the machinery and the man at the head of it. He was a Dutchman with a Dutchman's ideas, that came over with the idea that Michigan people did not know anything, and he was very sure that he did know everything, and the result was disastrous.

Q. Is it your idea that the machinery for the manufacture of this beet sugar which is made in America or in the United States is better than the German machinery?—A. Unquestionably better—no doubt about it whatever.

Q. Is the factory of the Michigan Sugar Company at Bay City equipped with American or German machinery?—A. American machinery, and the same at Rochester and at Alna. They have turned out sugar of most excellent quality.

Q. Which of the Michigan factories has made the greatest success?—A. The Michigan Sugar Company's factory at Bay City, or at Essexville, right close by Bay City. It was the first in the field and has been very wisely managed; less friction between them and the farming community than anywhere else. Mr. Cranage, the manager, has been very wise and conciliatory. He told his men, "if there is a question between you and the farmers, a doubt, give the farmers the benefit of that doubt, and let us secure the confidence of these people." He succeeded in doing that, and I think it was a very wise move.

Q. That factory has been in operation how many seasons?—A. Two seasons.

Q. And the other factories of Michigan only one?—A. One.

Q. (By Mr. CLARKE.) This sample of Michigan beet sugar from the Michigan Sugar Company at Bay City is a fine white granulated sugar. So far as I can see it is fully equal in appearance to the refined granulated commercial cane sugar made by Havemeyer of New York. Do you consider that a fair sample of the general product of the Michigan mill?—A. I do, yes; a very fair sample and something to be proud of. The question has been raised—I attribute it to the sugar trust—suspicion has been thrown out that this sugar, while it will do for sweetening things on the table, is not as good for preserving and things of that kind. I took some of this sugar and passed it over to the ladies' department in the agricultural college and asked them to test the matter in regard to the preserving qualities. They made up various things, and among others some specimens of fruit jelly; they sent me a specimen of the fruit jelly, and I must confess, judging from the looks of it, that it was very much in danger of quick consumption. It was pretty hard to resist the tendency to eat it.

Now, this exemption of our sugar factories—the exemption of our domestic supply of sugar from the sugar trust—I consider one of the best things to be secured from the whole enterprise—deliverance from that monopoly.

Q. Some of the people who own sugar stock say the trust will get the control of these beet-sugar factories. What is your opinion about that?—A. Well, they will have to pretty nearly buy up the whole people, and if they will take the whole people into their trust perhaps we can trust them.

Ladies have come into my laboratory and spoken about this suspicion. They have sent out little packets of a pound or two or three from Havemeyers and state that this is the sugar that is to be certainly relied on. The ladies have come into my laboratory and looked at this beet sugar and said: "Well, beet sugar is it?" "Yes." "Is it sweet?" "Yes." "Can we use it for sweetening things?" "Yes." "Well, I did not know beets would make anything like that." "Well, my lady, how long have you been using granulated sugar?" "Two years." "In all human probability in the 2 years you have used nothing but beet sugar. The supply was cut off from the West Indies by the war. We did not get very much from the Philippines during the war. All that was produced in the Sandwich Islands, pretty much, is used up on the Pacific coast for supplying their wants; and the amount made in Louisiana is no more than sufficient to supply Louisiana and the States immediately surrounding it; and the great bulk of our sugar that we have been using has come from Europe, and is produced from the sugar beet."

Now, if we can obviate any necessity of our paying tax to Germany or the Havemeyers or any one of that class, so much the better for Michigan and the United States. I speak for Michigan, because we are chock-full of the beet sugar question in Michigan, and it naturally crops out. (Continuing to read:)

"Michigan has the physical basis for producing beet sugar of the highest quality and in unlimited quantity. We have the soil and climate, the coal, limestone, and pure water, the intelligent farmers and wide-awake business men required for so

great an industry. Michigan no more needs to import sugar than to send abroad for flour.

"There are two points in the relations of farmers to factories where misunderstanding and friction may spring up:

"1. Tare, or deduction from gross weight as allowance for adhering dirt and insufficient removal of the crown of the beet, is largely left in the hands of the weighman, and must depend upon his honesty and good judgment. But this is a matter which is open to the direct inspection of the farmers, and any great injustice would soon receive attention from the parties interested.

"2. Marc, or the deduction to be made from the amount of sugar found in the beet juice to offset the nonsaccharine solids in the beet in order to determine the actual amount of sugar in the beets, is a subject demanding careful consideration. This is a matter that does not come directly under the observation of the farmers, and they must take it on trust. It is a matter easily slurred over, and the farmer may be defrauded to an extent he little suspects.

"The marc adopted by the chemical division of the Department of Agriculture is 5 per cent, and chemists generally agree with Dr. Wiley. The examination of Michigan sugar beets in this chemical laboratory gives a factor almost identical with 5 per cent. The students in our beet-sugar class have examined the subject carefully, but the beets used had been five months stored in a cellar, were somewhat wilted, and gave too high a per cent for marc. The average results, reported by 7 of these students, are as follows:

	Per cent.
White.....	5.30
Skinner.....	5.06
Bauer.....	5.80
McKinney.....	5.57
Hargrave.....	5.58
Dooley.....	5.75
Westover.....	5.20
Average.....	5.46

"Making allowance for the dried condition of these beets, it would seem that 5 per cent marc for these beets as they came from the soil would be a fair allowance.

"One of our senior class chose 'The composition of sugar beets' as the subject for his graduating thesis, using beets that had likewise been stored for several months. He found as the average marc for such beets in 33 determinations 5.45 per cent. The marc by Pellet's Method (10 samples) was 4.93 per cent. All these trials were by use of water in removing sugar from the pulped beet.

"In extracting the sugar by the alcoholic method he found the process less satisfactory, because the sugar was not entirely removed by the alcohol, water washing out sugar from the residue. Sugar is not extracted from beets in manufacturing by alcohol, but solely by water. What sense in using alcohol in determining the marc? Why not use water in both cases and thus be consistent?

"The factory may arbitrarily select a marc to suit itself, quite different from that of the chemist, and sometimes without notice to his patrons. Instead of 5 per cent for marc, suppose he selects 10 or 12 per cent, and even more, and the farmer is without notice of this serious cut in the estimation of his produce, serious injustice may be the result."

These are not idle figures; they are actual figures, so far as quotations from Michigan are concerned. (Continuing to read:)

"If in addition the factory uses the unreliable alcohol method in estimating the marc, the wrong may be increased. It is possible that the factory may offer large prices for beets and extra inducements for patronage, and yet even up matters by assuming a marc of 7 to 10 per cent beyond what is just. Dr. Wiley, at the 'round-up' of farmers' institutes at Ann Arbor, made the remark that 'Any marc on sugar beets beyond 5 per cent was robbery.'"

Q. (By Mr. CONGER.) Have the deductions for marc that have been put upon you by the factories in Michigan been the cause for much dissatisfaction among the farmers?—A. It has become a very serious thing; not only dissatisfaction, but suspicion.

Q. Do you think there is a tendency on the part of the factories to increase the percentage of marc?—A. There is. I am informed there is one factory that has announced that they would use a deduction of 16 per cent, one-eighth of the total product deducted for marc. Five per cent, or one-twentieth, was what we considered to be ample. I am afraid of the influence of this thing creating division and strife and want of confidence between the farmers and the factories, and it is

upon this especially that the success of the sugar factories and the sugar-beet production in Michigan is to be relied upon.

Q. What is being done, if anything, among the beet growers to meet this dissatisfaction?—A. Well, this came out at our round-up meeting at Ann Arbor in March of this year, but I think that there will be a serious overhauling and a very thorough understanding between the farmers and the factory men before confidence is restored—before successful cooperation is secured.

Q. Is there any tendency toward or effort being made to bring about organization among the beet growers?—A. Not that I am aware of at present. It is too early for that to organize itself—get itself in shape. It will come; no question about that. That organization will come, and a demand for a fair and honest understanding between the factories and the farmers as to what deduction shall be made for the marc and for the tare. There has been some bitter talk about the tare. The tare men or the weighmen were appointed by Land Commissioner French, and some claim that a little favoritism was used there, but I do not take any stock in that; but he appointed them, and they are supposed to be the honest and fair representatives as between the farmers and the factories. Now, some of the factories have offered to let the farmers elect their own weighmen and tare men; but the marc, that comes on the chemical side, and the farmer is not able to cope with it.

Q. Well, this is a new industry in Michigan—that is, new to the growers of beets—and it is one, I should think, the farmers should need education in. Is there any organization along those lines, or any effort being made through farmers' institutes or other organizations to extend education in the way of the best methods to raise beets?—A. No; only through the discussions which we have in the farmers' institutes and the farmers' clubs and organizations of this kind, and granges of these kinds, coming up for discussion in these various bodies, and the thing is being agitated, and the more agitated the more we secure organized effort.

Q. The farmers' institutes, at least in Michigan, as I would judge from this round-up meeting at Ann Arbor, have given considerable attention to beet sugar culture, have they not?—A. Yes; largely. It has been discussed in every locality where people are interested in it and in a great majority of the counties, and people are interested; they have that brought up as one of the points for discussion, and it is pretty well ventilated.

Q. (By Mr. CLARKE.) Do you recognize that the success of the industry in this country depends largely upon the attitude toward it?—A. Yes.

Q. What is the attitude of the Michigan farmers this year as compared with last year?—A. The unfortunate experience of a season of drought that we had was very unfavorable, and yet they have organized a number of acres for, I think, beet factories, but only after they secured sufficient acreage for the production of sugar beets for this year: so I think they are recovering from the panicky condition they had of the growth of last year, and they are recovering confidence and are going to give it another fair trial; and if they do, and they have a season which is not so full of disasters as was the year preceding, it will come out favorable, and we shall get the confidence and cooperation of the farmers and of the factories. The question, indeed, has been discussed, as you are aware, a good deal, in regard to the desirability of the farmers entering into cooperation with the factories, agreeing to furnish the beets and then to receive such and such proportions of the results of the product of it, and that is a very hopeful sign. It can be carried out, and if you can get the farmers themselves interested in this matter, why you are going to prevent this kind of strife, and so the factories are, too. You have got to pay them prices or they won't raise the beets, and then the factories could have nothing. It is just like the strifes we have in other industries. That is no foundation, because the factory, or the most available elements of it, is capable of easy transportation from one part to another; there would be only the shell left behind, which would be a dead loss; so an effort of the farmers to establish a corner on the matter by refusing to raise beets would not give any good results. So far as the factory is concerned, of course, there is a certain amount destroyed, but the factory is not as helpless as the farmer thinks on the outset. The factory can move—can move the great mass—although with expense, of course; but they can remove the exceedingly valuable plant to other localities, leaving behind simply the shell.

Q. Has cooperation been tried in Michigan?—A. No; that is a thing of the future.

Q. Has the system of contracts for a term of years been tried?—A. No; it has only been, as far as I understand, contracting from year to year. The system of cooperation has been tried, I think, very thoroughly in Germany. I think Dr. Wiley can tell us something about that, and I would like very much to have Dr. Wiley make some statement in regard to this question of marc, which is the most important question in Michigan at present.

Q. (By Mr. CONGER.) I would like to go back for a moment to the case of the farmer from Bay City that you quoted. I think in your paper you stated that he raised 20 tons of beets to the acre and received \$90 for the same. Now, is not that an extraordinary yield?—A. Yes.

Q. What would be a fair yield per acre?—A. Well, the crop we produced there on the college farm—the average crop—is 14 or 15 tons to the acre. We call that a very fair crop, and that is what I have rather felt we should ultimately settle upon as what would be expected.

Q. And what is the rate paid per ton under the bounty law in Michigan?—A. Four dollars for 12 per cent beets, and an increase of 50 cents for every additional per cent.

Q. What per cent beets did you raise on the college farm when you raised 14 tons per acre?—A. The sugar content was 15 per cent, I think.

Q. Under the provisions of that bounty law this would have been worth how much per ton?—A. \$5.50 a ton.

Q. (By Mr. A. L. HARRIS.) Can you give the information as to what it would cost the farmer to raise a crop of beets?—A. Well, it is very difficult to get from a farmer an actual statement. The experiment was tried by the college, by keeping an accurate account of expenses for the raising of beets, and the beets as raised cost very nearly in the vicinity of \$30 an acre.

Q. That, at 15 tons to the acre, leaves a very nice margin for the farmer?—A. Yes.

Q. Will the farmer be apt to strike while there is that profit?—A. No, I do not think so. But maybe he will strike for more acres—larger investment.

Q. As soon, then, as factories deal fairly with the farmers there won't be much trouble for raw material?—A. I think not. If we get amicable and hearty relations between the factory and the farmer, and we get any such productions as we consider to be the average, there will be a very successful working between the two.

Q. You use the most improved implements in cultivating the beets on the farm?—A. Yes; the best we can find.

Q. Is the American implement an improvement over the German implement?—A. I think so. I have never used the German implement. Dr. Wiley is authority on that. But judging from what I saw imported from Germany, I should say the American implements are better.

Q. In what respect?—A. Well, in the lightness and finish and efficiency. They do better work, cleaner work, and more complete work.

Q. With less draft?—A. Less draft, and less manual exertion on the part of the man who handles the machine. The cultivators, for instance, are more satisfactory than are the clumsy and what we sometimes term the wooden machines of Europe.

Q. Do you plant by drill or by machine?—A. By machines, yes; drills.

Q. You cultivate by machines?—A. Yes; we plant the seeds very heavy; put on a heavy supply, not less than 20 pounds to the acre, in order to get a continuous row of the beets; so when you come to cultivate you crosscut out, leaving only 2 inches square in the row of the beets which are not removed; and by this cross cultivation we have just enough then, by carefully picking out, to leave a single beet once in 8 inches, for example, for the growth of the crop, and in that way the process of the weeding out and thinning out has been largely reduced. In Bay City they have largely employed the foreign women and children—wives of the Polacks—who are very efficient in doing that kind of work, and work very cheap. This man who I said got his \$90 for an acre of beets paid \$14 for thinning; and the man who stood by and listened said, "You paid an enormous sum for thinning. My son-in-law had 50 acres and got it thinned out by Polacks for \$4 an acre."

Q. (By Mr. CLARKE.) Cross cultivation, then, takes out a large portion of the surplus beets?—A. Oh, yes, very large; but if you have so sparse an arrangement of seeds in the drill when you come to crosscut to cut out, you have got a blank space here. That is so much loss—loss of the plant there, and in such development of the neighboring plants it causes them to grow too large, and an overgrowth gives less sugar, so there is no economy in the use of small amounts of seed. That is one of the troubles with our farmers. They say there is no use of wasting so much seed; it costs \$2 an acre for the seed, and nineteen-twentieths of the beets are taken out and thrown away. That is too much waste. I think I know enough about farming that I can put in seed and save one-fourth that amount of seed. Well, the great trouble with it is the farmers; well, they say they know how to farm; they have raised beets; and they rather resent the idea of anybody giving instructions on that point. That is one of their weaknesses—not receiving good advice, from their pride, or opinion, or practice.

Q. How many inches apart do you plant the rows?—A. Oh, we plant them from 16 to 18 inches apart, and we would have them perhaps a little closer together if our cultivators were a little narrower. We have got to have room for cultivating between them. All that was done by the hand hoe or hand cultivator, but 16 to 18 inches we consider a very desirable distance apart in the rows, and then 8 inches apart in the row of beets themselves.

Q. How many rows at a time do you cultivate?—A. Well, on our farm we cultivate only one row, because we have just got a 1-horse single cultivator; but if we go into business on a large scale we will have to arrange to cultivate three to four at a time.

Q. Your cultivator should take just as many rows as the drills would plant?—A. Yes.

Q. Now, you speak of cross cultivation. Do you mean you can run an implement or machine across the rows?—A. Take out those extra plants and leave just simply a block, say 2 inches square, in the row to hold the beet you want to save. The farmer does it frequently by going along with a hoe and taking a slice with the hoe and leaving blocks along for the distribution of seed; but when we come to do this on a large scale for commercial purposes and have commercial objects in view, we shall have these cross cultivators to cut out these blocks and leave blocks behind. That will be the instrument for saving a large amount of this finger work.

Q. Then thinning would be reduced by taking extra plants cut from the same seed?—A. Yes, very largely; no, there will be more than that, because they have probably more than one seed in a place, and a single seed may throw out one, two, three, or four plants; but in the two inches of thorough planting you would have probably more than one single—we call it the fruit of the beet.

Q. I would like to know something about the value of the by-product—pulp, for instance.—A. The pulp in the first place was given away to the farmers who would remove it; they took it back. The idea of the arrangement was to carry a load of beets there and take a load of pulp back, and it was given by the factories to the farmers who would take it away. That is, they would even have it arranged so as to run it out on cars and so arranged as to dump a wagonload right in the farmer's wagon, and he would carry it off. I do not think our farmers have awakened sufficiently to the value of this as feeding material, not alone, that is, by itself, but feeding in connection with other food, as, for instance, in dry food and grain, for fattening of stock. Now, in Nebraska they were using that very largely for feeding stock and fattening steers for the market, and the most delicious and juicy beef in the world was made out of pulp and prairie hay. That is all that is used for cattle.

Q. Without any grain?—A. Without any grain. They ate a very large amount of it. That was the condition I found when I visited the factory there in 1891. I presume that undoubtedly grain was introduced in finishing the feed as an element of food, but at the time I was there they were feeding just pulp and prairie hay, and about as healthy and thrifty a flock of steers as I ever saw was fed in that way. It was found to be exceedingly valuable, so far as the production of milk was concerned, and a great flow of milk was secured by the succulent food; but I do not think the farmers adequately realize the real feed value of it, and the especial value of it by bringing back on the land through the intervention of stock feeding the manure that comes through the process of raising stock. There in Bay City I was astonished to find that the molasses left behind, they let run right in the river, and paid no attention to the carrying off of a large amount of potash salts, and a very large amount of exceedingly valuable substance for feeding purposes.

Q. (By Mr. CONGER.) Have they abandoned that way of doing it or are they still following it?—A. They will abandon it without any question.

Q. Is there any difficulty about preserving this pulp or must it be fed fresh?—A. Oh, it can be siloed and kept a long time. A little will decay, but it will keep better than common corn ensilage. They are at Bay City trying to form a company and making a plant for taking this pulp and drying it, and thus preserving it in dry form for feeding purposes, enabling it to be carried for a distance by rail and sold in the open market as cattle food.

Q. (By Mr. A. L. HARRIS.) Is it valuable for sheep?—A. Yes; any class of stock except hogs. I do not know as it has ever been tried for hogs, but all ruminants relish it very much.

Q. (By Mr. CLARKE.) Much odor from it?—A. No. We have had some at the college that has been there three or four months, and there is not much smell about it.

Q. What proportion of the beet crop is returned to the soil?—A. Well, in many cases none is returned. There is a fatal defect in the agricultural arrangements.

The whole should be returned; that is, as far as possible. The beet tops and beet crowns undoubtedly should not be ever taken off the farm, should be there as a fixed element, because it has so large amount of mineral substance. The pulp has less of this because by the process of the extraction of the sugar by diffusion a good deal of the soluble soils are taken out and reappear finally in molasses, and there is the waste, allowing the molasses to get away, not so much as food, but especially for loss of manure matters.

Q. Can exhausted fertility of the soil be restored by vegetable and leguminous plants?—A. Yes; and the lost potash and phosphoric acid has got to be returned by some form of commercial fertilizers. In certain portions of Germany—for instance, North Germany—I am told by my son who has spent some time there that the land is a light, sandy soil and, for the successful raising of crops, requires a large amount of fertilizing material; but that is not the condition we find in most of our soil. In Michigan, to be sure, we have jack pine plains, which for all such purposes are useless, requiring an amount of expenditure for fertilizing material that would never be remunerated by crops.

Q. If the pulp and molasses were taken to the farm and utilized in the best way would they restore the fertility of the soil?—A. Well, they will keep up the fertility of the soil. What I claim is, there is a natural development of the fertility of the soil by natural changes which take place in the soil. The soil is a dead and inert mass. The plant food, the potash, and phosphoric acid, and lime, and all these materials become more and more available by processes which go on under natural conditions of the soil—chemical changes which go on in the soil. Now, a certain amount of fertility is thus secured and a dividend is made; but still you may say, year by year, nature rises for this purpose, if you restore it, but you have taken out of the land a thing that is there, and if you add to it, why you are building up the fertility of the soil, so you are getting a richer soil from year to year whatever the waste on it is. I was struck by a remark made by Farmer Luce there in our State. He said he had cultivated a farm for 40 years, with constantly increasing fertility of that farm, and never had bought a pound of commercial fertilizer in his life, but he had sold from his farm only finished products. He did not sell off the hay, corn, cornstalks; all coarser material he kept and fed it to the stock; and the stock itself, and wool, and butter, and cheese, and occasionally a little wheat—these materials were all he proposed to sell from the farm, and he was keeping up his farm with continually increasing fertility for 40 years, and he said it was a rich farm to begin with, and he never bought a pound of commercial fertilizers.

Q. (By Mr. A. L. HARRIS.) Is it more easy to keep a rich farm in a high state of cultivation than a poor farm?—A. I think Governor Luce would bring almost any farm in a rich condition, with his foresight and readiness to secure these results.

Q. (By Mr. SMYTH.) Has he made it profitable under these circumstances?—A. Oh, yes; Governor Luce is a man that won't fail in any sense whatever. He has enriched himself and has enriched his people by his knowledge and success and the diffusion of the knowledge which he has from his own experience. We call him one of our tillers of agriculture, and he is a good citizen in Michigan. We are very proud of Governor Luce.

(Testimony closed.)

WASHINGTON, D. C., May 15, 1900.

TESTIMONY OF MR. JULIUS E. ROGERS.

President of the Binghamton Beet Sugar Company.

The commission met at 2.07 p. m., Mr. A. L. Harris presiding. At that time Mr. Julius E. Rogers was introduced as a witness and, being duly sworn, testified as follows:

Q. (By Mr. A. L. HARRIS.) You may state your name, your post-office address, and your occupation.—A. Julius E. Rogers; post-office address, Binghamton, Broome County, N. Y.; occupation, president of the Binghamton Beet Sugar Company.

Q. Are you a grower of beets also?—A. Yes.

Q. How long have you been president of your company?—A. Since it was organized, in the spring of 1893.

Q. How many years has your mill been in operation?—A. We have been in operation two seasons and commencing on the third.

Q. If you have any points that you would like to dwell upon in connection with this industry, you may take them up in your own way, and we may interrogate you as you go along.—A. You, of course, are after all the information you can get in relation to the industry, and its bearing upon the agricultural interests of this country. Now, I feel, in the two years we have been at work, that we have solved some of the problems in relation to it. The industry is comparatively new in this country. The first factory established in New York State was in the season of 1897; that was built at Rome. For two years previous to 1898 I had become very much interested in what I believed to be the fact that New York State could produce her own sugar. I procured something over 100 pounds of seed and distributed it among the farmers of Broome County and adjoining towns, asking them for a sample of the beets grown from the seed, that I might have it analyzed in the fall. I received about 50 samples and sent them to Cornell University where they were analyzed, and that analysis showed us that we had the soil and the climate which would enable us to grow beets sufficiently rich in sugar to pay to manufacture it, and on the strength of that and an analysis made at Cornell University from many samples over the State from seed which they distributed—different parts of the State—we organized during the winter of 1897-98, the Binghamton Beet Sugar Company. We built a factory in the summer of 1898 and manufactured sugar from about 10,000 tons of beets that fall. This last fall we manufactured sugar from about 13,000 tons of beets, and we are satisfied from the experience we have had that our expectation was correct that we had both the climate and soil that would enable us to make the beets, and that we can manufacture them in New York State as cheaply as they can be manufactured anywhere. The two products of importance in manufacturing beet sugar, other than the beets themselves, are principally coal and limestone. These are the two elements which go into the manufacture of sugar from beets. We have the limestone in abundance, and we have the coal very near to us.

Q. The coal is for fuel?—A. Power, steam.

Q. What do you use the limestone for?—A. We can not buy the lime burnt; we have to burn it because we have to have the carbonic acid gas that comes from the burning for the clarification, and the lime, also, which is the milk of lime, which we mix with the juice to take out the impurities. So the two principal elements, aside from the beets themselves, are limestone and coal.

Q. Limestone is an important element or factor?—A. Very. We consume in coal about 13 per cent of the amount of beets and in limestone about 11 per cent. So that the consumption of limestone and coal are very important elements and the factory must have them—must be in a position to procure both limestone and coal at a reasonably low figure delivered at the factory—in order to insure its success.

Now we feel confident, from the experience of 2 years, that the success or failure of the beet-sugar industry in this country is emphatically with the farmer and of it. As I have said, there is no question but we can grow the beets sufficiently rich to pay to manufacture them into sugar, as the beets which we manufactured last year gave us an average per cent of sugar of between 12 and 13, and that was sugar in the beet, not the analysis that Dr. Wiley was speaking of, this analysis of between 16 and 17 and 18, which is the sugar in the juice. Then the professor, you remember, spoke of the amount of solids and the amount of crystallized sugar, giving the per cent as 80. For instance, if he had a beet that would analyze 16 with a per cent of 80, he would get 16 per cent of crystallized sugar; but with the average farmer, who has been in the habit of growing corn, potatoes, wheat, rye, oats, he could prepare his ground somewhat carelessly, put in his seed, and go off and leave it until harvest time, and he must have a good deal of education before he can successfully grow sugar beets.

Q. Is that education needed among your farmers?—A. Emphatically; and many of the farmers are going to make a success at growing their beets so far as I have had any means of knowing.

Q. (By Mr. CLARKE.) Is that education difficult to acquire?—A. It is not difficult to acquire except as the average farmer is difficult to teach. The average farmer does not take kindly to new ways.

Q. (By Mr. A. L. HARRIS.) With a careful, intelligent farmer are beets difficult to raise?—A. No; they are not to the most intelligent farmers—to the farmers that do their work in the best way. The farmers who take the best care of their crops are those who are making the most success of growing sugar beets. We have contracts now for about 2,200 acres for this next year—between 2,200 and 2,800. I should think that from 70 to 75 per cent of these contracts are with old growers, and fully 60 per cent of them are those who have grown beets for us two years. But the man who puts in his seed, as I have said, and goes off and leaves his crop is sure to make a failure of growing sugar beets. It means very emphatic culti-

vation and very much more work than the average farmer puts on the average crop.

Q. Is there any particular expert knowledge required in the raising of the beet, such as is required in raising of tobacco?—A. No; except in the economy of caring for the crop. Almost without exception the farmers who grew beets for us the first year, and those who contracted the second year, have stated to us that they were able to care for the crop with very much less expense the second year than the first.

Q. Does it require special preparation of the ground?—A. It does.

Q. You may briefly describe the necessary preparation, if you will.—A. In the first place, as was stated here this morning, we can not successfully grow beets on mucky soil. We can grow a sufficient number of tons, but we can not grow beets of sufficient quality of sugar. Soil that would grow wheat, corn, and potatoes will not grow good sugar beets. It requires a soil that is well drained, that is comparatively free from stone, so as to be easily worked, and it needs deep and thorough cultivation. While for corn and oats ground should be plowed only about 5 or 6 inches, for beets the soil should be worked at least 10 or 12 inches deep in order to procure the best results, as the sugar beet must be grown down in the ground if it is to be grown profitably both for the factory and the farmer. Then the seed bed must have very much more attention than for growing the average farm crop. It must be thoroughly pulverized as the first essential, and the difficult part of procuring a crop of sugar beets is to secure a full stand. In our contracts we ask our farmers to sow not less than 14 pounds of seed per acre. Professor Kedzie said they asked theirs to sow 20 pounds. Now, not more than half of 14 pounds even can grow, but we insist upon their sowing this amount that they may get a full stand—that every row may be full—and in order to insure that they must have a seed bed in as perfect condition as it can be got.

From our experience and the experience of those who have made the most success of growing sugar beets in the last two years, the cost of preparing the ground, sowing, thinning, cultivation, and harvest is about \$30 per acre. We have had very many farmers who have paid as high as \$40 and \$45 per acre in labor who have expended that amount in labor for growing this crop. We have others who have grown it for less than \$20 an acre, but it need not cost to exceed \$30.

The first year our average yield of the crops which were harvested, not including all that was sown, because some were sown and never harvested at all—but those that were harvested would average 6 tons per acre. Last year the average yield was 8 tons per acre. We fully expect, with the experience of the past two years and an average season so far as rainfall and climatic conditions are concerned, that we will get very nearly or quite 10 tons per acre as an average yield this year. But I do not think we can expect, certainly not for some time to come, an average yield of more than 10 or 12 tons per acre, and this will be secured only on good land, thoroughly cultivated.

Q. (By Mr. CLARKE.) How much do these beets net per ton or acre?—A. The conditions in New York State are somewhat different than in Michigan. Our State pays a bounty of 1 cent a pound on all sugar made from beets grown in the State, providing the farmer receives \$5 per ton for the beets: so that our contracts, all of them, provide that we shall pay \$5 a ton for the beets, and that they shall not give us less than 12 per cent of sugar. But we never have thrown out any beets because of the analysis; never had any trouble along that line whatever.

Q. (By Mr. A. L. HARRIS.) How do you determine the value of the beet when brought to your factory?—A. We determine that by analysis in the laboratory, and, as I say, we have had a few lots of beets that have not analyzed up to the standard of 12 per cent; but we take this ground—that the farmer does not know the land or the kind of cultivation that will give the best result, but it is a matter of education to him. He does not know the kind of soil or the kind of fertilizer or the kind of tillage that is going to produce the greatest amount of sugar if he has not had any experience. We are aiding all we can. We are employing men and keeping them in the field all the summer to give them that help and instruction—all that we are able. If he does his best we take his crop in the fall regardless of analysis and pay him the price provided by the State law. We have never refused any beets offered us by those with whom we had a contract, and we have only had a very few lots that have given us less than 12 per cent of sugar.

Q. (By Mr. CLARKE.) Then the farmers make a profit of \$10 an acre?—A. The good farmers. Those who have taken care of the crop have made a profit, as a rule, of more than \$10 per acre. There have been a good many failures. These came from men who either took no pains with the crop, did not follow the instructions given them, or because of their shiftless way of both sowing and cultivating the crop was a failure.

Q. (By Mr. A. L. HARRIS.) Are you reasonably certain of a sufficient amount

of moisture in the course of the season to grow your beets properly?—A. The average season, such as we have in New York State, we get sufficient moisture to give us a good crop of beets. We had the driest season last year that we have known for fully 20 years, and yet the crop was 2 tons, on an average, better than the previous year, because of the experience of 1 year in growing them.

We have in New York State a condition that perhaps does not exist in any other State of the Union. We can grow peaches, pears, apples, plums, grapes, apricots, cherries, berries of all kinds, in fact, almost every kind or variety of fruits that go on our table, except the orange and banana; and we grow them, too, in their perfection. There are no apples abroad that bring a better price than New York State apples: none that have a better flavor. Now, the soil and the climate that gives us the fruit in its perfection is exactly what we want for the sugar beet. So there are natural conveniences for this industry in this State. Our claim for our State is that we have a condition of soil and climate that will give us the best fruit and a larger variety than is produced anywhere else on the globe.

Q. You think, then, the fruit index is a good one?—A. I do, most emphatically. I also know from my own experience, not in growing sugar beets, but in growing other crops, that there is not any crop that is open to the farmer of this country from which he is sure to derive a larger income, and from which he may be more sure to receive pay for the labor he expends and a fair remuneration for the land which it takes, than the sugar beet, properly cultivated and economically cared for.

Q. (By Mr. CLARKE.) You think a profit of \$20 an acre is entirely within the range of reasonable expectations?—A. I do. I can give you an instance of perhaps one of our largest growers—Smith & Rowell, of Syracuse. The first year they contracted for 15 acres of beets. Last year they grew for us 130 acres. They are under contract this year to grow 300 acres. Quite a portion of their farm is within the corporation of Syracuse. They have been in the nursery business and they understand gardening. From the 130 acres which they grew for us last year we paid them about \$8,000, an average of something over 12 tons for the 130 acres. There is no sentiment in growing beets with them. They grow them for money, but undoubtedly they are making a greater success than many others, because they know how.

Q. Do you pay that free on board Syracuse?—Yes.

Q. (By Mr. CONGER.) What percentage of beets do you pay \$5 a ton for?—A. I was saying, in our State, by the State law, we get a cent a pound on all sugar made from beets grown in the State; but under this condition: That the factory pay \$5 a ton for the beets regardless of the per cent of sugar.

Q. You do not pay more than \$5, no matter how high the percentage of sugar?—A. No; nor less than \$5.

Q. You spoke of the production being 12 tons. Is that an average for the production in New York State?—A. I was saying that the first year our average yield from the whole number of acres from which beets were received—not from all the acres planted, because there were some failures, but from all the acres from which the beets were received—our average yield was 6 tons per acre. Last year it was 8, and we fully expect, with the experience of the last two years and an average season this year that the yield can be increased to 10 tons, or very near it.

Now, I do not believe the yield in New York State or in any State of the United States can be counted on at more than 12 tons per acre, certainly not for a number of years to come, until the farmers become more thoroughly versed in growing their beets than they are now.

One of the unfortunate things, it seems to me, in connection with this industry, is in the fact that many farmers have been deceived in regard to the number of tons they can grow, saying they may expect a yield of 20 to 25 tons, and some have estimated it as high as 30 tons to the acre. I know a year ago they endeavored to start a factory at Penn Yan, and I saw circulars published and posted for the information of farmers, that they could grow from 25 to 30 tons per acre. We have had men grow 25 tons per acre for us, but they are very exceptional cases, and it can not be done as an average yield; and when the farmer is given to understand that he can grow that amount and then does not get more than 10 tons to the acre, he is not satisfied.

Q. (By Mr. SMYTH.) Was the quality of that yield at 25 tons as good as the 12 tons?—A. Yes.

Q. Was it due to the cultivation and skill of the farmer?—A. Yes. More particularly, where we have had a failure, what has reduced the yield more than anything else is the lack of a full stand. We advise them to sow in rows 18 inches apart, and then to thin them to 8 inches—a beet for every 8 inches in the row. That is the ideal condition for a field of beets. If we can secure that on good land, and keep it clean, we can secure a very satisfactory yield. Our failures have been

due almost entirely to the lack of the rows being full, and the cultivation being poor and neglected.

Q. (By Mr. CONGER.) Did you have any difficulty in getting an acreage this season? In other words, are your farmers satisfied?—A. Not all of them are satisfied. As I stated, I think the beet-sugar industry, so far as it pertains to this country, the problems have been solved with the exception of this one problem that still remains—the farmer's end of this business. Now, there is no question that the farmer can grow the beet, and profitably, after he has learned how to do it in the most economical way, but it will require a good deal of teaching on the part of some of them, and a great deal of patience on the part of the factory, to get the farmers to grow beets that will be the most profitable for the factory and give the best returns to the farmer. There is no question about the manufacturing end of it. The factory that is sure of getting from thirty to fifty thousand tons of beets for the campaign can be almost sure of the results with conditions as they are to-day in relation to the price of sugar; but, as was stated here this morning, it matters not how thoroughly equipped a factory may be, how well it may be managed, if it has not more than half the amount of beets it ought to manufacture in one season it can not run profitably.

Q. (By Mr. CLARKE.) What is the season for running factories?—A. About 100 to 120 days.

Q. Beginning and ending when?—A. Beginning the 1st of October with us. That time would change in some localities. In California they begin very much earlier. We usually begin about the 1st of October, and then our beets, of course, have to be harvested or provided for in some way to protect them from frost about the 1st of December.

Q. Are they gathered into cellars then?—A. No, we provide sheds—storage room for the beets, and we receive them all by the 1st of December, and then we hold them from that time until they are worked up.

Q. (By Mr. CONGER.) You have followed that plan in both the seasons you have operated?—A. Yes, and expect to follow it this year.

Q. (By Mr. CLARKE.) How long will they keep well?—A. Freezing does not hurt the beet to be made into sugar; freezing and thawing will spoil it, but the beet can be frozen and if it remains frozen it does not hurt it.

Q. (By Mr. CONGER.) You allow them to freeze in these sheds?—A. The outside freezes because we have freezing weather always in December, but they are protected from snows and storms.

Q. The center of these piles will not freeze then?—A. No. Heating will spoil a beet.

Q. Do they heat in these large piles?—No. Our sheds are made with slat bottoms so that the air circulates through them, and we have never had any trouble with them heating. Heating is much more injurious to the beet than freezing. They decompose.

Q. (By Mr. CLARKE.) Do you pile the beets in large masses?—A. Our sheds are 425 feet long and from 16 to 24 feet wide, and we fill them from 6 to 8 feet deep.

Q. (By Mr. SMYTH.) What is the capacity of your mill?—A. Our factory has a capacity of 250 tons per day of each 24 hours.

Q. (By Mr. CONGER.) How many tons did you handle last season?—A. We handled 13,000 tons. We have under contract now what we think will give us 20,000 tons for this season.

Q. (By Mr. SMYTH.) The business is moderately successful?—A. Yes.

Q. You have no difficulty in disposing of your product?—A. That question came up this morning in regard to the kinds of sugar. The first year we made granulated sugar. We have a full equipment for making granulated sugar, but this last year the difference in price between the raw sugar, which is a sugar something like the middle one on this card (indicating)—

Q. (By Mr. CLARKE, interrupting.) That is a yellow coffee sugar?—A. Yes; what we used to call light brown. The difference between that and the granulated sugar was less than one-half cent, and the American Sugar Refining Company offered to take our entire product, and we sold it to them at less than the half cent difference in the price between that and granulated sugar, which was very much better for us than to refine it. It would cost us nothing to sell it. We shipped a car every day, as fast as made. It cost less to bag it, no insurance to pay for storage, and we had but one customer, and it was a good one. Now this difference might not exist every season. It was only because of the sugar war that was on that made prices as they were.

Q. (By Mr. CONGER.) What difference between raw and fine would make it more profitable to you to turn out the refined or granulated?—A. If the difference was over a half cent we should refine it.

Q. (By Mr. SMYTH.) Can you tell us something about the by-products of the

beets?—A. The by-products are a very important feature with us. The first year when we began to manufacture we gave the pulp to the farmers and told them to come and get it. They began to draw it away in small quantities, and after we had run about a month we charged 25 cents a ton, but they took only a small part of the product we made. This last year we started by charging the farmers 50 cents a ton, and we could have sold three times the amount we had. It may be interesting for you to know that many times last fall I have gone to the factory in the morning and found 60 teams in line waiting to be loaded with pulp, and many of them would stay there all day waiting for their turn. It is one of the best milk-producing foods that I know anything about.

Q. (By Mr. CONGER.) These farmers would buy it for feeding purposes?—A. We have not confined it to raisers of beets, so many others wanted it. This year we have used that as a lever for raising beets, by giving special accommodations in relation to pulp to those that grow beets. Last year I began by distributing several barrels of molasses to the best farmers and told them to try it, and I was surprised as much as they. They fed the molasses all winter. I fed about 200 head of stock and 10 or 12 horses with excellent results.

Q. (By Mr. CLARKE.) How is it fed?—A. Pour it on the feed.

Q. On hay or grain?—A. On hay or grain. It is very fattening. Our horses have never come out in the spring in the condition they are now—they are too fat to work; and on the stock that we have fed it to, both sheep and cattle, the result has been very satisfactory, indeed.

Q. (By Mr. SMYTH.) Are they fond of it?—A. Very.

Q. (By Mr. CLARKE.) Is there any flavor to the molasses except sweetness?—A. Yes; it has a very salty flavor. In fact, most of the impurity of molasses is salt, and that is what retards the crystallization of sugar in the molasses. Our molasses will analyze 50 per cent sugar; so you can see as a fattening food it is one of the best, and our farmers, very many of them, have been feeding it, and very many more will feed it the coming season, I think. There is no question at all. I have solved that to my own satisfaction, and many others of our farmers about us feel that the molasses and pulp are a very important food product, and will be used in our dairy sections to a very great advantage.

Q. Are you able to get second-hand barrels for that?—A. We had good second-hand barrels; yes.

Q. (By Mr. A. L. HARRIS.) Is it possible to convert it into alcohol?—A. Yes. I looked that matter up, thinking we might use it in that way, but I found that our Government has rated it as grain alcohol. If we could put it in as wood alcohol we could afford to make it, but as grain alcohol we could not. Paying \$2.10 tax and selling it for \$2.35 there was not anything in it to us. There is no tax on wood alcohol for mechanical purposes. But they have rated this as grain alcohol, and it would be subject to the tax of \$2.10 a gallon. Very much of the molasses in Germany is made into alcohol, although for the past 5 years there has been much less than formerly, because it has been used as a food product.

Q. You think the 50 cents you have been selling the pulp for is the full value of it as food?—A. No; I think it is worth, to any farmer who has dairy cows to feed, more than \$1 a ton. In fact we sold this year a very large portion of our pulp for 50 cents a ton put on the cars, and the farmer paid \$1 a ton freight to bring it to his place.

Q. Is it good to make a complete ration?—A. No. It needs grain with it. The stock that we have fattened this season we fed ensilage of pulp and molasses, but the molasses, you see, provides the grain ration, because the molasses has an analysis of about 50 per cent sugar, which in another form is starch, and about 5 per cent potash.

Q. Has beef practically fed on the pulp a superior flavor?—A. I do not know about the flavor, but they say it comes the nearest to grass beef of anything they get. They have complimented the beef very highly as being of excellent quality. I do not know whether the flavor would be affected or not, but it would be juicy, tender beef, and it would come very near to grass beef.

Q. Do your farmers have any trouble in getting help in the busy season?—A. Yes, that is one of the difficulties in growing large acreages of beets. Many farmers tell us they can not get help. Of course, if it could be employed for any length of time they could get all they wanted, but to employ it only for a few weeks it is difficult in some cases for them to get the help necessary to do the work.

Q. (By Mr. CONGER.) In selling this pulp at 50 cents a ton do you sell it as it comes from the factory?—A. Yes, but it passes through presses and the water is taken out of it. It is very moist, but the greater portion of the water is taken out. It passes through a spiral press which takes out the water, although it is

moist enough. It probably contains 60 to 70 per cent of moisture—perhaps not more than 50 per cent, but I think it would run from 50 to 60.

Q. When it comes from the factory it is 90 to 92 per cent?—A. The water is mixed with it then. We take the juice from the beet by diffusion and not by pressure, and of course when it comes from the factory there is a great amount of water in it.

Q. You take part of that water out before you sell it at 50 cents a ton?—A. Yes; it passes through the press. I have never analyzed the pulp to know how much moisture there is in it, but I think it would be in the neighborhood of 60 per cent. The one point I would like to emphasize is that the question of the help the farmer may be able to get in this industry is going to mean very much to him, as I am confident we have the soil, climate, and conditions that will enable us to produce every pound of sugar that we consume. Now, I was astonished when I first began to look up the question of the sugar consumption of Binghamton. I looked up how many pounds of sugar we consumed in Binghamton. We have a town of from 45,000 to 50,000 inhabitants, and I found that our sugar bill was over \$500,000 each year; that there went out of Binghamton every year to pay for sugar over \$500,000. And with our factory, thus far, we have made something over \$100,000 worth of sugar every year. If we had three just such factories we could not supply Binghamton alone. With a knowledge on the part of the farmer that would enable him to produce the beets in the most economical way our county could supply beets enough to provide the sugar which it buys.

Q. (By Mr. CLARKE.) Are most of the farmers in your vicinity native Americans?—A. Yes; and that is not conducive to beet raising.

Q. Why not?—A. Because they do not like to get down on their knees. The most successful beet raisers we have are the foreign element that are not afraid to work.

Q. (By Mr. A. L. HARRIS.) Is there any possible chance to invent a machine that will do the thinning?—A. No; I do not think there is. There is a certain amount of work that must be done by hand. The row contains very many more beets than can possibly grow. We go through with a 6-inch hoe and cut them out, leaving a little clump of beets, cutting out 6 or 7 inches between.

Q. (By Mr. CONGER.) Could not that work be done with a cultivator?—A. Yes; with a great deal of care. We have tried that with a cultivator that cultivates 4 rows at a time, and that work to a certain extent can be done by cultivation, but it is very particular work, more careful work than the average farmer will do. We found—I had charge of growing some beets last year—that it was more profitable for a man to take the hoe. Now, when you have that little clump of beets, whether it was done with the cultivator or the hoe, you have a half dozen beets close together, and the roots of these little beets are wound around each other. Somebody has to put his thumb and finger on the beet he wishes to retain and pull up the rest of them with the other hand. That is the particular part of the work, and a man has to go down on his knees to do it.

Q. Is it tedious work?—A. It is not tedious or hard work, but he can not do it standing up or riding, and the average man wants to ride.

Q. (By Mr. SMYTH.) He has to move from plant to plant on his knees?—A. Yes; we hire boys or Italians to do that work.

Q. He is practically on his knees almost all the time?—A. It is not hard work, but the average farmer does not like to do it. Why, you know there is hardly any machine to-day but the man rides.

So the one thing I am anxious about, and the one I believe is of more consequence than anything else, is the help the farmer can have in growing this crop—the help that he can get in the line of cultivation, the economy of cultivation, and to be able to secure a price that will be remunerative to him until the time comes when he can produce this crop for the least money.

Q. (By Mr. CLARKE.) This thinning process has to be gone through with once in the season?—A. That is all.

Q. What time of year?—A. We sow the beets with us during this month. Probably this year many of them are sown now, from the 1st to the 10th of June; and in about 10 days after beets are sown—perhaps 2 weeks after—when they are about 3 or 4 inches high, then we cut them out with a hoe, and then thin them.

Q. (By Mr. A. L. HARRIS.) You thin immediately after cutting out?—A. Yes.

Q. (By Mr. CLARKE.) How much time is devoted to the thinning?—A. I think it cost us last year about \$6 an acre to thin them.

Q. The process is going on for a week or 2 weeks, I suppose?—A. Yes.

Q. Do you bring in this extra help from the outside or find it there?—A. You can get all the help you want in Binghamton. The way I did last year was to establish a tent on the bank of the river and board the help, and it was a sort of

picnic for the boys to come out there. I could get three boys to come out and live in the tent and work in the beet fields, where I could hire one and send them back home at night.

Q. Did you pay by the piece or by the day?—A. By the day.

Q. (By Mr. SMYTH.) How long did they work?—A. Ten hours.

Q. (By Mr. CONGER.) What wages did you have pay to these boys?—A. From 50 cents to \$1.25 a day.

Q. According to efficiency?—A. Yes; we put them in different gangs and paid according to work, and then we charged them 10 cents a meal and lodged them under the tent, of course. The food—we did not serve any ice cream, but it was good wholesome food.

Q. (By Mr. A. L. HARRIS.) Outside of the thinning, how many acres of beets can a man till?—A. Then it is simply a matter of cultivation largely.

Q. How many rows of beets do you cultivate at a time?—A. We have a cultivator to cultivate 4 rows at a time. We sow the beets with a drill that sows 4 rows at a time, so the rows are rigidly equal distances apart, and the cultivator is gaged exactly the same, so that we have to watch only 1 row, and if we cultivate it properly we are sure of cultivating the other 3. The first cultivation we do with that, but after that we run a cultivator which only cultivates 1 row at a time, so a man will cultivate 3 or 4 acres a day. We cultivate them about once in 10 days until the leaves entirely possess the ground—that is, cover the ground over. The beet is a hardy plant and rapid grower, but it must have attention early. One day's work in the beginning of the season is worth a half dozen after the weeds have got a start.

Q. (By Mr. CLARKE.) There is no danger of the destruction of the crop by insects—as the tobacco crop and some others?—A. Not any. I presume the beet has its enemies like other crops, but we have not found them yet.

Q. (By Mr. SMYTH.) Do you have to rotate the land?—A. We have not done that yet. On our farm, which is right near the factory—in fact, the factory is built upon it—we had 20 acres of beets the first year, and last year we had 40 acres, and that included the same 20 acres that we had the year before. This year we have prepared 50 acres, and it includes the same 40 acres that we had last year. I presume we are making a mistake. I presume it can not be done continuously, but I am going to find out how far it can.

Q. (By Mr. A. L. HARRIS.) What kind of soil?—A. Sandy loam; river flats.

Q. You would consider the physical condition good?—A. Yes, and taking care of it every year. This year, from the 200 head of stock we have fed, the manure has gone on to the land. I know we are told, by experience in Germany and France, that we must not grow beets continuously on farm land, and I presume it is correct; but we must learn some things for ourselves, and we may have different conditions—a different soil—and I am going to determine how many crops of beets I can grow on the same land. I know I can grow corn 15 years in succession and just as good the fifteenth year as the first.

Q. (By Mr. CONGER.) How do you do that with corn? Use fertilizer?—A. Certainly.

Q. Artificial?—A. Manure.

Q. (By Mr. CLARKE.) Do you use any other fertilizer in addition to that?—A. Yes, we are applying, in addition to that, about 400 pounds of phosphate—commercial fertilizer—per acre.

Q. (By Mr. A. L. HARRIS.) Do you use any potash?—A. The commercial fertilizer carries an analysis of about 4 per cent of nitrogen, 8 per cent of phosphoric acid, and 10 per cent of potash, all available.

Q. High grade?—A. It is high grade, very. I had it prepared on purpose. We have taken this pains with our farmers in regard to fertilizer: In order that they may have the advantage of the best fertilizer we were able to procure for them, we have bought the fertilizer in the spring and distributed it to the farmers for the crop, and taken it out of the beets in the fall. We have provided our farmers with the seed and the fertilizer, and they have paid for it with the crop in the fall.

Q. What is the cost of that grade of fertilizer?—A. It costs \$31.

Q. How many do you apply to the acre, or rather, how many acres can you fertilize with a ton?—A. That depends on the condition of the soil. Last year we put on 800 pounds, but where the land is in a high state of cultivation, or there is a large application of stable manure, it does not require as much, and I think the majority of our farmers have used about 400 pounds to the acre.

Q. Do you use the commercial fertilizer in connection with barnyard manure?—A. Yes; but where no manure was applied they used 800 pounds to the acre.

Q. (By Mr. CONGER.) You state that of the 40 acres in beets last year 20 acres of it raised beets the year before?—A. Yes.

Q. Was the crop on that 20 acres as good as on the other 20 acres?—A. Yes; but not as good as it was the previous year. That we did not attribute to the second season of growing beets on that land, but to the very extreme dry weather.

Q. About what tonnage did you get last year per acre?—A. Between 10 and 11. The previous year we got 14 tons, but where we got 14 tons it was, in the first place, on the best of land, and had the best of cultivation. It is entirely possible to grow 14, 15, or even 20 tons of sugar beets to the acre, but it is not reasonable to tell farmers that they can grow that number of tons as an average crop for a number of acres that might be sown, for experience does not prove it.

Q. Your idea is, as far as land is concerned, that that 20 acres raised just as good beets as it would have raised if beets had not been grown on it the year before?—A. I think so.

Q. (By Mr. A. L. HARRIS.) How do you dig the beets?—A. We have what is called a lifter, made on purpose—made with a beam similar to a plow, and then instead of the landside and moldboard of the ordinary plow, it divided after going back about 2 feet; on the bottom it goes out in a circle in this way [indicating], and arms go down in this form [indicating], and on the ends there are 2 sort of spurs, about as large as my finger and in about that shape [indicating] and about that distance apart, and the edge of these is sharp, and that runs right under the beet and loosens it so that a man can take it by hand and throw it out. Another way, generally used, is a subsoil plow or an ordinary ditching plow, and some have used an ordinary reversible plow and plow the beets out with that. Then the beets have to be topped and the tops have to be cut off by hand. Now, one of the most important things in the harvesting of beets is the cutting of the crown off square with the last or bottom leaf. That dotted line [indicating] shows what I mean by cutting it off at the base of the lowest leaf. The crown of a beet contains a large percentage of mineral element, of salt, when the beet is taken out of the ground, and it is not that there is no sugar in the crown but it is because of this salt, which not only will not crystallize itself, but retards the crystallization of other sugar in the beet, and that we must insist on being cut off.

Q. (By Mr. CLARKE.) Where is the topping done?—A. In the field.

Q. What becomes of leaves?—A. They may remain in the field and be plowed under, and as Professor Kedzie told you this morning, by returning the crown and leaf back to the soil you have returned more than half of the fertility that the beet has taken out in growing. But it is an excellent food, also. Cattle are very fond of it, indeed, and do remarkably well on it. It may be fed, or it may be returned to the soil.

Q. (By Mr. A. L. HARRIS.) Which is the most economical?—A. If a person had stock to feed it to, might better feed it and return the product back to the lot; but in either way. Professor Roberts, of Cornell University, makes this remark: "That the United States have been paying a \$100,000,000 a year for sunlight." On the same line Professor Kedzie told us this morning that sugar was carbon, and water, and sunlight. Sugar is partly carbon, and in taking the sugar product alone off of our fields we have taken very little of nitrogen and phosphoric acid and potash, which are the true elements of plant food; so that if we return the crown and leaves, as I say, we have returned to the soil half the fertility which the crop has taken out.

Q. You look upon the enterprise as an encouraging one, do you, at the present time?—A. I do. I have great confidence, because, as I said here, I know that there is no crop that is open to the farmer to-day from which he can realize, and be sure of realizing, the pay for the labor that he puts upon it, and a reasonable use for the land which he devotes to it, because his crop is contracted for before he puts the seed in the ground, and he knows exactly what he is going to get, and he knows it is sold. Now, the hardest thing with the average farmer is, not to grow the crop, but to dispose of it after he has grown it. They can grow wheat enough, produce corn enough, butter and cheese enough, but the average farmer can not sell it, that is, can not sell it at a price to his credit. Now, with the beet crop, it is sold before he puts the beets in the ground, and he knows what he is going to get, and it is sold at a price which, if he will produce it as it can be produced, with economy, it pays him for his labor, and pays him for the use of the ground devoted to it; and that is my confidence in it.

Q. (By Mr. CONGER.) The State of New York, you say, pays a cent a pound bounty?—A. Cent a pound; yes.

Q. Are there many of these factories in New York?—A. Only one now, and another is building. There will be two this summer.

Q. (By Mr. SMYTH.) Is that cent a pound on refined or brown sugar?—A. No, a cent a pound on sugar from beets grown in the State that polarize 90 per cent; and from each day's product we send a sample to the State chemist in Albany and the State pays bounty on his analysis.

Q. (By Mr. CLARKE.) Does all yours come up to that percentage?—A. Yes; our granulated sugar like this will polarize 96.6, 99.7, and our brown sugar, such as we made last year, such as on the card there, will polarize about 96, and the third product will polarize about 93 or 93, so that it all comes above the standard.

Q. Where are those polariscopic tests of sugar made?—A. Made by the State chemist. We send a sample every day of each day's product to the State chemist. The State appoints a man to weigh sugar and select these samples; he is in the factory all the time during the campaign, and he selects samples and sends them to the State chemist and he makes his analysis; then he makes a report to the State.

Q. (By Mr. SMYTH.) His salary is paid by the State?—A. No; by the factory.

Q. (By Mr. CONGER.) How long ago was this bounty law enacted?—A. Enacted in 1896 or 1897.

Q. (By Mr. SMYTH.) Does he work for the factory to some extent other than to do this weighing?—A. All he does is to weigh the sugar. The law provides we shall pay him \$5 a day for services while he is with the factory; but he is an appointee of the State, and is a State officer.

Q. (By Mr. CONGER.) It does seem a little strange that with that bounty as an inducement you have not more factories established there. In Michigan, for instance, in 1897, there was such a law enacted and we had 8 established the following year, or the second year, rather. Can you offer any explanation why, with this inducement in New York that is offered by the State, more factories have not been established?—A. No; I can not state except from the fact that it takes a great amount of money to establish a beet-sugar factory, and this other question of the attitude of the farmer toward the industry. Now, they will have more to do with it than anything else in relation to the matter.

Q. Have there been some failures in attempts to establish the industry in New York State?—A. There have been no failures in attempts to establish it. Rome was the first factory that was established.

Q. Was that a success?—A. I do not know whether they made any money the first 2 years, but they have stopped now, because Rome went into Canada and bought a plant there. That remained in operation I do not know how long; only capable of reducing about perhaps 125 tons of beets per day, and they got a very large part of their acreage from Wayne County; and at Lyons, which is situated in Wayne County, they organized a company this spring, and are putting up a building now, but their building is being built for a 500-ton plant, and they took the contracts that formerly had gone to Rome, and Rome has quit. Now, whether she lost any money or not, I do not know anything about that. I know nothing about this, except that I know she is not going to make sugar this next year, and the Lyons people claim they have the contracts; in fact, I know they have, because I have been on the ground—the contracts that Rome had the last year; at least, I have not been there, but I sent a man there to see about the acreage.

Q. (Mr. A. L. HARRIS.) What kind of machinery was this in the mill at Rome?—A. It was very unsatisfactory. Well, I can give you this, which will show you just the condition exactly. They had last year 9,000 tons of beets. They were 105 days in working up 9,000 tons. Our factory had 13,000 tons and were 65 days, and we sent some of our help to Rome to help them out. I think it was an unfortunate year for them. Then I think that Rome, too, only got—I do not think they got anywhere near the amount of sugar from the beets they ought to have got. As I say, we got 9.07 per cent of sugar to the ton of beets, about 180-odd pounds. Rome did not get anywhere near that.

Q. Was the trouble with machinery?—A. Yes.

Q. (By Mr. CONGER.) Was that machinery in the Rome factory of American manufacture?—A. No.

Q. Is the machinery in yours American?—A. It is both French and American. We bought part of it in France and part here.

Q. (By Mr. A. L. HARRIS.) How many men do you employ during a campaign?—A. Well, in the factory alone we employ about 35 men, and unloading beets and in the work outside about 120.

Q. Do any of these men raise beets?—A. Yes, some of the farmers who live about the factory farm some, but the majority of them do not.

Q. Could they get employment that way the year round?—A. Yes. Now, I have prepared here something along the line of manufacturing. I do not know whether it comes in line with what you want. Here is our report for 1899. Now, I want to say that, in my judgment, and I think from the experience we have all had in this country, there is not any question but what you can make sugar at a minimum cost with a 500-ton factory. That is, I think that sugar can be made cheaper per pound where 500 tons of beets are worked each day than any amount less than that. You have got office expenses, superintendent's expenses, and engineer and

certain fixed expenses which every factory carries that are not any more in a 500-ton plant than a 300, and we shall increase the capacity of our factory this year. part of it, and next year we expect to put the rest of it up, and make a 500-ton plant on that ground, for that reason.

Q. (By Mr. CONGER.) What capacity do you call the plant now?—A. We say 250; it is rated 300. We can not run 300 and run it every day; we can run about 250.

Q. (By Mr. A. L. HARRIS.) May I inquire what the cost of a 500-ton plant is?—A. It would cost about \$500,000.

Q. (By Mr. SMYTH.) This machinery you import from France—do you have to pay a duty on it?—A. Yes; 45 per cent.

Q. Was the machinery for the sugar-beet industry made in this country previous to that time?—A. It was; that is, most of it was. We thought we could procure this to a better advantage there, and be sure of getting it, than we could to procure it here. The centrifugals, granulators, boilers, pumps, and things of that kind we bought here; part of it we bought over there.

Q. (By Mr. A. L. HARRIS.) Is machinery that you bought in France manufactured in this country?—A. Yes; a factory can be equipped in this country throughout.

Q. (By Mr. SMYTH.) Can it be equipped with as good machinery as you bought in France?—A. I think so.

Q. Is it not a fact that machinery in this country is really better than that made in France?—A. Well, I think that would be subject to the manufacturer. There are some manufacturers in this country that have been making as good machinery as can be made in France, but I know of some lawsuits they have in Michigan now in relation to machinery put up there by manufacturers in this country, and it will be a very serious matter before they get through with it.

Q. (By Mr. CLARKE.) You were speaking wholly of sugar machinery?—A. Yes. There is not any doubt at all but what there are manufacturers in this country who will manufacture and are manufacturing just as good machinery as we get abroad, and there are manufacturers abroad—that factory that was spoken of this morning, put up by a German concern, got in trouble—but there are other German concerns that make just as good machinery as they do in this country. It is not the machinery as much as it is the manufacturer, and machinery can be manufactured and is manufactured in this country now.

Q. (By Mr. CONGER.) Is it not a fact that all of that machinery used by that company in Michigan was German-made?—A. I do not so understand it. At any rate there was some machinery put in factories there that was put in by Chicago concerns that had to be taken out and changed.

Q. Mr. Smith says that while the machinery was put in by an American firm, it was all made in Germany?—A. All made in Germany—I have not any definite knowledge of things there.

Q. (By Mr. SMYTH.) Just from your general knowledge of the business?—A. Yes. What I am saying of our factory, of course, I have personal knowledge of. I think I have given all the facts I have here on this paper.

Q. (By Mr. CLARKE.) How much less would it cost to equip a factory if you did no refining?—A. Very little. The difference between granulated sugar and raw sugar is simply the difference of passing the sugar through a granulator, which makes but very little difference indeed. It simply dries it, that is all. The raw sugar, as we sold it this year, was sold as it came from the centrifugals. That is where we threw the molasses out of the sugar. The only other process is the granulator; it passes through the granulator, where it dries it; but in making granulated sugar we have to wash it in the centrifugal, being sure to get all the color of molasses out of it, so that when it is dry it will be entirely white, while with the brown sugar we do not have to be as careful about that; but the difference in refined sugar and raw sugar, as far as the manufacture is concerned, is very little indeed.

Q. It pays, then, to be equipped for refining?—A. Certainly. We are not in the hands of the American Sugar Refining Company, or any trust, because it is only a matter of having a little belt and refining our sugar or selling it raw. It is simply a matter of business with us—which we could get the most out of.

Q. (By Mr. SMYTH.) Sugar sold unrefined is heavier? A. Heavier. It is just like very light brown sugar that used to be sold in our grocery stores, but little of it sold now; but when we can sell, it matters not whether to a trust or any other man who wants to buy our sugar at less than half a cent difference between granulated price and refined price, they will get it, if they can pay us for it.

Q. (By Mr. CLARKE.) How does your soil and climate compare with the soil and climate in the valley of the Connecticut River in New England and the White

River?—A. I think it is but very little different. You may have more stone than we have, and you can not grow beets on stony ground. You can grow it, but it is too expensive for cultivation. But your soil which is free from stone is as well adapted to it as ours. The trouble with that country is that there are not enough beet acres to the square mile; it takes in too much territory.

Q. (By Mr. A. L. HARRIS.) How many acres do you calculate will be necessary to supply your mills when you increase the capacity to 500 tons?—A. About 4,000.

Q. You mean 4,000 acres in beets each year?—A. Yes.

Q. Then, with the rest it will require, of course, an addition of acres in land?—A. Yes; ought to have at least 12,000 acres.

Q. Now, your own calculation of \$30 an acre as the cost of raising beets—that of course does not include owning the land?—A. No; I am only telling now of the labor, cost of feed, and fertilizer.

Q. What is the rental value of beet land?—A. The rental value of land in our section would be about \$10 an acre—that is, I think that land suitable for growing beets, that which ought to be put to beets, would be worth \$10 an acre to rent, if a man could rent a good deal of it at that price. I think that would be about the price.

Q. (By Mr. CONGER.) What would it be worth an acre to buy it?—A. Well, to buy it in connection with farms, you mean, or buy it separately? Our farms are all laid out. Most of them run from the river back, and it takes part of the river flats, and included in each farm is also part of a hill or upland, which is not as valuable as flat land. That land would be worth, I think, \$100 an acre—that is, the land, I mean, which would be suitable to grow beets.

Q. (By Mr. A. L. HARRIS.) To encourage that the State of New York has given a bounty. Do you think that has been necessary to encourage the enterprise?—A. It has; yes. This 500-ton plant at Lyons would not have been built if not for that. I do not think our factory would have been built if not for that. The bounty law was passed before our company was organized.

Q. (By Mr. CONGER.) Is there any limit as to time in that bounty law; in other words, does it continue indefinitely?—A. No; except this: When the bill originally passed, it provided that bounty should be paid at least 5 years. It did not limit it to 5 years, but virtually committed the legislature to 5 years' bounty, although the appropriation had to be made every year. There has been no disposition to retract from that position by the New York legislature.

Q. (By Mr. SMYTH.) What does it cost New York State in dollars and cents?—A. They appropriated this year \$50,000, and there was \$30,000 in the fund. The first year they appropriated \$25,000. Last year they appropriated, I think, \$40,000; I am not quite sure about that.

Q. (By Mr. CONGER.) Did those who supported the bounty feel that monopolies might be raised?—A. I do not think the industry should be fostered continuously. Now, my judgment is this: If the bounty in our State—you see it is to help the farmer, because we would not pay \$5 a ton for all beets if we did not receive a bounty. Now, with us the object and the intention of the bounty was to aid the farmers.

Q. (By Mr. SMYTH.) The law compels you to pay the \$5?—A. Yes; and we can not take any beets of any kind at a price less than \$5 a ton and receive our bounty. Now, where I think the bounty ought to go is to assist the farmer. If they would put competent men in the field and show him how to cultivate this crop and how to produce it at its least and minimum cost, then the industry is established in this country. Now, the factory end of it will take care of itself if the farmers will produce the beets.

Q. (By Mr. CLARKE.) Is not the State board of agriculture giving special attention to instruction of farmers in this respect?—A. Yes; our State has done nobly, and other States have done nobly in that respect; but it wants someone not only to publish pamphlets, but it wants someone to go right in the field and do just what Dr. Wiley said he was doing with the drill and show them how to use it—to put the right amount of seed in the ground; but the average farmer don't read all that is published for him to read, and he don't follow all he reads.

Q. You think it would help the State to employ men in the sugar-growing section—say, 1 man for each factory—to instruct the farmers?—A. We have 5 men in our State now. Seventy-five hundred dollars is appropriated out of this bounty fund to pay for men to go among the farmers and instruct them in our State.

Q. (By Mr. CONGER.) Do they take to that instruction kindly?—A. Yes, very kindly, indeed; and they are glad to see the man, provided he is a man who can tell them more than they already know. Now, that is the very essential part of it.

Q. (By Mr. CLARKE.) How are the men selected—by the civil-service examination?—A. They are selected by the civil-service examination.

Q. Have the selections generally been fortunate?—A. Most of them have.

Q. (By Mr. SMYTH.) Are those men at the call of the farmers? Can they invite them to come, and send for them?—A. The factory gives them a list of the growers, and they go to them and report to the State auditor at Albany and report to us.

Q. So they visit each farmer?—A. Yes. They visit him two or three times during the season. Now, the farmer will take a good deal better care of his crop if he knows somebody is going to come around to look at it, and if he knows he is brought in comparison with his neighbor it is an incentive and inducement for him to take care of that crop and have it compare favorably with others. It is one of the best things we have got. The first year we employed 4 men ourselves and kept them in the field all summer to do this work, and at the end of the first year we had a record giving the man's name, the number of acres, the post-office address, the kind of soil, the kind of fertilizer used, how applied, when applied, and analysis of the beet, and his yield, which gave us a history of every man's crop. We did not get this from the man himself, but from the man we sent to his field. That we have on record, which tells us and enables us to tell the farmer the kind of soil that will produce the best beet, the kind of cultivation best adapted, the kind of fertilizer he needs most, and we are giving him that all the time. That is our business. Now, we want the farmer to help.

Q. (By Mr. CLARKE.) Do you hold meetings in the nature of farmers' institutes and discuss the question?—A. Yes, we are doing that constantly in the winter and spring, and the man that needs the help in this matter, and must have the help to make this a success, is the farmer. The United States is going to produce its sugar. It is just a question of whether it takes it up now and goes on with this matter, or whether it is going to be some years before the farmer gets the education which he must have if he is going to grow sugar beets successfully. Now, it is just as I said, the man who produces and who is most saving to grow beets is the foreigner. The average American would rather ride, wants a cultivator or plow or something he can use that he can ride.

Now, I very much hope that the State of Michigan is not going to be any worse off on account of the number of factories she has got. I should be very sorry indeed if there were any factories there that were not going to get enough beets.

Q. (By Mr. A. L. HARRIS.) Do you think of anything further?—A. Well, I am particularly anxious to give you all the information I have, and the information from our experience in this matter, that you may be able to know exactly what to do and the wise thing to do in regard to fostering this industry, because to me, I believe there is nothing so important to the American farmer to-day; that there is no crop that is open to him; there is no business on which he can lay his hand that means as much to him as the beet-sugar industry does. I believe it will do more toward lifting up agriculture, if rightly put on its feet, than anything else. That I believe, and I believe it to the extent that I have been willing to stake a good deal on it, and I believe that it only needs just the help that I believe you are seeking to give it in order to have that accomplished. I am confident, and I am sure from the results we have already had and the experience with which we are meeting, that the farmer must have encouragement, he must have help, he must be educated in order to produce this crop at a cost that will enable him to desire to do it.

Q. Have you ever made a calculation of the number of acres of land that would go into beet culture necessary to supply the United States with sugar?—A. Yes. I do not know whether I have that correct or not, but when I was looking up the question of establishing a factory in Binghamton I went into all of those questions; in the first place, the amount of sugar we consume, and my estimate then was that it would take over a million acres of the cultivated land of the United States to produce the sugar that was necessary—that we are now consuming.

Q. That would take that number of acres then out of— A. (Interrupting). Competition of some other lines, and it would leave at home the money which we are now sending away from home, and would give employment to the people who are now asking for employment and anxious to get it.

Q. You think, then, that the farmer outside of the beet-growing belt is interested also?—A. Just as much as the one in it, because the man on the upland who has no beet land to grow, has not as many bushels of potatoes, bushels of corn, and bushels of wheat, to come in competition with; he is in better position than he is if his neighbor in the flat country could grow these products at less cost than he can grow them, and has got them to put on the market against him. Now, we have the land and an abundance of it; we have the labor; we have the soil; we have the climate, and why should not we produce our sugar beet? I know of no reasonable answer.

Q. (By Mr. CLARKE.) How far can you afford to haul beets?—A. We haul them from 75 to 100 miles.

Q. Then it would pay the farmer who has a small area of his farm, even an

acre or two, to grow that kind of beets?—A. Certainly. Now it does not mean the keeping of one less cow or the product of one less pound of butter. It does mean the producing of less products of other kinds, but here we are producing a food that goes back to supply the place of those. The consumption of sugar in this country to-day is about 80 pounds per capita and increasing every year, and three-fifths of all the sugar we are now consuming is beet sugar.

Q. Do you know how the profits of beet growing compare with the profits of tobacco culture?—A. The profits of tobacco culture for the past two years have been better than this. We have realized more per acre from tobacco than beets, because we have had that in a section where it came in direct competition; but the price of tobacco has been exceptionally high, with the exception of some few instances I know of where the crop has been entirely destroyed by hail.

Q. This condition you regard as abnormal owing to the results of the Spanish war, I suppose?—A. I do. It comes more directly in competition with cabbage and potatoes and crops of that kind, and with the grains, and the cabbage has been higher than I have known it for the last two years, and yet we have a great many acres devoted this year to beets that were formerly devoted to cabbage.

Q. Is cabbage a sure crop?—A. If plenty of fertility is applied to the soil, it is; but it is a very uncertain crop as far as the price is concerned. But here is a crop that is sold, and the price is fixed before it is planted. The farmer knows what he is going to do; he has not got to store it; he hauls it immediately from his field to the railroad or factory, and it is disposed of. What other crop is open to him with which he can do that?

Q. (By Mr. A. L. HARRIS.) How long will that condition last?—A. Well, I have no fear in my time of our being able to produce the amount of sugar we are consuming. I have not any fear of it at all. I do not believe we can do it.

(Testimony closed.)

WASHINGTON, D. C., May 16, 1900.

TESTIMONY OF MR. CLINTON D. SMITH,

Director, Agricultural Experiment Station, Lansing, Mich., and Superintendent of the Michigan Farmers' Institutes.

The commission met at 10.18 a. m., Mr. A. L. Harris presiding. Mr. Clinton D. Smith, director of the Agricultural Experiment Station, Lansing, Mich., was introduced as a witness, and, being duly sworn, testified as follows:

Q. (By Mr. CONGER.) You may state your full name and post-office address?—A. Clinton D. Smith; Agricultural College.

Q. And your occupation?—A. I am director of the experiment station and superintendent of the Michigan Farmers' institutes.

Q. How long have you held those positions?—A. I have been director of the experiment station since July, 1894, and superintendent of institutes for one year.

Q. In the performance of your duties at the agricultural college you have had considerable to do, as we understand, with the industry of raising sugar beets and in the manufacture of sugar therefrom?—A. Yes.

Q. You may, if you will, then, in your own way, state to the commission any information that you may have that may be of interest and use to us. If you have a paper, you may read that?—A. In the first place, as to my relation to the work: Having been in Nebraska at the time of the manufacture of sugar from beets had its inception at Grand Island, and having studied the matter there, as the various forces began their work to create factories in Michigan, I was called upon by the promoters of those factories to visit the places where the factories were about to be organized to give advice; and in the second place, I was called upon to talk to the farmers in regard to the method of growing beets. As stated in the paper, I made something like 50 of those addresses last spring. I also visited all the places where factories have originated in the State, as at Caro and Rochester, and talked with the people both before, at the time of, and after the contracts were let.

Q. In referring to contracts, do you mean contracts with farmers for beets or for the building of plants?—A. I refer to the contracts between the owners of plants and the people who built them. As director of the experiment station, I had also to write the bulletins, with the assistance of Dr. Kedzie, and publish them, relating to the industry in the State.

Q. You have a paper prepared?—A. Yes.

Q. You may read it.—A. I ask the privilege to modify and comment and otherwise, if the commission please.

Q. You may feel at liberty to do so. (The witness reading:)

"THE RELATION OF THE MANUFACTURE OF BEET SUGAR TO FARMERS AND THE LABORING CLASSES IN MICHIGAN.

"As early as 1890 and 1891 the experiment station of the Michigan Agricultural College had distributed sugar-beet seed, which it had imported directly from Germany, among farmers scattered well over the State. The analysis of the beets had shown that roots containing a higher per cent of sugar would be grown in all parts of the State south of the line drawn east and west through the southern boundaries of Manistee and Iosco counties. After that time and up to the beginning of 1897 there had been frequent failures in the wheat crops and in the fruit crop along the western borders of the State, two of the principal sources of income to the agriculturists. Owing to droughts and the depredation of insects the clover crop had partially or, in some sections, wholly failed. There was, for these reasons, an active demand among farmers for some new crop that should be profitable.

"The United States Department of Agriculture sent to the Michigan experiment station early in 1897 a considerable amount of beet seed, which it was my duty to judiciously distribute to still further determine the best localities for growing beets on a commercial scale. The seed was distributed, and the results of the analyses of the product of the various counties are reported on page 149 of Bulletin 150 of the Michigan experiment station, as follows:

"RESULTS BY COUNTIES.

"In order to present the results in the different sections of the State, Table II is inserted, giving the number of samples sent to the station from each county, the average per cent of sugar and coefficient of purity of all samples sent, and a corrected table in which the samples grown on the wrong kind of soil, or with poor seed, are omitted. Seed was distributed in 63 counties and from the table below it will be seen that samples have been received from 64 of them. The average per cent of sugar in the beets of the whole State, when grown on the proper kind of soil and from the right kind of seed, is 16.40, and the coefficient of purity is 84. This coefficient of purity signifies that of the whole amount of materials in solution in the sap of the beet, 84 per cent is sugar and only 16 per cent is gummy, saline, or nonsaccharine matter. An average of 16.40 per cent of sugar for the whole State, far exceeding the best districts in France and Germany, is both surprising and gratifying.

TABLE II.—Results by counties.

Counties.	Total number of samples.	Per cent of sugar in them.	Coefficient of purity.	Samples rejected for bad soil or seed.	Number of samples on right soil and proper seed.	Per cent of sugar in such samples.	Coefficient of purity.
Alger	1	14.32	80	0	1	14.32	80
Allegan	3	15.67	86	0	3	15.67	86
Alpena	1	15.01	80	0	2	15.01	80
Antrim	1	15.97	82	0	2	15.97	82
Arenac	8	16.77	85	0	8	16.77	85
Baraga	1	14.10	76	0	1	14.10	76
Barry	4	14.90	81	0	4	14.90	81
Bay	10	15.53	84	1	9	16.00	84
Berrien	3	17.88	87	0	3	17.88	87
Branch	3	16.92	84	0	3	16.92	84
Calhoun	6	15.82	84	0	6	15.82	84
Cass	12	15.44	83	0	2	15.44	83
Charlevoix	1	17.58	87	0	1	17.58	87
Clare	1	16.80	84	0	1	16.80	84
Clinton	4	15.80	84	1	3	16.06	86
Crawford	1	15.25	81	0	1	15.25	81
Eaton	5	17.50	83	0	5	17.50	83
Emmet	1	15.02	82	0	1	15.02	82
Genesee	6	14.75	82	1	5	16.14	84
Grand Traverse	7	15.75	82	5	2	15.91	83
Gratiot	6	16.00	83	0	6	16.00	83

TABLE II.—Results by counties—Continued.

Counties.	Total number of samples.	Per cent of sugar in them.	Coefficient of purity.	Samples rejected for bad soil or seed.	Number of samples on right soil and proper seed.	Per cent of sugar in such samples.	Coefficient of purity.
Hillsdale.....	2	16.71	84	0	2	16.71	84
Huron.....	6	15.47	85	0	6	17.47	85
Ingham.....	36	16.43	87	1	35	16.53	87
Ionia.....	4	16.36	82	0	4	16.36	82
Iosco.....	6	13.18	77	1	5	14.32	79
Iron.....	1	18.18	80	0	1	18.18	80
Isabella.....	4	14.00	78	1	3	16.41	82
Jackson.....	7	9.74	74	5	2	18.16	86
Kalamazoo.....	16	15.45	83	2	14	15.87	83
Kalkaska.....	12	16.91	83	0	12	16.91	83
Kent.....	16	15.35	83	2	14	15.85	84
Lapeer.....	12	17.71	84	0	12	17.71	84
Leelanaw.....	3	18.77	86	0	3	18.77	86
Leawee.....	5	15.96	85	0	5	15.96	85
Livingston.....	2	14.34	80	0	2	14.34	80
Mackinac.....	1	16.22	85	0	1	16.22	85
Macomb.....	11	16.11	82	2	9	16.91	83
Manistee.....	6	17.00	84	0	6	17.00	84
Mason.....	5	16.54	85	0	5	16.54	85
Mecosta.....	4	16.67	84	0	4	16.67	84
Menominee.....	6	16.58	84	0	6	16.58	84
Midland.....	2	17.62	86	0	2	17.62	86
Missaukee.....	1	15.79	84	0	1	15.79	84
Monroe.....	2	16.41	84	0	2	16.41	84
Montcalm.....	2	17.64	83	0	2	17.64	83
Muskegon.....	9	16.03	85	0	9	16.03	85
Newaygo.....	13	16.11	81	1	12	16.54	81
Oakland.....	7	15.29	83	1	6	16.26	83
Oceana.....	11	16.54	80	0	11	16.54	86
Ontonagon.....	4	15.15	85	0	4	15.15	75
Osceola.....	3	16.35	90	0	3	16.55	89
Otsego.....	1	18.00	90	0	1	18.00	90
Ottawa.....	15	16.47	83	0	15	16.47	83
Saginaw.....	127	15.99	84	4	123	16.13	84
St. Clair.....	31	17.53	83	1	30	17.64	83
St. Joseph.....	1	12.16	76	0	1	12.16	76
Sanilac.....	11	18.15	86	0	11	18.15	86
Shiawassee.....	4	16.89	83	0	4	16.89	83
Tuscola.....	1	18.94	89	0	1	18.94	89
Van Buren.....	4	13.82	80	0	4	13.82	80
Washtenaw.....	4	16.10	84	0	4	16.10	84
Wayne.....	9	16.12	84	1	8	17.08	85
Wexford.....	9	14.59	79	1	8	15.25	81
Sixty-four counties.....	493				465		
Average.....		16.08	83			16.40	84

¹ Five samples from Oceana County are not included in results of analysis because they were dried and damaged by keeping.

"Your attention is respectfully called to the history of the beets grown by Higgins & Lenders, and others in Saginaw County, in 1897, as reported on page 137 of this bulletin. You will note the high per cent of sugar and the most excellent, and occasional incredible, yield per acre, remembering that the various yields were in many cases largely estimated, though estimated from weights and measurements.

"This work in Saginaw was no inconspicuous factor in determining the location of the first factory to be erected in the State—that of the Michigan Sugar Company at Bay City, 14 miles north of Saginaw, and on Saginaw Bay."

Let me interpolate here the statement that when Mr. Cranage, the very efficient president of the Michigan Sugar Company, began the study of the question of locating a factory at Bay City, the first element in his decision was the numerous analyses of beets made by the station and reported in Bulletin 150. You will understand at the very outset that the reports of yield per acre stated in that bulletin are based upon measurements and weights it is true, but included a large element of estimation, and are therefore to be taken cum grano salis.

I have now to present to the commission a table not heretofore compiled, show-

ing the analysis of beets in the various counties of the State in the several years of 1897, 1898, and 1899. I call the attention of the commission to this because it is not in my paper, and because of the very evident and important decline in the per cent of sugar in the beets from the years 1897 to 1899, inclusive. I wish the commission to understand that this decline is more apparent than real. In the year 1897 we examined a great many samples of beets from over the State, and the beets were very carefully selected, and to the station there were sent beets of only small size and typical in shape, with the result that the analysis shows a very high per cent of sugar. In 1898 the plots were grown in areas from one-quarter of an acre to an acre, and average specimens were sent and marked, which is equally true of the product of 1899, consequently the results of these years are based upon the average specimens, while the results of 1897 were based on selected specimens. This table further demonstrates—

Q. (By Mr. CONGER interrupting.) It might be well for you to mention at this point, I think, some of the average yields per acre to which you refer in that bulletin, as we will probably not want to embody the bulletin in the testimony.

The WITNESS. The yields to which I refer are all excessive yields reported in that bulletin. For instance, a yield of 90 tons to the acre is reported, an amount so immense as to be grotesque, and let me say further, that the report of these excessive yields has done incalculable damage to the industry in the State.

Q. What, in your opinion, would be a fair statement of the average yield per acre for land devoted to raising beets in Michigan in 1898 and 1899?—A. I can not speak with any degree of positiveness about 1898 except to say that the yield was a great deal larger relatively in 1898 than 1899, for two reasons: In the first place the season was vastly more favorable, and in the second place the major part of the yields were confined to areas specially well adapted to the growing of the beets, namely, the Saginaw Valley; I judge in 1898 it was about 10 to 11 tons per acre.

Q. How much in 1899?—A. To the acres harvested the yield in 1899 was about 6 to 7 tons; of the acres sown not to exceed 4, and possibly not to exceed 4, there being a large number of acres sown in 1899 that were never harvested.

Q. The principal reasons for that were weather conditions?—A. Two principal reasons; weather conditions and the fact that beets were put upon land ill adapted to them. I refer now especially to the very sandy land, such as is found north and west of Holland and east of Caro or east of Rochester. Those are the 2 chief elements in the small yield. (Reading:)

"Beet seed was distributed again in 1898, and later in 1899, to selected farmers widely scattered over the State. In both these years the beets were grown in plots larger than a quarter of an acre each. The results of the work for the three years are given in the following table:

Counties.	1897.			1898.			1899.		
	Number of samples analyzed.	Percent of sugar in juice.	Purity.	Number of samples analyzed.	Percent of sugar in juice.	Purity.	Number of samples analyzed.	Percent of sugar in juice.	Purity.
Alcona									
Alger	1	14.22	80	1	18.00	80			
Allegan	3	15.07	80				5	15.70	83
Alpena	2	15.01	80						
Antrim	2	15.97	82						
Arcanac	2	10.77	85	2	15.18	86			
Baraga	1	14.10	70						
Barry	4	14.90	81				12	13.15	79
Bay	10	15.53	84	4	14.86	80			
Berrien	3	17.83	87				1	13.06	79
Branch	3	16.02	84	1	16.85	83			
Calhoun	6	15.82	84	1	12.98	79	1	15.22	85
Cass	12	15.44	82				4	13.02	76
Charlevoix	7	17.58	87						
Chippewa				1	17.30	83			
Clare	1	16.80	84	1	19.03	89			
Clinton	4	15.89	84	1	15.97	88	1	13.39	71
Crawford	1	15.25	81						
Delta							1	11.87	75
Eaton	5	17.50	83	2	14.82	83	7	13.38	77
Emmet	1	15.02	82						
Genesee	0	14.75	82	1	18.69	86	10	14.75	81
Grand Traverse	7	15.75	82	1	21.18	91			
Gratiot	6	16.00	83	2	17.28	89	5	15.97	81

Counties.	1897.			1898.			1899.		
	Number of sam- ples analyzed.	Percent of sugar in juice.	Purity.	Number of sam- ples analyzed.	Percent of sugar in juice.	Purity.	Number of sam- ples analyzed.	Percent of sugar in juice.	Purity.
Hillsdale	32	16.71	84				3	10.76	78
Huron	6	17.47	85	1	10.85	83	15	15.58	80
Ingham	36	16.43	87	5	13.72	79	7	13.00	77
Ionia	4	16.36	82						
Iosco	6	13.18	77				4	16.06	83
Iron	1	18.18	80						
Isabella	4	14.00	78	1	14.88	87	4	12.86	79
Jackson	7	9.74	74	1	10.60	86	10	14.76	80
Kalamazoo	16	15.45	82	10	13.40	82			
Kalkaska	2	16.91	83						
Kent	16	15.55	83	1	15.42	85	19	15.15	78
Lapeer	2	17.71	84				1	15.00	85
Leelanaw	3	18.77	89						
Lenawee	5	15.96	85	2	15.03	88			
Livingston	2	14.34	80				1	14.03	80
Mackinac	1	16.22	85						
Macomb	11	16.11	82				16	14.10	80
Manistee	6	17.09	84	2	16.13	85			
Marquette	5	16.54	85				5	13.67	80
Mecosta	4	16.67	84	1	16.42	86	2	13.81	80
Menominee	6	16.58	84	1	17.98	93	4	14.73	82
Midland	2	17.62	86	1	15.99	85			
Missaukee	1	15.79	84						
Monroe	2	16.41	84	4	12.61	79	1	14.56	83
Montcalm	2	17.64	83						
Muskegon	9	16.03	85						
Newaygo	13	16.11	81	1	15.84	82	1	15.83	83
Oakland	7	15.29	83	4	14.11	81	1	17.50	88
Oceana	11	16.51	86	1	15.66	83			
Ogemaw				1	17.78	88			
Ontonagon	4	15.15	79						
Oscoda	3	16.55	85				3	15.60	83
Oscoda				2	18.14	86	2	14.83	84
Otsego	1	18.00	90	1	16.42	91	1	17.33	81
Ottawa	15	16.47	83	2	16.29	87			
Saginaw	127	15.99	84				1	12.08	81
Sanilac	11	18.15	86				1	15.80	85
Schoolcraft				1	15.91	88	1	17.09	83
Shiawassee	4	16.89	83	1	18.61	88	3	14.72	81
St. Clair	31	17.53	83				2	15.72	84
St. Joseph	1	12.16	76	2	15.19	80			
Tuscola	1	18.94	89	2	18.11	88	1	15.72	81
Van Buren	4	13.82	80						
Washtenaw	4	16.10	84	1	6.46	52	1	16.10	86
Wayne	9	16.12	81	2	13.10	80	16	13.44	79
Wexford	9	14.59	79						

"There has been much excitement in all parts of the State in regard to the sugar industry, and it has been my duty as director of the station to speak in practically every county south of a line drawn east and west through the south boundary of Manistee County on the question of beet raising, explaining to the farmers the soil conditions requisite, the amount of labor involved, the cost of the crops, and the possible yields. The attitude of the speaker was conservative, tending rather to quiet the excitement than to increase it. Fifty such addresses were delivered.

"It must be remembered in this connection that the agriculture of the State was depressed, and that farmers were discouraged by successive failures of wheat. So great has this depression become that agents of the Canadian government and of the great railroad companies owning lands in the United States, in the Dakotas and States adjoining, have succeeded, through the activity of shrewd and plausible (?) agents at various points in the State, in securing a large migration of agriculturists westward. There exists in Michigan to-day an organized emigration department which, by systematic work, including the distribution of literature and personal solicitation, has succeeded since the beginning of the year 1900 in securing the migration from Michigan of several hundred people, chiefly tenants and laboring men. The significance of this fact, in connection with the gradual but irrevocable western movement of the crest of the wave of maximum agricultural financial success, can not be overestimated."

The bearing of that fact upon sugar-beet raising can not be omitted. If you

please, over in Shiawassee County alone there has gone at one time one train load and at another time a considerable number of laboring men, rendering the problem of securing sufficient help a very serious one. The Canadian government maintains a general agent who has charge of special agents through the State and is securing by all sorts of representations, mostly true, I hope, the migration of Michigan citizens to the great Canadian northwest.

Q. (By Mr. A. L. HARRIS.) Does that take your best labor element?—A. Yes and no. It takes the farmers who have rented land heretofore or worked land on shares largely, and we think it has taken also the men and families who worked upon the farms. Their expenses through to the northwest are paid by the railroad, I believe, although I am not too positive upon that point, and they are put down in the northwest free of charge, a movement which we greatly deplore. (Continues reading.)

"The farmers of the State are for the most part native-born American citizens, accustomed to the growing of the cereals and not to the system of agriculture in which the application of a large amount of labor to a small area is involved; but repeated failures of accustomed crops had made them ready to welcome any new one that gave promise of adequate financial returns for labor expended upon it.

"While the surface of the State of Michigan is covered to a great depth with a glacial drift, so that areas of clay, loam, and sand succeed each other in inextricable confusion, still certain areas have well-marked soil characteristics. The broad alluvial Saginaw Valley, in which are located the 3 factories at Bay City, is undoubtedly the most promising section of the State from the standpoint of the beet grower. The water table is within a few feet of the surface. The soil, while rich in organic matter, has still an abundance of constituents. It is friable and easily penetrated by the growing roots, resembling somewhat in physical makeup water-holding capacity, and relation to the water table the valley of the Platte in Nebraska. Moreover, the area having once been the bottom of a broad lake or river, the surface is almost or quite level. Much of the land, since given over to beet growing, was formerly devoted to truck farming and gardening, lines of work which fitted both the farmer and the farm for the economical production of large crops of beets.

"Other sections of the State are found to be well adapted to the industry. Near each factory, it is true, there are many farms too sandy and light for beet production in dry years without a system of culture, not yet attained by our farmers, directed to the maintenance of a surface-soil mulch to prevent the rapid escape of moisture. Too many of these farms were injudiciously selected for beets in the dry season of 1899, with results disastrous alike to the hopes and the finances of the owners. North and west of the Holland factory is such an area, on which, last year, many hundred acres were planted, part of them thinned, and none of them harvested. These farmers are firm in the belief that beet raising does not pay, and no arguments based on statements regarding the adverse season have any weight with them. Such areas are not wanting about the Peninsular Sugar Company's factory at Caro, or about Rochester, the site of the factory belonging to the Detroit Sugar Company. About the Alma factory the soil tends rather to a clay loam with greater power to resist drought. In fact there is fortunately within reaching distance of each factory an abundance of soil that is in all respects well adapted to beets, and which will produce in all normal seasons abundant and paying quantities of roots rich in saccharine matter as soon as the farmers have learned how to prepare the ground and care for it when once sown. No existing factory can be said to be badly located as to soil, nor are all the desirable locations yet occupied.

"In selecting proper sites for the factories matters other than the attitude of the farmers and the quality of the soil had to be considered. Chief among these factors were the water supply, abundant in quantity, pure in quality; and transportation facilities, upon which depends the cheapness of coal and limestone. The nine factories in 1899 are located as follows: Three at Bay City, viz: The Michigan Sugar Company, the Bay City Sugar Company, and the West Bay City Sugar Company; the Alma Sugar Company, at Alma, 40 miles directly west of Saginaw; the Peninsular Sugar Company, at Caro, east and slightly north of Saginaw; the Detroit Sugar Company, at Rochester, Oakland County, north of Detroit; the Kalamazoo Sugar Company, at Kalamazoo, in the southern central part of the State; the Wolverine Sugar Company, at Benton Harbor, in the southwest corner of the State, and the Holland Sugar Company, at Holland, on the west coast."

There is now in process of erection a new factory at Marine City, on the extreme eastern coast of the State. The foundations were dug last week, and the process of construction is now well under way. There are also two other factories organized, but no money has yet been expended.

Q. Are these factories making contracts yet?—A. No. The Marine Sugar Company, I understand, have made some contracts, but I do not know. (Reading:)

"The great bulk of the capital required to erect, equip, maintain, and operate these immense and complex factories was supplied by Michigan men, a fact that attests both the enterprise of the citizen and his faith in the business.

"The Michigan Sugar Company, at Bay City, was the first to build a factory, their initial campaign being in 1898. They were fortunate in having, as patrons, an agricultural community composed largely of Germans and Hollanders, many of them accustomed to raising beets in their native homes. They were therefore intelligent in their methods, and were at the same time working on a soil adapted to the business. The season of 1898 was in most respects favorable, although the fall was excessively wet, making harvesting difficult, unpleasant, and expensive. The factory secured nearly its full complement of acreage, the farmers entered into the care of the crop enthusiastically, the harvest was abundant, and the financial returns to the farmer exceedingly satisfactory. I give here by way of illustration the results obtained by several farmers about the factory in 1898:

Name.	Area.	Per acre.			
		Yield.	Cost.	Receipts.	Profit.
	<i>Acres.</i>	<i>Tons.</i>			
G. Hine	24	13.1	\$11.25	\$64.59	\$23.34
S. F. Sayles	4	17.5	46.30	67.52	21.22
J. F. Boes	1	18.8	32.02	89.09	57.08
John Jones	3	14	27.48	73.33	45.83
J. McKinney	3	18	27.81	79.98	52.14
J. W. McIntosh	8	17.5	35.15	60.75	31.60
Thomas Handy	16	12	31.68	57.34	25.71
C. B. Chatfield	13	14.5	38.82	65.25	26.43
T. F. Shepard	9	12.2	25.37	53.88	28.51
F. E. Webster	19	11.4	24.60	43.45	18.85

"I cite these cases as examples of intelligent management of good soils in a favorable season."

Q. (By Mr. CLARKE.) I notice that the yield per acre, that is, the profit per acre, was larger where there was a small acreage than where there were large acreages.—A. May I explain by saying that Mr. Boes and Mr. Hine and one or two others were old German beet raisers. They had small areas which had theretofore been devoted to truck crops, and, as I know by inspection of most of these areas, they were deep rich soils in the very pink of perfection for growing beets; the season was exactly right; they knew just how to take care of them, and they got phenomenal yields which have done incalculable injury to the State, because other farmers won't realize what you and I realize, that there was an exceptionally favorable combination of circumstances. (Reading:)

"Frequent visits to the farmers about Bay City during the summer of 1898 convinced me that the community as a whole was enthusiastic in the belief that great profits were to accrue from the growing of beets."

Q. (By Mr. A. L. HARRIS.) I notice some of your best profits occur where there is the greatest cost of raising per acre.—A. Yes.

Q. That shows, then, the difference in cultivation?—A. The more intelligent the application of fertilizers and the cultivation of a good soil, the greater the yield. We expect, for instance, if our farmers the past adverse season, had had 8 or 10 years experience and information how to meet those adverse conditions, the results would not have been as disastrous as they have this past campaign, because by proper cultivation the ill effects of the drought would have been largely met. (Reading:)

"Other communities began to send committees to Bay City, and the good fortune of that factory in 1898 was without question one of the strongest inducements to both capitalists and farmers to invest money and work in sugar production in Michigan.

"It was assumed that the almost phenomenal results obtained on a peculiarly favorable soil in a peculiarly favorable season by experienced beet raisers would be duplicated on less favorable soils by inexperienced farmers regardless of the season. Farmers all over the State were aroused from apathy and indifference to unbounded and unwarranted confidence in the certainty of financial profit from this new industry. Factories were built, as indicated above, and little difficulty was experienced in securing sufficient acreage.

"Another and possibly the chief factor in bringing about the construction of these factories was the promise of bounty made by the legislature in an act approved March 26, 1897. This bounty was to be 1 cent per pound to the fac-

tories for all sugar made from beets grown in the State for which the factory should have paid \$4 per ton for beets containing 12 per cent of sugar, with an addition of 33½ cents per ton for each additional per cent of sugar in the beets. It may be remarked in passing that this bounty was paid to January 1, 1890, to the Michigan Sugar Company for sugar made up to that time. None has been paid since.

"I submit in the table below some of the facts in the campaign of the factories in 1899."

I call the attention of the committee to the fact that when they compare this statement with that made by Mr. Rogers yesterday, they must remember this is the per cent of dry granulated sugar and not the per cent of raw brown sugar to which he referred. The relation between the dry granulated and the brown, I do not know; that is, how many pounds of brown sugar it takes to make 10 or 100 pounds of granulated sugar. I confess my ignorance. I do not know. (Table above referred to follows:)

Name.	Net tons of beets sliced.	Pounds of sugar produced.	Pounds of sugar per ton of beets.	Pounds of sugar per 100 pounds of beets.
Michigan Sugar Co	40, 720	7, 415, 233	182.1	9.1
Bay City Sugar Co	40, 084	6, 942, 000	169.2	8.46
West Bay City Sugar Co	17, 334	2, 162, 157	124.0	6.2
Peninsular Sugar Co	25, 581	4, 004, 884	155.9	7.94
Detroit Sugar Co	21, 064	3, 669, 839	169.4	8.47
Wolverine Sugar Co	10, 797	1, 787, 233	165.5	8.27
Holland Sugar Co	16, 871	2, 585, 779	153.1	7.66
Kalamazoo Sugar Co	9, 681	1, 441, 998	147.7	7.38
Alma Sugar Co	19, 700	3, 359, 366	167.0	8.3

(Reading:) "The reports of the factories for the campaign are not yet complete. The weight of sugar manufactured is correct. The net weight of beets is approximately so, making the sugar per ton of beets as given very nearly correct.

"As to the quality, first, of the sugar made, I am glad to say that it was generally a prime article. It must be admitted, however, that certain factories were, by reason of machinery not adapted to American conditions, unable to make a first-class article, and as a result the reputation of Michigan sugar in the markets is somewhat injured."

The commission may be aware that there is a lawsuit now in the courts between the Peninsular Sugar Company at Caro and the contractors that built the factory. These contractors put in entirely German machinery. The owners did not know what they wanted, and the contractors did not know what was wanted, and the contractors therefore put in machinery that was adapted to the manufacture of sugar for refining purposes and not sugar for the market. The Caro factory is under the very efficient management of a president who is a thorough business man, and he succeeded in selling that sugar to the refining companies and elsewhere at very good advantage, so that the financial loss during the past season was not so great. Unfortunately, much sugar was sent to Chicago that ought not to have gone there, and I saw there in the hands of factors barre's of sugar offered as typical of Michigan beet sugar, where the barrel was stratified light blue, yellow, white—light blue, for instance. The people who formerly had bought the product of the Michigan sugar companies without question, asking no further certificate than the fact that it was made by the Michigan beet-sugar factories, became at once suspicious and would buy no sugar from Michigan without examination. That matter, however, was stopped, and I hope the damage has not been great.

Q. (By Mr. CONGER.) Your idea, then, is that the reputation of the product of the Michigan factories suffered from the output of this one factory?—A. Yes. I stayed in Chicago for a short time, long enough to make an investigation, and I know that to be the fact.

Q. Have the proprietors of these other factories suffered in the way of being unable to sell their products at so high a price as formerly?—A. No; they at once notified their factories and stopped the damage just as quickly as they could.

I might say that the product—as an instance—of the Benton Harbor factory, the Wolverine Sugar Company, sells rather above, I think about ½ cent above the market for average goods because of its pearly whiteness and fine even grain. That was sold in Grand Rapids and in Chicago. The same thing is true of the Michigan Sugar Company; and in fact I ought not to mention one company except by way of illustration and not to draw an invidious comparison to the others in Michigan

I might say, also, that the West Bay City Sugar Company has brought suit, or is to bring suit—I am not certain which—against the construction company because the beets yielded only 124 pounds of sugar per ton of beets. Now, they had to pay an average of \$4.33½ a ton for these beets, and receiving only 124 pounds of sugar to the ton of beets, under the market price of sugar, they suffered great financial loss by reason of the German machinery put in that factory not being capable of extracting from the beets the amount of sugar it ought.

Q. You say they averaged \$4.33½ for their beets. That price was determined by the purity of the beets; by the sweetness of the beets?—A. Yes.

Q. By test?—A. Yes.

Q. What would that price of \$4.33½ indicate as to the sweetness of the beets?—A. It would be just 13 per cent average.

Q. And this record you have just read of 124 pounds of sugar to the ton would indicate something very different, would it; that there was some trouble?—A. The construction companies say that their factories ought to take out 10 per cent of the sugar—that is, they ought to get 200 pounds of sugar. A ton of beets weighs 2,000 pounds, and at 13 per cent there would be 260 pounds of sugar in the ton, and they ought to get 200 pounds out. As a matter of fact, I have never been in any factory east of California that made any claim to get out as much as that, and our factories, as the table I have just read shows, come very far short. The old Michigan Sugar Company gets out, as you see, 183 pounds, but as I have heard, until they got a letter from Dr. Wiley they got out much less. You see the season was peculiar, and the per cent of nonsugars was high, and they had to modify the temperature in their diffusion batteries in a way that these German operators did not know anything about. As a result the Michigan sugar factories will be manned by Americans next year almost exclusively.

Q. Has it been the custom among the factories there in Michigan to employ Germans as superintendents?—A. Had to. You see it requires a high degree of skill to manage a factory from the diffusion battery to the sale of the sugar, and that skill is acquired by experience only, and as a result—if I may state a specific instance without making reference to any other factory—the West Bay City factory has imported Bohemians and Austrians to manage their factory.

Q. What number?—A. I think about 125. They were shipped back to Bohemia with the thanks and good wishes of the factory immediately at the close of the campaign, and next year they will be replaced almost entirely by American laborers who can adapt themselves more readily to the new conditions obtaining in this country.

Q. In other words, the employment of those foreigners has not been entirely satisfactory, either as laborers or as superintendents?—A. No; it has not been. Understand, that does not refer to the chief superintendent. The superintendent, if I may enter into personalities—I do not know how far I should do so, but I depend on you to check me—the superintendent of the Michigan Sugar Company is a man by the name of Brysselbout. He is an exceedingly efficient man, and the success of the factory is largely due to his efficiency. The superintendent of the Bay City factory is a foreigner, but an exceedingly efficient one. The same is true of various other factories; but understand that under the superintendent there are men who superintend or control the treatment of the diffusion juices, and then the strike pan and the management of the limekiln and the various departments of the factory. They have universally been foreigners in our State during the campaigns of 1898 and 1899, and it is to them that I refer when I say that they are to be replaced by Americans. All who have charge of divisions and who receive good salaries and on whom rest responsibilities will, in the main, be Americans in Michigan. (Reading:)

"Taking up the factories one by one, permit me to report certain details. The campaign of 1899 was the second one for the Michigan Sugar Company, which had sliced during 1898 over 41,000 tons of beets, and had made therefrom 5,280,000 pounds of sugar. Its second campaign was marked by the fact that the experience of the year preceding, with the opportunity to improve machinery during the summer of 1899, has resulted in a campaign practically without accident or stoppage. The second campaign lasted 114 days. There are 190 men employed in and about the factory, 20 men working the entire year. The quality of the sugar is uniformly first-class. The factory was built by Fred W. Wolf Company, Chicago. They have 4,000 acres contracted for the coming campaign. The men employed are for the most part American born, and nearly all of them American citizens. The per cent of marc used in converting per cent of sugar in juice to sugar in beets was 5. The factory has a nominal capacity of 350 tons a day, although it has sliced as high as 400 tons per day for several consecutive days.

"The Bay City factory has a capacity of 500 tons per day, with room for double that amount, and cost \$500,000. The sugar produced is excellent in quality, and

is sold in Chicago very largely, some going to Michigan points. No dividend has been declared this year, the profits made being applied to retiring bonds and the betterment of the plant. Both these factories use limestone from Trenton and Wyandotte quarries. The factory was built by the Kilby Manufacturing Company, of Cleveland, and is giving good satisfaction. It was in operation 110 days during the last campaign. There are employed in and about the factory 250 men, 30 of whom work the entire season, and 30 more during June, July, and August in repairs and preparations for the coming campaign. The owners are at present installing a plant for drying the pulp and mixing with molasses, making a feed for cattle, which will be put upon the market, the bulk of it being already sold for export at a nominal advance over the cost of production. This dried pulp contains less than 10 per cent of water; it also contains 16.90 per cent of protein, as analyzed by the chemists of the factory, with a high per cent of carbohydrates. The per cent of marc used averaged 8. The factory now has 5,410 acres contracted for the campaign of 1900.

"The factory of the West Bay City Sugar Company was not finished in time to begin operations until nearly the beginning of the new year. Its campaign was therefore necessarily short, and was unfortunately attended by several accidents, which seriously interrupted the work. As shown in the table above, but 124 pounds of sugar were manufactured from a ton of beets. This small yield made the factory owners somewhat dissatisfied with the plant, and they have refused to accept it from the builders. Owing to the lateness of the start in the last campaign, many of the farmers that had contracted with the factory sought relief from their contracts and delivered their beets to other factories. As a result, this factory has few contracts for 1900, the total acreage to date being scarcely more than 2,000. It must be confessed that the location of 3 factories within 1 mile of each other was a hazardous undertaking. Had the community been thoroughly accustomed to growing beets, it would have been much less so. The inevitable consequences of this proximity have already manifested themselves, since the available acreage at this stage of the history of the industry is unavoidably limited.

"The Peninsular Sugar Company has located its plant at Caro, some 26 miles east and north of Saginaw. The building is a large one and is fitted with machinery to consume 500 tons of beets per day, with opportunity to double its capacity. The factory is equipped with German machinery, and the product has not been satisfactory as to quality, the sugar being off in color and grain. As a result, a lawsuit is already begun by the owners against the contractors who put up the factory. The good will of the farmers toward the factory was manifested by the fact that there are already subscribed for next campaign pledges for nearly 5,000 acres.

"The factory of the Alma Sugar Company is located about 40 miles almost directly west from Saginaw, in the center of a rich, populous, and prosperous agricultural community. Like the other factories of the State, it is backed by sufficient capital to insure success, if success be possible. The factory cost \$450,000 and employs 500 men, mainly Americans, and will employ practically all Americans hereafter. As the table shows, it had a fairly successful campaign in 1899, making 167 pounds of sugar to the ton of beets. In converting the per cent of sugar in the juice to that in the beets a factor of 92 was used, allowing for 8 per cent marc. There are already pledged 3,500 acres for the coming campaign, as against 3,000 for last year."

I stop to inquire whether the commission is informed as to the meaning of the "per cent of marc?" You will note that the Michigan Sugar Company use 5 per cent, this Alma Company 8 per cent, the Bay City Company 8 per cent, and some of the factories in the western part of the State using as high as—in specific cases, in dealing with individual farmers—from 10 to 12 per cent.

Mr. CONGER. The matter was given considerable attention by Professor Kedzie. We understand this marc is the percentage that the factories deduct in making settlements with the farmers, and of course it is of vital interest to the farmers. The matter has been gone into to a considerable extent.

Q. (By Mr. A. L. HARRIS.) But it may be that you have something to offer in a practical way.—A. I simply found a great deal of dissatisfaction among the individuals about Holland and Benton Harbor, because these factories have used a higher per cent of marc than the farmers thought just.

Q. (By Mr. CONGER.) These factories charge a higher per cent for marc than the factories in the eastern part of the State, as a rule?—A. As a rule. Their average may not be higher, but there are specific cases when it went exceedingly high, and that caused dissatisfaction. Some farmers absolutely refused to raise beets, because they said they had been gulled by the factory.

Q. (By Mr. A. L. HARRIS.) Does the locality have anything to do with the fixing of the marc?—A. I have no specific information on that point. Dr. Wiley or Dr. Kedzie is incalculably better informed than I.

Q. (By Mr. CONGER.) If these factories made exceptional cases and insisted on a greater allowance for marc than any of the others, were there any special reasons for it? Did they claim that the beets of the farmers in question should be charged that marc?—A. Most of the factories accepted the dictum of the Department of Agriculture at Washington, backed up by the experience of Dr. Kedzie at our own station, that 5 per cent of marc was about the normal, and they made no further examinations. Now, for reasons into which I can not enter, some of the factories in the western part of the State thought it advisable to determine the marc for themselves. I am not informed as to the reasons why that decision was made. (Reading:)

"The Detroit Sugar Company has located its plant at Rochester, not far distant from Detroit, with which it is connected by electric cars as well as by steam railroads. This factory made a relatively short run in 1899, but turned out a quality of sugar that is unsurpassed and secured a larger per cent of sugar per ton of beets than any other factory in the State except the Michigan Sugar Company.

"The Wolverine Sugar Company is located at Benton Harbor, in the extreme southwestern part of the State. Here the factory has to compete with the fruit growing in the best fruit section of the State, and also with the raising of cucumbers and vegetables for large canning and pickling factories at Benton Harbor and St. Joseph. As a result of this competition, the factory has secured its acreage for this year very largely from Indiana. There are 5,000 acres now pledged for the coming campaign. The factory was put up by E. H. Dyer & Co., and cost approximately \$300,000. Its work has been eminently satisfactory during the past campaign, the sugar being faultless and in demand both in Michigan cities and in Chicago.

"The Holland Sugar Company, at Holland, differs in some respects from the other companies of the State. A large share of the stock is owned by farmers in the vicinity of Holland, who therefore are interested in the factory as well as in the growing of beets. Last year the campaign lasted 55 days. The sugar made was excellent in quality and met with a ready sale at highest market prices. The per cent of marc as determined at the factory varied from 8 to 12.

"The Kalamazoo Sugar Company began their campaign late at their factory, north of Kalamazoo. The run was short and the supply of beets limited. The factory has pledged for next year, however, 5,400 acres, of which 2,200 acres are in Indiana and 1,000 acres in Ohio. A series of accidents delayed the beginning of the campaign last fall, but the work was satisfactory when once operations fully began. The factory was erected by F. W. Wolf & Co., and cost \$400,000."

Q. (By Mr. CLARKE.) About how far from that factory are these Indiana and Ohio plantations?—A. If you mean to ask me in miles, I certainly could not give it. I should judge in this particular case 45 miles on an average.

Q. (By Mr. CONGER.) Is it not farther than 45 miles from Kalamazoo to the Indiana line?—A. I do not know. It is a matter easily ascertainable. Let me stop right here to say that the attitude of the average farmer toward the factory in Michigan is extremely reluctant—I could not say hostile; it is an attitude of waiting to see, like Micawber, what is going to turn up. The Kalamazoo factory proves the case to my mind. These people found it almost impossible to secure any acreage in territory that supplied them last year, and this territory which is to supply them this year is utterly new territory—territory on which they did not draw last year. The same thing holds true, I am informed by one of the Detroit Sugar Company men, about Rochester. They drew largely last year from west of Rochester, about Pontiac, and in the section from over Richmond way, but this year they have to work a new territory.

Q. (By Mr. A. L. HARRIS.) What is the cause of that change of locality?—A. The extremely unfavorable season last year. You may know that about Benton Harbor there are a great many hundred acres on which in May and June last year the farmer had sowed his seed originally and had waited. The seed was a relatively poor quality; the beets came up spindling, and then came the drought and they died. They resowed, but these beets were in so late that the harvest was very small. I would be perfectly safe in saying that the result, from this reason, would not average 3 tons to the acre. But you see the farmers did not know what to do, and when they applied to me I had to confess that I could not advise them, for I had never seen such a condition of affairs; so they did the best they could and resowed, and that was a mistake, as they got their beets in so late. About the other factories the same conditions obtained, and the average crop for acres harvested would not be more than 6½ tons, and for acres sown it would be very much less. I made a special effort to get for the commission definite data as to the relation between the total tons of beets harvested and total acreage sown, but I found it absolutely impossible to get data that I could swear by.

Q. You have hopes that the confidence of the farmer will be restored?—A. We are hoping and praying for a good season this year. If we get it, our farmers, like a flock of sheep, will drift over the other way. (Reading:)

"The influence of the establishment of factories upon the agriculture of Michigan is very important. In the first place, in the immediate vicinity of the factory and near all railroad stations within 40 miles of the factory it has appreciably increased the selling price of the farms."

There is a statement that I want to qualify. That statement I find not to be true about Rochester. You will understand that in getting this data I have visited and stayed some length of time near all of the factories except Caro and Rochester. I need not state the reasons why my visits there were curtailed. I have talked to a host of moneyed men and farmers in Bay City and Benton Harbor, at Holland, at Kalamazoo, and at Alma, names that I can give you later if you want them, that concur in the statement that the value of real estate in proximity to the factory and points located by railroad connections conveniently accessible thereto—they have increased the value of renting power and of real estate. (Reading:)

"At Bay City there is now a greater activity in real estate transfers than has been witnessed in many years, and vacant houses in and about the city are very scarce. Farms have sold at a price per acre far in advance of offers of five years ago. A host of conversations with leading business men and with farmers about Bay City leads me to believe that the net advance in real estate values, due to the establishment of the factories, can not be less than 15 per cent, while cases are on record where specific farms have been sold at an advance, in one case of 25 per cent, and in another, a very large farm, of nearly 50 per cent."

Note that these farms were sold for the specific purpose of growing beets. (Reading:)

"Land rents for growing beets at from \$5 to \$8 per acre. About the other factories in the State the same appreciation of values in real estate is notable. About Holland, for instance, the rent of land for growing beets had gone from \$6 per acre per annum to \$8, \$10, and, where the land was especially well located and of good quality, to as high as \$12 and \$15 per acre.

"At Holland there are canning factories and pickling works, which compete with sugar beets and draw heavily upon the supplies of transient labor. I visited Kalamazoo and the other localities where factories were established and find that this rise in the price of real estate has in every case followed the erection of the factory.

"In the second place, the by-products of the factory are gradually being used for feeding live stock and for fertilizers. In Bay City the supply is so large that as yet but a small per cent is thus utilized. Near that city, however, I may cite the enterprise of Mr. W. A. Wilder, who fed last year several carloads of pulp to his dairy cows and to young stock which he was wintering. The young stock were fed nothing but pulp, straw, and hay. They had no grain. They are now in fair condition, ready to turn on grass. His dairy cattle received corn, silage, hay, grain, and beet pulp. The steers ate $1\frac{1}{2}$ bushels per day of the pulp, while the supply to dairy cows was limited to less than 1 bushel per day. I found a growing feeling among the farmers in the vicinity of Bay City in favor of the pulp, and many teams were engaged up to late this spring in hauling it away. I found a farmer west of Kalamazoo, also, who was feeding 236 head of steers on pulp and hay. He had fed several carloads, and deems it impossible that the material shall not come into immediate and extensive use among cattle owners near the factories. I can cite you to many other cases where the pulp is fed extensively, and to still others where farmers are preparing to ensilage it next year, expecting to rely upon it largely as succulent feed for dairy cows and pigs.

"The slaked lime is being used as fertilizer on lands that need it near all the factories. Unfortunately the molasses, rich as it is in potash, is at present in Michigan entirely wasted.

"So far, from the very nature of things, no American seed has been used on a commercial scale by our factories. The imported seed in 1890 was in some cases very unsatisfactory. The repeated tests we have made of the seed coming into the State this year shows it to be of a very much better quality. A systematic effort will be made this year to begin the growing of seed. This industry will employ a great many men and will demand the highest type of talent to insure success.

"While at the outset it was necessary to employ experts in the various divisions of the factory work, and these experts had to be brought in from without the boundaries of the State, and even from without the boundaries of the United States, I am glad to report that Americans are rapidly learning the business, and

it will not be many campaigns before the American factories will be manned throughout by Americans.

"The establishment of the factories has exerted a marked influence on the labor market. Employment has been given to men, women, and children who would otherwise have been idle. During the months of June and July, and again in October, the factories have given rise to an active demand for persons possibly not strong enough to do the hard work of a farm, but able to do light work—to thin, hoe, and harvest the beets. Near most of the factories the supply of such labor has not been sufficient. In the campaign of the Michigan Sugar Company in 1898 beet raisers found it possible to hire women at from 50 to 65 cents per day to thin beets. Later in the season, as the labor supply proved inadequate, these same women, and children as well, asked and received from 75 cents to \$1 per day. In 1899 about the same city they have received habitually \$1 per day and dinner. The prices for this class of labor have varied from time to time and in different localities. About Benton Harbor the price per day rose to \$1.25 and board, and about all the factories in the very busy season the daily wages rapidly rose to \$1 per day and upward. I know of but one case where laborers were brought into the locality from a distance for the express purpose of doing the thinning and hoeing. This was at Alma, where a lot of men were brought from the city of Detroit to aid in thinning the beets, which, by reason of the extreme wetness of the season, had been too long neglected. The men were unaccustomed to field work and disappeared at the first opportunity.

"In brief, then, it may be stated that the introduction of the factories has increased the demand for labor and its value in the market. It has furnished employment to a large number of boys that would otherwise have been idlers, and to a possibly still larger number of women, who were sorely in need of the money thus earned. Fortunately the thinning and hoeing comes for the most part after the close of the common schools, and the topping is over soon after the beginning of the school in the fall. Thus the work interferes but little with the school attendance of the children.

"The busy period of thinning and hoeing lasts about 40 days; begins in early June, and the harvest, beginning in September, lasts well into November, the lifting and topping occurring in September and October, and the hauling to the factory continuing through to January and even later.

"The plan of furnishing employment during the summer in the fields to the men engaged in the factory in the late fall and winter will be tried this season by one factory.

"My investigations at all the factories convince me that the establishment of this industry has so far resulted in no serious disturbance of economic conditions relating to the labor market. There have been times near all factories when labor has been scarce and exceptionally high prices have been paid. On the whole, however, there has been a fair supply to meet the active demand. Mature laboring men have found remunerative employment, and the congestion of labor in the cities noted in former years has been less conspicuous this year than heretofore. I believe the work of the sugar factories has been one contributing cause to this healthy economic condition.

"This demand for labor is fairly certain to be permanent, as it seems hardly possible that any machine can be invented that can take the place of the human hand and eye in the operation of thinning, while to thin an acre of beets planted in rows 18 inches apart will require the work of an active boy or woman fully 6 days."

You will remember an acre of beets is 160 rods long if it is only a rod wide. Now, a rod wide, divided into rows 18 inches apart, provides room for 11 rows. Eleven rows a half mile long is one row $5\frac{1}{2}$ miles long, and for a boy or woman to get down on the knees and creep $5\frac{1}{2}$ miles is a rather onerous undertaking, and requires a good deal of time. Our experience, based on the raising of 6 to 8 or 10 acres at the college, and keeping careful note of the time, and getting the men whose names I read in the former table to watch matters closely, leads me to make the statement that it will require about 6 days to thin an acre if the boy or woman creep $5\frac{1}{2}$ miles; and that statement is based on the supposition that the rows are 18 inches apart.

Q. (By Mr. CONGER.) Would not one of these boys or women take two rows, and thus be obliged to creep only one-half the distance?—A. It is done that way in some cases, but it does not lessen the time materially to do that. They have got to take hold of one beet in the bunch and pull out the others. Where the wet season delays the thinning, as it did about some of the factories last year until the beets were the size of my pen and up to the size of one of these small bottles—from a quarter to three-eighths of an inch in diameter—the time required for

thinning was very much lengthened, because, as Mr. Rogers so ably explained yesterday, the roots of nearly all had grown so fast to the other beets that they found it almost impossible to pull up the beets not wanted and leave in good condition the beets they wanted to stay in the bunch. Thinning must therefore be done at just about the right time or it costs more than it should. That is why we have such an active demand for boys and women at just the one season, and again at just the exact season when we come to harvest them. That is why these women about Bay City adopted the American custom, Polish women as they were, and when they saw the supply was limited they formed a combination, got a corner on the market, and raised the price.

Q. (By Mr. CLARKE.) Why can not seeds be so perfected that each one is sure to produce a beet, and then sown so that thinning will not be necessary?—A. Unfortunately we have it so arranged that 1 seed will produce 1 beet, but they are so ambitious that they usually produce 4. The trouble is, what we sow is not the seed but the fruit, and the fruit contains 1 to 4 seeds. There are therefore liable to be 4 plants from 1 fruit. Very many factories have invented tools that drop the beet seeds at the distance apart that we want the plant, and there will be 2 to 4 plants then growing from each fruit, and thinning is, in my estimation, absolutely unavoidable; and where farmers have reduced the number of pounds of beet seed per acre, as Mr. Rogers said yesterday, they have a poor stand; and the trouble in Michigan is just as it is in New York, we can not get a good stand. Professor Wheeler, of our station, tested nearly all the beet seed sown in Michigan this year. Now, the Magdeburg rules require that 100 fruits send up, I think it is, 173 plants in 14 days. We find that the seed instead of germinating together will come up irregularly. The largest per cent will be out of the ground in about 10 to 12 days, and all of them should be out in 2 weeks. Then, again, there will be out of every 100 perhaps 16 fruits that will not germinate a plant, and the others will germinate. In fact, we may say that out of 100 beet seeds of a certain variety I have in mind, 2 weeks ago at our station there were 227 plants grown from the 100 fruits. Now, don't you see that since 1 fruit will send up 4 distinct, separate plants, thinning is absolutely unavoidable?

Q. Can these fruits be separated so that each fruit will send up only one?—A. Yes; we grind them. We break them up into separate seeds. We soak them, and by maceration in cold water, to save injuring the seed, we get the seed out separately. But they do not seem to develop well except in the matrix of the fruit itself. We were anxious as a station to aid in lessening the cost of thinning, which is the great bugbear in the eyes of the farmer, and we resorted to all sorts of experiments to find some way to avoid thinning, so far with absolutely no success. I can not report 1 inch of progress since 2 years ago, except where the farmers will consent to sow 18 pounds of seed to the acre and get a very thick stand. We do run a cultivator across the rows and do the bunching, as it is called, but even then I am advising the farmers to resort to the hoe. They do it somehow very much more efficiently. The cultivator will cut out a bunch of beets and will leave spaces where no beets are growing, whereas the man with the hoe, notwithstanding Edwin Markham to the contrary—"the man with the hoe" will leave the spaces where beets should grow.

Turning now to the farmer's side of the question, we come to the matter of the cost of production. We have raised many acres on the college farm, and I have visited repeatedly every beet-growing section of the State. By the cooperation of a large number of intelligent beet growers I am able to give approximately the average cost of growing beets in the State at large. Here are the items, some of them estimated, it is true, but all of them based on actual and extended experience:

	Cost per acre.
Plowing, usually subsoiling	\$2.50
Harrowing, several times	1.00
Seed	2.50
Sowing .....	.50
Cultivating, six times	2.40
Thinning and weeding and hoeing	8.00
Pulling and piling	6.00
Topping	6.00
Drawing, average 2.5 miles	6.00
Freight, 17 tons, at 20 cents	3.40
Unloading	1.13
Total	35.43

Two bugbears stand in the eyes of the farmer: First, it costs so much to thin and harvest; and, second, the beet crop is so exhaustive to the soil. I explain to them what Dr. Wiley and Dr. Kedzie have told us about the nonremoval of plant food itself, but the farmer says: "Remember that you told us at the institutes that where land was very rich in organic matter and in mineral plant food, and was left bare through the winter, the rains of winter and the rapid oxidation of the plant food in the soil took more plant food from the acre than three or four or possibly a half dozen crops; and consequently we must not leave our ground bare during the winter, this being especially true of the loams of a sandy character." So we are urging these farmers to subsoil early in the fall, plow the ground and fit it well and sow some crop—rye or oats—which shuts in the soil, preventing the leaching during the winter and the rainy season during the fall and spring. This crop is then inverted in the spring reploting, the ground fitted in perfect condition, and the seed sown. That is why I have put the plowing and harrowing at amounts which, to some of you who are acquainted with agricultural conditions, might seem exorbitant—\$2.50 for plowing and \$1 for harrowing an acre. It seems to be a large amount, but the success of the crop depends so primarily on the condition of the ground when the seed is sown that we insist on the farmers having confidence enough in the crop to thoroughly prepare the ground. Seed at \$2.50 per acre is not excessive, nor is sowing at 50 cents an acre, nor cultivating 6 times at \$2.40, nor thinning and weeding and hoeing at \$8 an acre. That takes us up to the time of harvest. Now, the harvesting is done in Michigan largely with the lifter, which has 2 prongs sent astride the beet some 6 or 8 inches below the surface, inclined from in front back and upward, so that it just lifts the root and breaks it as Mr. Rogers told you yesterday. The beet stands in the soil vertical, just as it stands when growing, except it is separated at the bottom. A woman or man comes along, takes hold of the beets, knocks the dirt off, and throws them into a long pile, the tops to the right. Now, there are various methods of doing that. Sometimes they are thrown in large piles and sometimes they are thrown in a continuous row, and then a person takes each beet in the left hand, chops off the top with the right hand, and throws them into a pile. That harvesting is the second large item, in my estimation, in the cost of growing an acre of beets—pulling and piling, \$6; topping, \$6.

Q. (By Mr. HARRIS.) You speak of throwing the beet. Does it hurt it or bruise it?—A. They do not throw it far enough to injure it.

Q. (By Mr. CLARKE.) Has any machine been brought in use for chopping?—A. Yes. If our beets could all be grown on land that is dead level, absolutely free from stone, and if the little fellows would only grow out of the ground the same height and stay down the same depth, that would work splendidly.

Q. Do you have a machine to top after pulling?—A. Such machines may be in operation. I do not know of any machine except the human hand so far. Some of these machines have been tried in Michigan, but all have been replaced.

The next item of large expenditure is drawing. Now, let us suppose an acre turns out 10 tons of beets (this estimate from now on is made on 17 tons to the acre, but let us suppose it is only 10 tons). Freezing does not ruin a beet, it is true, but freezing and thawing does. To haul beets for the use of the factory and deliver them in January and early February requires that the beet be pitted, as it is called. The roads in Michigan, to put it mildly, are universally bad in the fall, and the average load—I have watched them, for instance, at the Alma factory, when the average load did not come up to 2 tons. Now, supposing a man has to haul these beets 3 miles and only makes one trip a day, it takes him nearly 5 days to deliver an acre of beets. On the good roads up about Bay City I saw three-horse teams haul 3 and 4 and 5 tons of beets at a load; but the roads radiating from the factory at Bay City are stone roads built at large expense, and there the cost of delivering is very materially reduced; but about the other factories that had not the advantages of these stone roads, the cost of the delivery of the beets to the factory is a large item. If a man has 6 or 8 or 10 acres, that item of delivery is one he has to take largely into calculation.

Q. Why should not the factories have storage facilities so they can receive the beets when the roads are good?—A. I have had that brought up at every beet meeting in the State. You are asking a great deal of the factory. If it was simply a question of storage it would be hard to answer. When you store 40,000 or 50,000 or 60,000 tons, it goes up into the millions of bushels because a bushel of beets only weighs 50 pounds, and that would be 40 bushels to the ton. That would be a large proposition, but when you have to store them in such a way that the stream of water must wash them into the factory and have to store them so they will not freeze or thaw, it is too big a problem for our Michigan factories to undertake. The Benton Harbor factory is going to try it this year and the others are going to stay back and watch the proceedings at Benton Harbor. If they succeed the other

factories will hereafter undertake to store the beets and avoid the large expense of pitting.

There is another element: I find that most farmers would rather hold their beets and deliver them later. During harvest they have a large gang of men and they want to put in all their energies in getting the beets pulled up and pitted, and then along during the winter they will haul them at their leisure.

Q. You want to encourage good roads, then, in Michigan?—A. Yes; I will speak of that in time.

Now, the unloading costs on an average—I got this data from 6 factories—of about \$1.13 an acre, making the total cost, without fertilizer or rent of land, \$35.43. (Continues reading:)

"This is, of course, an average, with all the imperfections that that term implies, and does not take into account the rent of land and the cost of fertilizing. It gives a rough estimate, however, of the actual cost to the farmer, and leaves for him the question whether the resulting crop will be sufficient to give him a profit over this cost.

"The profit is contingent on the season, as well as upon the soil and the skill of the farmer. The season of 1899 was distinctly adverse; the spring was late and very wet through May and early June. The temperature for the same period was below the normal. As a result, the early-sown beet seed did not germinate and resowing was deemed necessary. The wet May was succeeded by a dry and very hot late June, July, and August. (See page 103 in Bulletin 179 of the Michigan Experiment Station.) As a result the crop over the State was well-nigh a failure. On all the sandy lands the crop was practically a total failure. On the light loams it was better, on the clay loams still better, and on the alluvial soils tending toward muck it was best of all. Notwithstanding the adverse season, some farmers harvested as high as 18 to 20 tons per acre and made a fair profit. On the other hand, other farmers lost practically all the time and money spent on the crop. Some of the farmers sowed the seed on well-prepared land, thinned the beets, and then abandoned the fields; others carried their crop through the season to the harvest, but to meet serious loss and grave disappointment. A recent visit to beet growers in the various sections of the State, and to the factories where the beets were delivered, makes me positive that the average yield for the State of acres harvested did not exceed 7 tons. I question whether it exceeded 6."

I went to a farmer, who had been renting, and asked him, "How much do you get for your farm?" "Well, sir, I am getting \$8 an acre." "What did your farm used to rent for?" "Well, I sometimes got \$6 an acre." "Has the factory increased the rental value of the farm?" "Yes; next year I won't rent for less than \$10." I went to another farmer. "How much rent are you getting for land?" "Twelve dollars an acre this year." "What is going to be done with it?" "Raising beets." It is upon these facts that I base statements which I have made in this paper, and it is upon these facts I base this statement at the present. There is a tendency to rent fields for cash rent to men who know more about beet growing than the owners do and are willing to take chances. That is especially true at Holland, Benton Harbor, and somewhat so at Bay City. (Continued reading:)

"In sandy localities many acres were plowed up without loss further than the seed, as the fields were utilized for other crops. This failure by reason of the adverse season has made the farmers hesitate about raising beets this year, and has covered the whole proposition with a cloud. The resulting attitude of the farmers, as a class, while not hostile; is not encouraging, and the factories are finding it difficult to secure sufficient acreage for a full campaign next fall.

"A second result of the adverse season has been a pressure upon the factories for a higher price for the beets and for other concessions. To this pressure the factories have yielded. The price this season will be \$4.50 per ton for 12 per cent beets, with an addition of 33½ cents for each per cent of sugar in the beets over 12. Some factories are paying the freight on the beets to the factory. In some cases the beets are unloaded free of cost, and in others the beets are received at any time and the farmers are not forced to pit them, with all the labor and cost attendant upon that operation.

"One cause of unpleasant feeling on the part of the farmer toward the factory has been the high per cent of marc sometimes claimed. The belief is nearly universal that 5 per cent is the normal amount of marc in the beet. Some factories have used figures in excess of 10, thus reducing the price of the beet very materially.

"The beet growers about Bay City have organized an association for mutual instruction in the art of growing beets economically, and for the further purpose of securing better prices for their product. The association was formed in the late summer of 1899, and has held frequent meetings through the winter and early spring. I can not give the present actual membership, but am confident that over 50 per cent of the growers tributary to the 3 factories are affiliated with it.

"It was this organization which by conferences with the factory managers secured the rise in the price of beets from \$4 per ton of 13 per cent beets to \$4.50. Similar organizations are formed at Kalamazoo for the western part of the State.

"In some of the factories the growers will nominate the tare men and possibly have some voice in the selection of the weigh man and beet tester, thus entirely removing all grounds for suspicion except in the single factor of determining marc.

"The work of this association can not fail to be of some educational value to its members, and it is education of which the growers stand most in need. The growing of beets demands far more careful methods of husbandry than those to which our farmers have been accustomed. It requires better cultivation, better fertilization, and expenditure of more money per acre. It thus broadens the mind and the methods of the farmers.

"As stated, the beet growers about Bay City, in 1898, found the crop very profitable. The cost was excessive because of inexperience, but the harvest was abundant, and the money received much greater than for any other crops to which their land had been devoted. It is a misfortune to the State that the initial campaign of the other factories should have been coincident with a bad season. Farmers feel that they have been deceived as to the merits of the crop and it will require a succession of more favorable seasons to regain their confidence and cooperation. The bad season of 1899 has, therefore, given a very marked setback to the industry. It has, however, sifted out the poorer farms and perhaps the more careless farmers, and better average results may be expected this year. It must be confessed, however, that the same attitude, not of hostility indeed, but of unwillingness to cooperate, does exist about all, or nearly all, the factories in this State.

"Beets have been grown almost exclusively by the owners on their own lands. At present, however, there is a tendency toward renting fields for a cash rent by the owners to men having more faith in the profits of the crop. I found this true especially at Holland and Benton Harbor and somewhat so at Bay City."

Let me say, when I was summoned to Alma and to Benton Harbor to talk with the people who were constructing factories, they asked me, "Will a factory work frozen beets?" And do you know that I could find no data in Nebraska or California on that point? Other factories may have succeeded; it may have been just the limitation of my knowledge, but I was unable to give those people any information on that question. They took the risk and found out that the factory worked up frozen beets all right. (Continues reading:)

"One of the main arguments at the outset against undertaking to make sugar beets in Michigan was that the period between beet harvest and the final freeze-up in the fall was too short. California and Nebraska had given little data as to either the possibilities of working up frozen beets, or the cost of burying in pits and thus protecting against frost. Our factories have had little trouble in working up frozen beets, but the cost of pitting and later removing from the pit and hauling to cars or factories have been a serious burden on the farmer. Owing to the limited capacity of the beet sheds which any factory can possibly construct and the great bulkiness of the crop, it seems inevitable that the farmer must deliver his products in installments, as called for by the factories. To retain them safely they must be buried, as once freezing and thawing ruins the roots. The dread of this job of first covering the beet piles with dirt and afterwards removing with pick and shovel the frozen covering has deterred many farmers from beet growing. To obviate this serious difficulty the Benton Harbor factory will undertake to receive all beets as fast as farmers can deliver them this year, or will pay the expenses of pitting.

"Over 50 per cent of the beets are hauled to the factories on cars which bring them from stations along the various lines from points up to 40 miles from the factory. The beets are hauled to the station when loaded on wagons. Good roads are therefore needed, and are now demanded by the distant towns and villages where the beets are grown. In this way the helpful influence of the factories on the character of the roads is widely extended."

In conclusion of this branch of my testimony, let me say that the grave questions in Michigan are two, first, the attitude of the farmer, who has been deceived innocently by the results of the Michigan factory its first season, and second, the adjustment of the relations between the factory and the farmer. No factory in that State knows whether it can afford to pay \$4.50 a ton for beets, as they now have promised to do, or not. Until the machinery is so far perfected in those factories that they can get a larger per cent of the sugar in the beet out of it, it is a very grave problem. Those are the two questions which confront us in Michigan.

Q. (By Mr. CONGER.) In your paper, in speaking of the factory at Holland, if I remember correctly, you said that quite a proportion of the stockholders in that company were farmers. I want to inquire as to the nativity of the farmers.—A. Hollanders mostly.

Q. Is it a fact or not that those Holland farmers had had previous experience in raising beets and knew something about the business?—A. Either in raising beets or similar crops. Most of them raised beets in Holland.

Q. In the old country?—A. Yes. They have large and thrifty families and are not afraid to work, and especially are not afraid to get down on their knees either in church or in the field.

Q. Was it in that section that the crop last year was to quite an extent a failure because of beets having been sown on sandy soil?—A. In the definite area north and west of Holland that statement is true. In the township of Robinson, you may remember, on the road leading from Grand Rapids to Holland, there is a definite area that is sandy. I am partly to blame for the mistake. I advised the sandy rather than the heavier clay soil of Holland because in all normal seasons it is the best soil.

Q. Well, do these beets grow well on heavier soil?—A. Yes; the best beets we had in the State, I think, except those growing on the alluvial—best Saginaw soils—were grown on heavier clay, better able to resist drought.

Q. You speak in your paper of land being rented to a considerable extent for the raising of beets. I want to inquire whether these renters are native or foreign born farmers.—A. I spoke of the trend in that direction, yes. It is more manifest at Holland, perhaps, Benton Harbor, and Bay City than elsewhere. Those renters are usually Germans or Hollanders. There is little bonanza farming yet apparent. That is, there is no land rented—large territories—and then worked by different gangs of men; but the factory, for instance, at Holland, has rented some land which it proposes to put in beets this year, and has had to pay \$8, \$12, and I am sure in some cases considerably higher rent per acre.

Q. These renters for the most part take this land in small tracts?—A. Yes.

Q. About what size tracts?—A. I can not say. They vary so materially it would be wrong and deceiving to give an average. For instance, I think of one man who rents 2 acres, because, as he said, he only had enough children to work that much; and another man I think of who has 5 acres; and another company have rented 103 acres; it is at Benton Harbor. Note that in this country, differing in that respect from our German instruction, lands tending to muck, if drained and thoroughly subdred, so much as to grow corn, are turning out excellent crops of beets of high percentage and purity. Now, I have mentioned this section rented by Stockwell & Bird at Benton Harbor. It is not a muck, it is an alluvial plot of land, full of grit. It is not simply decomposed organic matter. They have a pretty good yield, and this year they are trying it again. Their average yield, I do not think though, is much more than 8 tons to the acre. They had certain acres that were especially favorably located as to water table and so stood the drought all right, that turned out 25 tons to the acre. No use telling about that.

Q. These small renters—take this one you refer to who rented 2 acres of land—is he a native American?—A. No; he is a native of Germany—of the sugar-beet section there.

Q. He had experience in the old country in raising beets?—A. Yes.

Q. Well, is he typical of other renters?—A. Yes; typical of other renters.

Q. In other words, these foreign-born citizens in these sections who had experience in raising beets in Europe are becoming renters of land in this country to some considerable extent?—A. To some extent; yes.

Q. One place in your testimony you said, if I remember correctly, that an effort was to be made in Michigan this year to grow seed?—A. Yes.

Q. Where is that?—A. That is near the Alma factory.

Q. Is that being undertaken by the factory or by some farmer or individual?—

A. I can not state just the relation of the factory to the enterprise.

Q. Is it to be undertaken on a large or small scale?—A. On a fairly large scale, and it is backed by abundant capital, I understand.

Q. Do you know how many acres they intend to plant to beets?—A. It was not settled when I was up there, and, you will remember, it will take about 4 years before they will be able to put any seed on the market. The beet seed is a thoroughbred. It represents generations of careful selection. The normal content of sugar in beets is perhaps 5 or 6, and yet we grow seed that produce beets that test 18 and 20. Now, how is that done? Beet seed are sown. The individual beet is bored through with a little auger and the boring analyzed. While often growing from the same seed, beets range in per cent of sugar from 10 to 20 per cent. I am going over the ground hastily. The poor beets are all thrown out and only those kept for setting out the next year which test above the standard, which, we may say, is 16 per cent. Those beets set out by themselves in a row, a, b, c, and d, and the number of seed of each one of those beets is kept separately, and this is the seed from "a," this is the seed from "b," this is the seed from "c," and the seed is sown next year, and the beets are grown, and each one of these beets is analyzed,

and it is found out that the seed from beet "a," which tested 20 per cent of sugar, shows by a series of gradations from 12 to 20 per cent. Again a selection is made from beet "a" seed. Only those beets are considered that test above the standard again, and that process is repeated five times at least before they dare to put the seed on the market, so strong is the tendency to revert to the normal content of sugar; and so it is a very expensive process, and Dippe Brothers, Magdeburg, have spent a great many thousand dollars—I would not dare to say how many thousand dollars—just on analyses of beets alone last year, to produce seed, the best seed, of course, being consumed in Germany, and America using such seed as it can get. We have got to raise our own seed. Experience in Nebraska convinces me that American-grown seed, acclimated to our conditions, produces better results than foreign seed.

Q. Do they grow seed in Nebraska?—A. They did at a time; I believe it is abandoned now.

Q. Do you know if in California they depend upon American-grown seed, or do they get it from Europe?—A. I am ashamed to confess my ignorance. I ought to know, but I do not.

Q. (By Mr. A. L. HARRIS.) Do you know of any other seed company except the one you mentioned?—A. No.

Q. If the growing of sugar beets is a success no doubt companies will organize?—A. Yes; the installation of a plant to grow beet seed is so very expensive, and the returns put off so long a period that people hesitate to go into it until the beet industry is firmly established. Undoubtedly certain restrictions will be put upon the export of seed from Germany as soon as the industry of this country is developed enough to be a menace to their sales of sugar, and they will probably fix it so it will be very difficult for Americans to get seed, and we shall be obliged to raise our own seed.

Q. (By Mr. CONGER.) Do you know how many acres were devoted to the culture of the sugar beet?—A. I can make a calculation, but I can not tell you.

Q. Here is Joe Cox's report—44,000, he says.—A. Approximately 35,000 acres.

Q. Thirty-five thousand last year?—A. Yes.

Q. Can you tell us how many acres have been contracted for by the various factories there for the season of 1900?—A. Something over 37,000, if I remember correctly.

Q. Have the factories in each instance secured a sufficient acreage?—A. No; they all have except the West Bay City and the Detroit. Detroit is a little shy; that is, at Rochester; and the West Bay City is away below.

Q. The other seven are fairly supplied?—A. The other seven are fairly supplied, yes.

Q. To what extent have the factories in Michigan gone into the other States for this acreage?—A. No factories have gone outside of the State except the Kalamazoo and Benton Harbor; the Kalamazoo has 2,300 acres in Indiana and 1,000 in Ohio.

Q. To what extent has the Benton Harbor factory gone outside of the State?—A. My impression is it is 2,000 acres.

Q. As a matter of fact, then, the factories of Michigan have as much acreage contracted for this year as they harvested last year?—A. Yes; that is true.

Q. Well, in spite of the adverse season last year, you think this industry is one that will ultimately be a success and benefit to the farmer?—A. Yes.

Q. State your general opinion on that point, if you will.—A. I state this, that when the farmers realize that their harvest depends on their intelligent fertilization and management of the soil, and when they have sufficient confidence in the industry to put the necessary fertilizers and work on the crop: when they realize that the yield per acre is not to be so marvelous and phenomenal as some institute workers with a multitude of words lead them to believe, that they will on an average have successful crops. I think the matter will be well established, and it will be a great benefit to the State, pay them big for their beets, and the by-products are going to certainly increase the live stock kept. The practical experience of some of our feeders this year is doing more in this direction than all the theories that some of us have elucidated in the past.

Q. How will the profit in raising this crop compare with raising wheat?—A. Well, they compared very favorably last year, because the wheat crop was pretty nearly a total failure, and they will compare this year, because this year the outlook for wheat is still more depressed in Michigan than it was a year ago. Besides that, we have had a delightful spring, and the beet fields I tramped across last week and the week before were in first-rate condition. The season has been so good this spring, it has been so cool, that it has not retarded the work, and beet land is in excellent condition.

*Mr. A. L. HARRIS. I said to Dr. Kedzie, and also Mr. Rogers, that in the event they desired to ask any questions they could do so.

Mr. ROGERS. I would like to ask if Mr. Smith can explain why the percentage of sugar actually obtained is so much below the percentage of sugar that is found in the beet? What was the average per cent of sugar in the beet as delivered to the factories?

The WITNESS. I never have taken the pains to make an average of all the beets tested in the State, so I can not give it. The average per cent of sugar in the beet, not in the juice, I am sure exceeded 12. As a necessary consequence the average amount of sugar per ton of beets exceeded 240, and yet our factories did not get out more than 182½ pounds of sugar per ton of beets.

Mr. ROGERS. That is the largest, and it went from that to 124?

The WITNESS. From that down to 124.

Mr. ROGERS. A very great discrepancy somewhere in the matter of manufacture?

The WITNESS. Well, if I were able to explain to you why the West Bay City Sugar Company only received 124, I should be subpoenaed on that lawsuit as quick as those people heard of it.

Mr. ROGERS. I will say for the knowledge of the commission that I have examined a very great many German factory reports, and the factory loss ought not to be more than 1½ to 1¾ per cent.

The WITNESS. I might state there is another reason. The season last year in Michigan was so peculiar that beets were abnormal and they commenced with certain normal temperature of water in diffusion batteries. Dr. Kedzie may be able to explain the discrepancy.

Mr. ROGERS. Is the price paid the farmer for beets determined by the sugar of the juice or sugar of the beet?

The WITNESS. Sugar in the beet; and is determined by analyses made by the factory, by men appointed by the State, and the bounty is predicated on analyses made at the factory, not at the State laboratory, as in New York—one weighmaster working at both ends of the factory. It must be remembered in this connection, as to the efficiency of production, that our factories run from 350 tons up to 500 tons, and ought to be more efficient than smaller factories. I think that next year when our men become accustomed to their work and the very patent defects, I may say, in construction are corrected, that the per cent of sugar recovered will be very much larger. It has got to be.

Professor KENDIE. I wish to call Mr. Smith's attention to the sugar that is reported here. As I understand it, it is the first run, isn't it—the first product?

The WITNESS. Yes.

Professor KEDZIE. And I believe a considerable amount of the sugar which Mr. Rogers refers to, which is not realized in this first run, is contained in the molasses, and these are worked over in the second run and third run, and these are not reported as elements of the report for the bounty which is paid by the State. I think that the large disappearance—perhaps you will bear me out in the fact—that the disappearance of sugar is sugar contained in the second and third run, and is recovered in the second and third run or in the final waste of molasses, which counts for nothing.

The WITNESS. It should be understood, and I supposed it was understood by the commission, that the total amount of sugar reported refers to the total amount of crystallized A No. 1 granulated sugar that there is made; but there is still also an excess of second and third run sugar which is not reported, and which would reduce the per cent of loss somewhat.

Mr. ROGERS. But in the factory that is equipped with crystallizers in which the molasses goes into crystallizers, the entire amount of sugar is obtained as the first product and the molasses is disposed of, thrown away. The second and third run is only obtained in factories where the molasses goes into storage tanks and is left in them, and that does not prevail in most of the factories in Michigan.

The WITNESS. There is a good deal of that waste molasses still stored at these factories, in large tanks, to be worked over sometime during the season. Now, how much sugar they could get out of it no one can know, but it will reduce it a little, but not much. Our factories have been painfully inefficient in extracting the sugar from the beet. The factories cheerfully acknowledge it and are striving with might and main to remedy it.

Q. (By Mr. KENNEDY.) Are you acquainted with Mr. Oxnard?—A. Personally, no.

Q. Is Mr. Oxnard largely, if not altogether, connected with all sugar industries?—A. Yes.

Q. He is not connected with the cane-sugar industry, is he?—A. I do not know whether he is or not.

Q. You heard some weeks back a great deal of talk about the Oxnard sugar trust. I take it that would mean beet-sugar trust. Do you know whether it is

true that there is any such trust?—A. I have not heard that there was; no. Our factories are working entirely independently, as far as I am informed.

Q. Has there been any proposition for combination, looking toward bringing the beet factories under one management?—A. Only in certain respects. No; no organic combinations as I know of.

Q. As far as you know, there is no Oxnard or beet-sugar trust in this country?—A. No, not that I have ever heard of. I speak only with limitation, of my own knowledge. I do not know of any.

Q. (By Mr. CLARKE.) You formerly resided in Nebraska?—A. Well, I was there on a visit, that is all. New York is my home. I now live in Michigan. I was director of the experiment station in Minnesota, and as such I went around and watched the growing of the beets and watched the constructing of the Moline seeders and cultivators and matters of that kind. I was with Prof. H. H. Nicholson.

Q. (By Mr. A. L. HARRIS.) You spoke of the Moline seeders and cultivators. What do you mean by that—the implements?—A. Yes; they make a seeder that sows 4 rows, and, as Mr. Rogers says, they keep those 4 rows the same distance apart, and then they can take a cultivator and cultivate the same 4 rows, and by watching 1, you see, they are able to steer the cultivator for all 4, which is economizing labor; but, as a matter of fact, they have discarded that in our State and used the cultivator that cultivates 2 rows.

Q. Are there any foreign implements in this country—cultivators or seeders?—A. There were on the start, but they are entirely discarded. Our American implements, in the factory and out, now, are superior to the German make.

Q. The American inventor, then, is keeping pace with the demand?—A. Yes; but the exceeding fruitfulness of the beet seed gets away with him on the thinning. He can not find out how to do that—pardon the slang.

(Testimony closed.)

WASHINGTON, D. C., May 16, 1900.

TESTIMONY OF MR. CHARLES F. SAYLOR,

Special agent and investigator, United States Department of Agriculture.

The commission met at 10.18 a. m., Mr. A. L. Harris presiding. At 2.25 p. m. Mr. Charles F. Saylor, special agent and investigator of the United States Department of Agriculture, Des Moines, Iowa, was introduced as a witness, and being duly sworn, testified as follows:

Q. (By Mr. A. L. HARRIS.) You may state your name, your post-office address, and your occupation.—A. C. F. Saylor, Des Moines, Iowa. I am special agent and investigator of the United States Department of Agriculture, in charge of beet-sugar investigation.

Q. How long have you been so employed?—A. Since March, 1897.

Q. You may give the territory you have been over, and the line of work you have pursued.—A. I have been operating in connection with the experiment stations in all the various States except New England. We have been furnishing the State experiment stations with beet seed, and they have been furnishing these seeds to special lists of farmers that they made up who grew the beets. Then I have been visiting these stations and the farmers growing the beets, also meeting with business organizations and other associations with a view of promoting the industry locally, furnishing information, and, in a general way, promoting the industry wherever, in the sense of the Department of Agriculture, conditions were favorable and it was thought advisable. I have also been following out a line of investigation in the islands of Cuba, Porto Rico, and Hawaii, looking up the conditions of producing sugar in those regions from cane, with a view of ascertaining the cost of production, the amount of production, and such items that might be of interest to producers of sugar in this country, in view of the fact that those islands are now becoming possessions of this country, and to a more or less extent competitors, under advantages that are different from what they would be if they were absolutely independent. Now, then, that gives you an idea of what my work has been.

Q. Now, you may take up and give us the information as you have mapped it out, and members of the commission will ask such questions as you go along as suggest themselves.—A. I made an outline in order that what I might have to say would be carried through in a connected way. Of course this is entirely informal, and I am at your service to answer any question at call in any way you want. I can start out with this outline and at any time you can, anywhere you desire to,

ask any questions. It would bring it under that particular subject and keep it connected throughout. If you so suggest, I will take it up.

Q. If you please.—A. The investigation of this beet-sugar industry, so far as introducing it in the United States, has led to the conclusion that it is governed by conditions of climate, soils, and moisture; and, taking up the question of climate, our investigations have rather led us to conclude that the experience of Germany and France, who have had the most experience with this industry, is about right. They have settled that a temperature of about 70 degrees during the growing months is about the best climatic condition. The growing months, for instance, in the Mississippi Valley, we might say, would be June, July, and August. The growing months on the coast, you know, would be different, planting in February or March, and even on the coast it varies greatly; but sugar beets want about 100 days of good growing weather. It would be hard to state for the United States the growing months, where there is no general period that would be considered the growing months, because the seasons vary. On the west coast they aim to begin to plant beets in some places in February. In some places on the coast they would expect to harvest some of their beets in some of the places in July and August, and some of those factories are so fortunately located that in the variance of the planting time and harvest time in the different valleys they can have some valleys that will come into harvest earlier, and so fortunately balanced that they can begin harvesting as early as August, and have beets ripening as they go along with the manufacture of sugar, and really have a longer time for the manufacturing campaign. You take in places like the Mississippi Valley, they would expect really to begin to harvest the middle of October, something like that, you know, and all the harvest comes in at once; and they desire about 100 days' campaign in growing the beets, and another hundred in completing the manufacturing campaign. This would also be true in States like Michigan and New York, and States where the climatic conditions are uniform over the State in any particular region.

Speaking of the soils, where we have succeeded in demonstrating that beets are a success, there are two divisions: First, such soils as we find in the Mississippi Valley and States like New York and Michigan, where the fertility is largely due to their alluvial nature, the black loam, which is the formation of decayed vegetation; and, second, the other kind would be that found in the Rocky Mountain States and out on the West coast, originally due to the disintegration of the rocks, a silt formation, rich in mineral matter. These two formations of soil are also different materially in their physical properties, which will come out in taking up the question of moisture, which I will mention. Now, we raise sugar beets in this country by rainfall; that is to say, under conditions where all crops are grown by rainfall. This condition we would have in the Mississippi Valley, Michigan, Nebraska, New York, and those sections of the country where the crops depend entirely upon the real rainfall at the time of their growing. When we reach the Rocky Mountain region, we grow sugar beets there by rainfall and by irrigation. The desire is to start the germination of the plant and the early stages of growth by rainfall, and then the rainfall usually ceases, and they have to promote the further growth of the beets by irrigation. Now, we have another condition that prevails out on the coast of California. The coast country is the most extensive grower of sugar beets and at the present time the largest producer of beet sugar. Nearly all the beets of California are grown without rainfall. You may say they depend largely upon the supply of rain in the winter, and then by subirrigation or underseepage toward the sea the beets receive their supply of moisture while growing. It is a condition our scientists themselves are not agreed upon. I am not a scientist, but I have gone to them to get an explanation as to this condition. It is a question they are studying, and what seems to be the case is that water falls in the mountains and sinks in the ground, and in these regions where sugar beets are grown through seepage, or natural drainage to the sea, we have underground or subirrigation. These beets secure their entire amount of moisture for growth in this way, and if the amount of rainfall in the winter is sufficient the crop of beets will be secure and good; but if they have a prevalence of drought like they have had during the last three or four years, they are going to have a shortage in their beets such as they have had the last two or three years, ranging from one-half crop in the northern part of the State to a very small crop in the southern part. Then we grow beets entirely by irrigation, such as is the method in New Mexico. I have aimed to outline the influence of soils and moistures and climatic conditions, and will be glad to answer any question you want to ask on that.

Mr. A. L. HARRIS. I have none just now.

The WITNESS. In starting the sugar industry, and in the introduction of it in this country, there are two sides to be considered. One is the farm or agricultural side, and the other is the factory side or conditions which prevail favorable to a

factory. The thing that the farmer must study is the soil and kind. Unfortunately there seems to be a sort of a general misunderstanding about the kind of soil. People generally and newspaper writers and those who have tried to promote the industry have seemed to get the idea that sugar beets want a light soil, a sandy soil. I think this error has grown out of the fact that the industry started in the first place in Nebraska, where the soil is very sandy, and so far as the country east of that could get the information in the United States proper, it would be through investigations in Nebraska, for if they got into the West coast country, they would have to study coast conditions that did not prevail in any of the Eastern or Mississippi Valley States. That country around Grand Island and Norfolk is too sandy, and is not really good beet soil, but that is where the idea started, and people who made their investigations got the idea that beet soil, to make a success, should be sandy soil. Beets will do well in most any soil, but to make the greatest success, they are like corn or any other product that we plant, they should be given the very best soil that can be secured. There are some soils that will not succeed with sugar beets. With a soil that becomes compact, or a soil underlaid with hardpan, we are sure to meet failure in beet growing. We must have the fertility in the soil. The plant food must be there. Beets require a good, rich soil. Sand in the soil is all right. Provided it is fertile it tends to keep it loose, so that it would not be compact like hard clay or muck, or anything of that kind; but it must be kept in mind that the soil must be rich and fertile.

Now, I had that in mind yesterday while listening to your Michigan people. I was all over the beet fields of Michigan just prior to the harvest. Those people evidently were working under the idea that they needed a light soil. They selected their light soils and they had a very poor crop. My own impression is (I have not seen the statistics, but my own verdict would be) that Michigan did not average over 4 or 5 tons to the acre last year, and one of the mistakes, I think, was that they not only carried out the idea of selecting a sandy soil, but such soils of Michigan have been in use a good many years, some of them 50 to 75 years, and many farms are worn out for other purposes and sure to fail in growing beets. It only illustrates the point I am making, that they must be fertile whatever their physical character. Some sand is all right and proper, but the soil must be fertile. It must be a soil that the beet can penetrate. The tap root grows down anywhere from 8 to 12 feet, and the reason it can withstand drought so well is that like alfalfa it can go down and hunt its moisture in the stratas below. This can not occur if you have a hardpan; a soil with hardpan will not succeed.

The beet will succeed if it has a reasonable amount of moisture and it gets once started. After it has reached a plant of, say, four leaves, it is a very hardy plant. Up to that time it is a very tender plant. That is about the time that the usual drought conditions set in in any of these States, but it has sent down its tap root and is able to draw on the deposits of moisture in the soil below and sustain itself and make a good crop when other crops might fail, providing it has a fair start. A growth of, say, 2 pounds or 2½ is what a factory desires in the size of the beet. That is the theory of cultivating the beets, and you are under contract with the factory to produce a crop of beets that will not go over so many pounds, because when a beet grows over 2 or 2½ pounds to the beet it is coarse in its texture and consistency and does not present as much purity as it would below that. So the factory in contracting with the farmer always stipulates that a beet shall not go over so much, and shall contain so much sugar and so much purity. The one thing that it needs is sunshine after it has attained this growth; then you want droughty conditions. It is sunlight and air that produces the sugar in the beet, the entire product of sugar in the beet coming from the atmosphere and being worked out by the sunlight.

Another thing that should be particularly looked after when starting an industry is the question of labor. It costs about \$30 an acre in almost any region to produce an acre of beets, and that is mostly for labor. In the talk yesterday I understood Dr. Kedzie to say that in thinning out the work was done by cross cultivation. Didn't you so understand it?

Mr. A. L. HARRIS. In a slight degree; but the real thinning had to be done by hand.

The WITNESS. Well, that is one of the most laborious parts of producing beets. You understand that you have to plant enough beet seeds to secure a stand; as he explained to you, 20 to 22 pounds per acre. It is simply to assure yourself that you are going to have every beet in its place, because every beet relies on every other beet to keep it down from growing in size—to keep it down from taking from the soil things it ought not to take; and when you have a condition of things that you have not a stand and have vacant spaces, the beet has too much ground to draw from both in the matter of growth itself and in the matter of

taking up from the soil impurities, or things that we know as impurities in the sugar sense.

In order to thin out it simply becomes a question of hand labor. A man goes along with a hoe and chops out these beets at proper distances, whatever may be desired—8 to 10 inches—and then he is followed by a man who goes along on his hands and knees and by a dexterous move of the hand simply puts his fingers over the beet plant that he wants to retain, and takes the other hand and clasps the ones he wants to remove, and removes all but the one. That is quite laborious and costs a great deal of money, and at that season there is a great call for labor, and in starting an industry in the country it should be where you are absolutely sure the labor can be obtained.

The other side of the proposition, as distinguished from the agricultural side, is the conditions that should obtain for maintaining a factory. The first requisite is that you have good, pure water. You understand that when the slices are put into the diffusion and the sugars are dissolved from the cells and taken out, this water forms the juice for evaporation and should be pure from the fact that in the process of manufacturing the sugar all impurities serve to impede the process of extracting the sugar and the process of manufacturing all the way through.

Another thing that must be taken into consideration is that you must be in a district where fuel is handy or can be secured at cheap rates, because the sugar factory requires a considerable amount of fuel.

It also should be in a region where a good quality of lime rock or of pure lime rock can be secured. Not the lime rock that is desirable, perhaps, for plastering purposes, that might contain magnesia, but where the element of lime is pure.

The factory should be located in a locality that has good transportation facilities and where transportation is reasonable in expense. This is the one thing that gives Michigan the special advantage in location of factories. She not only has railroads playing everywhere reaching the markets, but she has also water transportation that gives the factories markets that are accessible.

Another thing that must be taken in account particularly in locating the sugar industry, from the factory side of it, is that it should be favorably located for markets, and that is another thing for which the State of Michigan is favorable and the State of New York, etc.

At the present time we have established 30 factories under this stimulus of encouragement that has been going on through the agitation of the papers, agricultural societies, agricultural writers, the Department of Agriculture, and the ambition generally of the people of this country to produce their own sugar.

We have in operation at the present time the following factories located: In California, 8. I mention California first because it takes the lead, not in the number of factories, but in the amount of output. California has the honor of having the largest beet-sugar factory in the world, a factory that has a capacity for 3,000 tons of beets daily, giving it an equivalent in round numbers of 300 tons of sugar daily, as it is estimated that about 10 per cent of granulated sugar can be produced from beets. Michigan follows with 9 factories, of which 8 were introduced in the State last year. Nebraska comes next with 3. Utah has 2 factories and 1 subfactory, or a factory that is really an auxiliary to the main factory, which is located at Lehi. There we have a new feature which is just being introduced in this country. The Lehi factory has been in operation about 6 years. About 30 miles away they have established a substation, or what they call a rasping station. They carry the process there to the extent of extracting the juice from the beets and then piping it down to the factory, a distance of 30 miles, where the juice is carried through the same process as is that of the other beets sliced in the factory itself. This is an innovation in this country, and should the experiment here succeed it will have a tendency to revolutionize the status of the sugar industry in this country. It will then be possible to locate a sugar plant at some favorable point on account of its facilities for fuel, shipping, water, etc.; and then in other sections not so favorably located subfactories can be built, the beet juices being piped to the main factory and worked up and the product placed on the market under the facilities pertaining to the main factory. This would bring the substations in close relations with the farmers, and it would be as advantageous as if they were located near the main factory, since they would be able to secure their pulp for feeding the stock, dispose of their beets, etc.; and that is their main relation to the factory. The next State is Colorado, with 1 factory; New York, with 2; Minnesota, with 1; Illinois, with 1; Washington, 1; Oregon, 1; New Mexico, 1. This gives in all 30 factories in operation in this country participating in the campaign of 1899.

Q. (By Mr. CONGER.) Do you know how many are projected for this year in the United States?—A. At the time I made out my report I investigated that very

closely and there were 6, but since then I think some others have materialized. There is quite a number that are very near the point of building. There has been more or less hesitancy on account of the question as to what effect our new insular possessions will have, and what will be the policy with reference to them; but I think there is in the neighborhood of 6 or 7 that are being built this year for the campaign this fall. There are 2 in Colorado and 1 in New York, and I do not just recall the rest.

Q. One in Ohio?—A. Yes.

Q. One in Michigan?—A. Yes, there is 1 there. There are 6 or 7 of them.

Q. Can you furnish a list of these 30 factories, with their capacity?—A. Yes, I can do that very easily.

Q. And the 6 or 7 that are building?—A. Yes.

We are starting an industry in this country with which it may be said the people generally have very little acquaintance. Even the farmers themselves and the capitalists who propose to furnish the money to build the factories are very much in the dark. We are building up a new industry with the view that we have the facilities for furnishing the people of this country with their own sugar, and with the possibility in the future that we may be able to export as we have done in most other lines where such industries have been developed. But at the present time the general information along these lines is very meager and the consequence is that education and the consequent advantage that comes from it has to be largely derived from experience, so that almost every new factory in starting has a great many difficulties to meet.

In the first place, farmers as a class are conservative. They have settled opinions and convictions about growing crops in general, and when they come to the problem of growing sugar beets they undertake to apply such experience as they have had in growing other field crops, while as a matter of fact it is entirely different. Growing sugar beets is the very highest type of field culture. It is intensive farming; in fact it is gardening, and such rules as would apply to most other crops will not apply here.

For instance, the farmer is accustomed to growing the largest ear of corn; he wants the largest hog and the largest steer, but here he has to resort to a system that will hold his crop down to a certain size. He has got to follow rules that will tend to produce in the best certain features. It is quality that must be secured regardless of quantity. Of course his interest is in the quantity, but he must know and understand how always to produce the quality as well as the quantity. A sugar beet treated right, from the standpoint of agriculture, is everything; if neglected, it is nothing. The farmer has to know this, and he can only know it by experience. This is the difficulty met from the farmer's standpoint.

We find the same thing with the capitalists or the men who are going to organize the company and furnish the money to operate the plant. They know nothing about the process of making sugar; probably very little about the markets for the sugar or what they have to contend with in putting the product on the market or in preparing it for the market. They must secure a man that is an expert in the manufacturing and must depend on this man or men until such time as experience and experience alone has given the information that makes a successful manufacturer of sugar.

In starting this industry in this country farmers and business men must acquire this information through experience. Until such a time it can not be said that we are on the basis of producing sugar to our best advantage so far as the cheapness of the product is concerned, but we are only on the threshold of the introduction of this industry.

It may be interesting to note that in the introduction of this industry we are working out some problems of our own. I will call especial attention to the central-plant idea which is now being experimented with at Lehi, Utah, where last year a pipe line was established and the juice piped to the central factory for a distance of 80 miles. Upon that experiment another substation is being established in the other direction, and the juice will be piped nearly as far. It is contemplated that several pipe lines will be started from this central plant should these prove successful, and then the central-plant idea will gain permanence in this country; the plan being to have one main plant surrounded at various points at proper distances with subplants, which will carry the process only to the extent of extracting the juices and pumping the same to the main factory.

Another feature in connection with the sugar industry that classes us almost as experimenters in that line in so far as we have participated in the business, is the fact that our people are entirely unacquainted with the value of feeding the pulp, the by-product obtained by extracting the sugar from the beet. In Germany the pulp is dried and prepared for the market the same as flax-seed meal and other products in this country, and sells in the feed stores in those countries for about 60 per cent of what these products bring. Dried pulp has a market in Germany

of about \$1 per hundred. There is no feed known, where it is understood, that is the equal of beet pulp for the dairy cow or for fattening steers, or for sheep and lamb feeding, for mares and for hogs. Its special value is as a dairy food. At the present time very few of our farmers appreciate the value of this pulp for feeding, and it is a fact that very few of our factories are able to realize much from this by-product. When the industry was started in New York it was my prediction to the manager of the Binghamton factory that they would realize at least \$1 a ton for their pulp within two years. I based this conclusion on the fact that New York is an old dairy State, thoroughly familiar with feeding all sorts of by-products, such as malts from breweries, etc., and being educated along the line of feeding those sorts of foods, they would readily take up with the pulp. It pleased me to be informed in this commission room yesterday by the manager of the same factory that were he free to make contracts for his pulp to-day he could get \$1 a ton.

Whole dairy districts have been established in California, running train loads of milk into San Francisco, solely from the fact that they are able to secure this pulp, and the factory secured \$1 per ton. Pulp can be very readily preserved. There is probably no other crop or forage that can be fed to cattle or animals of any description that can be kept longer or easier than pulp. When the people of this country so far learn the value of pulp and the factory shall receive for it a fair value, then we will begin to appreciate some of the corollary features of attempting to establish the beet-sugar industry, because this pulp feeding will be the very foundation of dairying and stock feeding.

We have a by-product in the molasses. At the present time this is a big loss. In Europe several things are manufactured from molasses—alcohol, vinegar, shoe-blackening—but the thing we expect most from molasses is that Yankee ingenuity will show us a way of extracting the actual sugar that is in the molasses, therefore giving it a greater value than may accrue from using it as a by-product, and I offer it as one of the problems to be worked out in this country along with the central plant and pulp feeding, etc.

There is a great deal of hesitancy in this country on account of our falling heir to a great deal of territory which produces sugar from sugar cane, and of course capitalists hesitate more or less about investment until they shall know more about the policy that shall obtain with reference to these new possessions. It is understood that sugar can be produced very cheaply in these islands, but the one thing that I wish to submit in this connection is that we know very little about what we can produce sugar for in this country from the simple fact mentioned above—that our experience is so limited that we are not working under the advantages that will naturally follow when the farmer and laborer and mechanic and investor and the expert in the factory are all thoroughly posted in their lines and working to produce sugar at its minimum cost in this country.

Q. Can you submit any figures to show how cheaply this cane sugar is produced in Cuba, for instance?—A. Yes.

Q. For what price per pound?—A. I was just going to make a comparison. We are able to produce in this country at the present time beet sugar under the best conditions for about 3 cents per pound, the cost ranging from 3 to possibly 3½ cents per pound. In Porto Rico it was my privilege to make an investigation of the cost of producing sugar in that country, and after making a careful analysis of the cost through a great many factories, I found that they could produce sugar at actual cost to themselves and place it on our markets for about \$40 per ton—short ton. This does not figure in our tariff, which is \$1.68 per hundred weight.

Q. Two cents a pound?—A. Yes; 2 cents a pound.

Q. Refined or raw?—A. Raw.

Q. What is it worth to refine sugar?—A. It is worth about 65 per cent on the west coast, and about 55 on the Atlantic.

Q. That gives the cost of raising a pound of sugar in Porto Rico and placing it on the market here refined as something over 2½ cents, according to your opinion?—A. Yes; that is, actual cost to themselves, figuring no profit to anybody anywhere. While I made investigations along this line in Cuba, I had not the facilities or time for giving it as close an analytical study as I had in Porto Rico, but the conclusions I came to were that it would cost very nearly the same in Cuba. I have recently been making investigations along the same lines in the islands of Hawaii. There are factories there that can produce sugar a great deal cheaper than that, but the cost of producing sugar in the Islands of Hawaii, and shipping to this country is about \$40 a ton on the average.

The Hawaiian Islands have been sending us about 250,000 tons, in round numbers. Last year the shipment was 282,000 tons. About 50,000 tons of this has been going around the Horn to the eastern coast, and the rest is absorbed by the Pacific coast and what is known as the Missouri Valley trade. The Hawaiian Islands, when they shall have been brought in to produce everything of which they are capable, such as new lands, better cultivation, etc., will be able to send

us at their maximum about 450,000 tons of sugar annually; but this increase will be at a very much higher cost, because the sugar will be produced on lands that require more expensive pumping—that is, higher lands requiring higher elevations of water for irrigation, very much increasing the cost of production. Porto Rico has been producing about 60,000 tons. Porto Rico is capable probably of doubling this amount. She will probably be able at her maximum to send us about 4 or 5 per cent of our present consumption.

Q. About how many tons would that be—5 per cent of our present consumption? A. I gave 5 per cent because I had figured it to be about 5 per cent.

Q. How many tons in the aggregate do you think Porto Rico can send in the future?—A. She will probably double her present output.

Q. At present that is 60,000 tons, and you think she may be able to double it, which it would be approximately 5 per cent of our consumption?—A. Yes. I have forgotten just the figures. I know that is what I estimated it at the time. As to Cuba and the Philippines, the question is somewhat different. Cuba is capable of a large output of sugar. I understand the same is true of the Philippines.

Q. Have you been to the Philippines?—A. No.

Q. Do you know how much we receive from there at present?—A. Not a great deal. The Porto Rican and Philippine trade was entirely with Spain, and their trade with us has just begun, so far as sugar is concerned. Hawaii has been sending us all her sugar.

The one thing that gives to Porto Rico and Cuba and the Hawaiian Islands and the Philippines their great advantage in the cost of production is the cost of labor. In Porto Rico unskilled labor is 30 cents a day, the laborer boarding himself; skilled labor such as brickmasons, carpenters, etc., 60 cents a day. This would make the wages of unskilled labor about \$9 a month. In the Hawaiian Islands sugar has been manufactured largely with contract laborers. These laborers are in most instances Japanese. The contracts are for \$12.50 to \$15 a month, the laborer boarding himself and the employer furnishing living quarters, medical attendance, etc. If we shall start with California as a comparison in the production of sugar, there we find that the same kind of labor in California is about \$30 per month.

Q. You mean Japanese labor?—A. Japanese labor and Chinamen. This is the conclusion I have come to after very careful investigation along that line. Not over 20 or 25 years ago this same labor was paid wages on a par with that now received by the Japanese and the Chinese in Hawaii, but under the influences that operate in this country, one of which was the exclusion of the Chinaman, these wage-earners receive at this time \$30 a month. Now, if we take it for granted that these influences are going to operate in Hawaii, now that it is American territory, and there is no doubt that there is a tendency now, a very noticeable tendency, for increase in wages in Hawaii, we must conclude that the wage-earners of that country will finally be receiving something equivalent to what is paid on the western coast of this country. In that event it will cost as much to produce sugar in Hawaii and place it in our markets as it does at the present time to produce beet sugar and place it in the market.

Q. Your idea is, then, that those who engage in the production of beet sugar in this country have little reason to fear this competition from the islands?—A. Yes. Is that the idea you get from my talk?

Q. We get the idea from your talk that, in spite of our having acquired this territory, it is still a safe business to engage in here.—A. Yes; perfectly safe.

Q. In your opinion, then, the future of beet sugar in the United States is not menaced by this acquisition of territory?—A. I do not think so. I do not think island competition is going to be extensively started at once, and I think every year we are in it that our people will reduce the cost of production, and that the islands will be increasing in the cost of production—referring to the Hawaiian Islands and Porto Rico and Cuba. Now, one of the great problems with these planters in Hawaii is where they are going to get further labor. There is a rapid development going on there in all the lines, demanding labor, while there are about 50,000 Japanese, and about—well, I do not undertake to state—quite a large number of Chinese. The Chinaman is estopped, you know, from coming into that country, the same as in this. He begins to diminish, and there is a development all along the lines in Hawaii, demanding labor. That demand is getting too great, and there is a tendency for wages to increase very rapidly, and that tendency is true in Porto Rico and Cuba. I notice all through those countries there are strikes for 8 hours a day and for stipulated wages. It sounds very much like agitation in this country already to hear the demands they are making, all stimulated by emissaries of organized labor in the United States proper.

Q. (By Mr. CLARKE.) So long as there remains a considerable difference in wages between those possessions and this country, and while our beet industry

here is still young and slowly growing, what would be the effect upon this domestic industry of importation of free sugar from these possessions?—A. We already have it free from Hawaii.

Q. Certainly; and have had for a long time.—A. If it is not to be a precedent on what shall happen further along with Cuba and the Philippines, I should say it would not have any effect so far as Porto Rico is concerned, or possibly so far as the Philippines are concerned, for a long time, because they have not the sugar interest developed there.

Q. Do you think there would be any effect of discouraging men from establishing factories or farmers from growing beets?—A. No doubt. I thought you meant what would be the effect in discouraging. There is no doubt it is very important; that it would discourage starting that industry a great deal. The very agitation of the question, you know, hurts the prospects all over this country.

Q. But you believe that the domestic market here is so large and likely to grow so much that we can consume all the sugar that we can produce and all that we would be likely to import from these possessions?—A. Yes; for a long time. The growth and development and increase in demand for sugar has been at a very rapid rate. I think it figures out an annual increase of 12 per cent, according to statistics compiled by Dr. Wiley, based on the statistics for the last thirty years.

Q. Have you compared the cost of producing cane sugar in Louisiana with the cost of producing beet sugar in the North?—A. I never gave that the careful comparison that I have of producing sugar in the islands, but the cost of producing sugar in Louisiana is considerably higher than it is in these tropical islands.

Q. (By Mr. A. L. HARRIS.) Why is that?—A. It is the difference in wages largely, and the difference also in adaptability. Cuba and Hawaii and Porto Rico, I suppose you might say, are more natural cane producers—produce heavier, and they produce longer.

Q. How long will cane in Cuba produce from one planting?—A. Oh, they get readily from 3 to 4 ratoons. Hawaii don't produce so readily in ratoons, but it produces a large tonnage. Take the leading plantation of the Hawaiian Islands, and it produces 10.1 tons of sugar per acre. I should say the sugar average on this plantation is a larger average than some States makes in beets, but for all the islands the average is about 5 tons per acre. I should say, with reference to this sugar industry, that it will develop in this country very rapidly, provided we do not hurry the idea that these tropical islands of ours are going to come in with free sugar, giving our own sugar industry a proper show in this country to start, and that the final result would be that we would all be producing sugar successfully. Our sugar districts here would be producing sugar a lot at an advantage.

Q. How could that encouragement be made?—A. Well, that depends. I myself am in favor of the tariff idea, providing that it is constitutional, because they produce sugar at a cost down there that they can pay a fair tariff and at the same time afford to make sugar. Under the present arrangement the American Sugar Refining Company and the combinations which we all understand control the sales of sugar have contracts with the planters of Hawaii to take up their sugar and refine it and put it on the market in this country, sharing, at a certain stipulated rate, in the profits. That information, I think, is pretty reliable as to Hawaii. I understand that the same thing is true with reference to handling sugar from Porto Rico. That being true, the only people that are interested in the free-trade proposition in Porto Rico would be the two people—the one who makes the sugar and the other fellow, who takes it and sells it—and not the masses, as the planter in Porto Rico is a foreigner both to Porto Rico and the United States, as a rule.

Q. (By Mr. CLARKE.) Have you studied the subject of bounty on sugar by the States in this country?—A. I have given that considerable consideration.

Q. What do you think about it?—A. Well, I think, in one sense, it is all right. I think it has a tendency to establish the industry in a State; I think it encourages it; but I think it produces inequality, because some States do not give any bounty. There are States that do. Take a State that might be qualified under all its conditions for starting an industry better than some State that offers the bounty, and the bounty State starts the industry. Those bounties are never carried out. The contract that the laws originally implied when they were put on the statute books are annulled as soon as the factory is started and the money begins to be drawn out of the treasury. The movement is started to get them off the statute books. Take the suits in Michigan. There are 8 or 9 factories that have started suits, claiming their rights under the bounty, and I think the bounty had a good deal to do to stimulate the starting of those factories. I do not think the bounty is really necessary for a factory to operate and succeed. I think a bonus is altogether wrong to offer. Well, in fact, nobody talks bonus any more.

Q. (By Mr. CONGER.) Are there any other States where manufacturers have had a similar experience to that in Michigan?—A. Yes.

Q. Where?—A. Nebraska has had exactly the same experience. They offered a bounty, and two factories were started, and then the next legislature refused to make the appropriation to pay it, and it went into the courts. I guess it is not decided yet.

Q. You say it did go into the courts?—A. Yes.

Q. Then the law was declared unconstitutional in Nebraska, or don't you know?—A. I do not know; never knew what the final disposition was.

Q. What would be your idea as to bounty; should it come from the National Government?—A. My idea is that a bounty, if anything at all, ought to be general.

Q. What do you mean by general?—A. Well, I mean national. The State of Iowa now refuses to give a bounty, but they exempt from taxes all investments of that kind for a series of years. Something of that kind, I think, would be practical. But, now, there is the State of Michigan, whose bounty is to be paid by taxation; you see they have a burden there. There must be something like \$300,000 in claims there.

Q. Claims for the last year; yes.—A. That is quite a heavy burden to a State like Michigan, and yet they have it on their statute books. I do not think, really, that a State bounty is necessary. I think there is enough in the proposition in itself, for the older factories are all doing well—all succeeding. Where they have continued for any length of time I do not think the bounty is really a necessary feature. To start with, of course, it is a very nice thing for the first year, because it takes them a year or two to really get themselves adjusted to their conditions.

Q. Your idea, then, if I understand you, is for them to offer it for a short period, say 2 or 3 years?—A. Yes. Of course I look at it from a general standpoint, without reference to any State, and I think the results of State bounties are not the most favorable for the general introduction of the industry in the country at large. One State offers a bounty and another don't. The offering of a small bounty for 2 or 3 years is probably not a bad idea, but should be limited in total amount and time to run.

Q. (By Mr. A. L. HARRIS.) What proportion of beets in California is raised by Chinese and Japanese labor?—A. I do not know just what proportion.

Q. Very largely?—A. Very largely. There are only 2 factories there where some other particular foreigners are supplied—foreigners that are accustomed and used to that sort of labor, where they attend to it; but the rest of it is done largely by Chinese or Japanese.

Q. How is that done; by hiring the man by the month or by the day, or by giving him a job?—A. They usually, you know, contract the work by the acre. The principal part of the work, you understand, is bunching and thinning and hoeing and weeding. Most any farmer can cultivate any amount of beets, as far as horse cultivation is concerned, but they contract with the laborer that he shall thin and bunch, and hoe and weed, and harvest and pile the crop for so much an acre.

Q. Is that contract made with one man for the entire plantation, or is it made by each individual taking a small contract?—A. Well, made both ways; made with each individual or several in combination, or some fellow furnishes a bunch of laborers and they make the contract with him.

Q. Does that come seriously in competition with the white labor?—A. Well, that kind of labor is nearly all done by Chinese and Japanese.

Q. Does white labor desire that kind of occupation?—A. No; nearly all vegetable raising and gardening, and all that sort of work, is largely done by Chinese and Japanese.

Q. Is Mr. Oxnard interested largely in the manufacture of sugar in California?—A. Mr. Oxnard has 2 factories; that is, his company, the American Beet Sugar Company, has one at Chino and one at Oxnard.

Q. Is he interested in the Nebraska company?—A. Yes; they have 2 there—1 at Grand Island and 1 at Norfolk.

Q. Do the companies that Mr. Oxnard is interested in control the industry to any extent?—A. I think not; they are building another large one now in Colorado.

Q. Is it a trust in any shape?—A. That is, the Oxnard factories?

Q. Yes.—A. Well, I do not know myself; just that those factories are all the American Beet Sugar Company. I do not know what the plan of organization is.

Q. What influence have they over the other beet-sugar factories?—A. Not any, I think, outside of the American Beet Sugar Company's factories. The rest are all entirely separate.

Q. (By Mr. CLARKE.) Those Oxnard factories number only about one-eighth of the beet-sugar factories in the country at the present time?—A. Yes; there are 30. This company owns 4 and is building another; that would make 5.

Q. Others being built in other parts of the country?—A. Oh, yes; I think the other factories act entirely separate and independent.

(Testimony closed.)

WASHINGTON, D. C., June 6, 1900.

TESTIMONY OF MR. ALEXANDER CLOHAN,

Farmer, Martinsburg, W. Va.

The commission met at 10.50 a. m., Vice-Chairman Phillips presiding. At that time Mr. Alexander Clohan, of Martinsburg, W. Va., was introduced as a witness and, being duly sworn, testified as follows:

Q. (By Mr. A. L. HARRIS.) You may state your name, your post-office address, and your occupation, please.—A. Alexander Clohan; Martinsburg, W. Va. Occupation, now, at present? I have a double occupation now.

Q. Well, what has been your occupation through life?—A. Mine has been farming; that is, for the last 25 years. I was not raised at farming.

Q. (By Mr. FARQUHAR.) Have you any official position now?—A. Yes; post-master at Martinsburg, at present.

Q. (By Mr. A. L. HARRIS.) How long have you been farming?—A. About 25 years.

Q. How extensively?—A. I have about 260 acres, and am in the fruit and truck business principally.

Q. Do you engage to any extent in ordinary farming, such as stock raising and wheat raising?—A. Only to a limited extent.

Q. You have been principally fruit raising?—A. Yes; that is, for the last 10 years at least dritted pretty much from the other—got out of that into the fruit as rapidly as I could.

Q. How extensively are you engaged in raising fruit?—A. I have about 60 acres under cultivation at present.

Q. Apples?—A. Apples, peaches, plums, and berries.

Q. Where do you find a market for your fruit?—A. Well, largely in New York; New York and Philadelphia are our markets.

Q. You may state, if you will, whether there has been any increase in the number employed in agricultural labor in your section of the State in the last 15 or 20 or 30 years.—A. No; I rather think there has been a decrease.

Q. To what extent?—A. Well, I would suppose it was one-fourth less.

Q. Why is that?—A. Well, I think largely from the fact that at that time we did not use any binders; there were no selfbinders used in the grain; all that was cut by the cradle, and the fact that in our country 15 years ago there was a good deal of meadow that was cut by the scythe. At present that is all done by the use of the mower, the hayrake, and the hayfork, and all the other implements; in short words, by the use of improved machinery.

Q. What effect has that had upon the condition of those that remained upon the farms—the laborers?—A. Well, they do not have as regular work now as they did 15 or 20 years ago. The season is pushed harder from the time we commence work and hurried through more rapidly than it used to be. Everyone at present aims to get his crop in just as hurriedly as possible, and wind up the farming season just as quick as it can be done.

Q. Is the work harder for the labor or is the drudgery taken off to some extent by present methods?—A. The drudgery is taken off to a great extent.

Q. Is work more desirable now than it was formerly?—A. Apparently it is, but there is a contradiction right there; the farming labor does not seem to be as good really as it was.

Q. Why is that?—A. Well, I think with our most intelligent young men it is the fact that better wages are paid in the cities and towns, and the most intelligent labor leaves the farm and goes to the town.

Q. Are the inducements greater in the factories in the towns than they are upon the farm?—A. Yes, from the fact that the hours of labor are not a great deal over one-half, and wages fully a half better.

Q. What is the comparative expense of living in the city as compared with the country?—A. Well, the ratio would be equally as great the other way. It would cost a half more, maybe more than half more, in the city.

Q. (By Mr. PHILLIPS.) Then, would they in the end get more by working in the city, do you think, than on the farm, considering the necessities—clothing, board, etc.—that they would require in the city?—A. Yes; I think an industrious and frugal young man, at the end of 10 years, would be decidedly ahead in the city.

Q. Decidedly ahead in the city?—A. Yes; that is, if industrious and frugal.

Q. (By Mr. FARQUHAR.) In the matter of wages, do lumbering and coal mining offer better inducements than the farm?—A. Yes.

Q. Well, have not a great many of your overplus of farming hands gone into

mining and into lumbering?—A. No. Where we are situated the most of our hands that leave us go largely toward Pittsburg and McKeesport and over in that direction, going into the manufacturing works. Some few go into mining, but not many.

Q. (By Mr. PHILLIPS.) The mines are generally worked by foreigners, are they not?—A. Yes; and I have found in my experience that generally miners grow up at that business and leave it for something else; but there are not many men that come up to the age of 21 or 22 that become miners afterwards.

Q. (By Mr. FARQUHAR.) Is the majority of your farm labor there American or foreign?—A. We have, I might say, altogether American.

Q. The foreign labor, then, goes into the lumbering and mining?—A. Well, now, I will not say that. A great many go to the lumbering, of course; but more of them go to the manufacturing. A great many have gone up into the lumber interest; and that is the better class of our American labor that goes often there.

Q. What foreign nationality predominates among your immigrants there?—A. We have very few foreigners: exceedingly few; not enough to make any impression; none whatever.

Q. (By Mr. PHILLIPS.) Then, do you have difficulty in getting American labor to do your work on your farms in your section?—A. Just now we have.

Q. (By Mr. FARQUHAR.) In the matter of intelligence, is the farming class really much ahead of what they were 15 or 20 or 25 years ago?—A. No; I really do not think there is very much advance.

Q. Have you made much advance in educational facilities there?—A. No; about the same. One month's schooling may probably have been added all around in the county in the last 15 years.

Q. (By Mr. PHILLIPS.) You have better schoolhouses and better accommodations for the pupils than you had 15 or 20 years ago, have you not?—A. Yes; there is an improvement in that line.

Q. And really better instructors, too, have you not?—A. Well, I do not know.

Q. (By Mr. A. L. HARRIS.) What are the hours of labor on the farm in your locality?—A. In our locality it is from daylight to dark.

Q. What time have you for taking meals?—A. Generally give them just long enough—until the horses are done eating. That seems to be the dinner hour.

Q. What is the average number of days your labor is employed in the year, about?—A. We generally have, say, from the 1st of April until the 1st of January—that is, the hands are generally hired for that length of time.

Q. About 9 months?—A. Yes.

Q. What is the pay?—A. Where the hands are boarded it is running from \$8 to \$15 a month.

Q. What is included in that except board, anything?—A. Nothing but board.

Q. No washing or mending?—A. No.

Q. Nor horse pasture?—A. No.

Q. How much do you pay them where the man boards himself?—A. We pay from 75 cents to \$1 a day. In the harvesting and busy season now we have to pay \$1; other times we get hands at 75 cents.

Q. How many days in a year will the transient labor be employed, usually; those that work by the day; irregular, we had better say, instead of transient?—A. It is a little hard to answer because there some of our day laborers, the better class of them, get almost constant employment. The others, the trifling fellows, we only hire just when we have to.

Q. Does that include rainy days as well as good days?—A. No; there is no employment there much for the irregular laborer in the wet; not any work on the rainy days.

Q. These irregular or day laborers, do they have permanent homes in the vicinity in which they work?—A. With us a great many of them have their own homes.

Q. Their own homes?—A. Their own homes; yes.

Q. Are very many of those men who have their own homes employed by the month or by the year?—A. A good many of those are monthly hands; some of them seem to prefer that way of hire.

Q. Working from the 1st of April until the 1st of January?—A. Yes.

Q. They own their own homes, as a rule, or does the farmer furnish them a home?—A. I think that fully a half of the labor in our county—I am only speaking of the county because we have peculiar conditions there—half the labor in Berkeley County own their own homes, coming from this fact: We have the North Mountain dividing the county, running up through it, and a great many get little homes along the mountain there, land being very low in price along the mountain. Then we have a belt of pine land running up through which is very cheap again, so that the men can get an acre for \$10 or \$15, and put up their houses. I

do not think that condition exists in West Virginia by any means, but I am merely speaking now of the county, as the facts are there.

Q. When the landlord owns the tenant houses what are the usual terms on which he lets to the renter?—A. In one or two cases there that I know of—not many—they pay about \$100 to \$150 a year, furnish a house, garden, cow pasture, and run, maybe, for two or three hogs. Several of our better farmers provide that sort of condition for their tenants.

Q. Does that custom prevail throughout?—A. No, not to any great extent; very limited.

Q. What is the character of the houses?—A. In those cases they are fairly good; about four rooms.

Q (By Mr. PHILLIPS). How is it with the class that live along the border of the mountain that you speak of? What kind of houses do they have?—A. They are very poor. They are nothing; very poor class of houses; one or two rooms and not much accommodations of any kind about them.

Q. (By Mr. A. L. HARRIS.) How much of a living does the tenant get from the privileges granted him by the landlord where the landlord owns the house and rents to the tenants who work for him?—A. Well, in a great many cases they raise enough potatoes or something of that kind to do them during the season, and cabbage and other vegetables, they raise that.

Q. The hand would have to buy—A. (Interrupting.) The flour and—well, there are some few of the better class that put up some meat, you know; say kill three or four good hogs; but it is a rare and exceptional class; they soon become farmers. This class of laborers in a very few years become renters.

Q. (By Mr. PHILLIPS). And then from that do they come to be owners of land after renting, as a rule?—A. There are a good many that have. Yes, I know quite a number that have.

Q. (By Mr. A. L. HARRIS.) Become farmers?—A. Become owners; yes.

Q. (By Mr. FARQUHAR.) Have your lands changed ownership quite frequently within the last 20 years?—A. There has been a considerable change within the last 8 or 10 years.

Q. What is the particular reason of that?—A. I think with us there were a great many men that were pretty badly involved, maybe, after the war, or bought when prices—well, at the war prices you might say, and they kept on struggling and struggling and trying and were able to pay their interest up to, probably, 1893, when the panic came on, and a great many of them had to go into liquidation, you know, and there have been quite a lot that were sold out. Probably more land changed hands for that reason, and settling up old estates that had been in liquidation for years. That has made many changes in our county for the last 3 or 4 years.

Q. Then did not the dividing of the States—productive lands—into smaller parts make a good deal of difference? Were there not some large estates in lands that it was impossible to get anything out of them in the body, the owners not having sufficient means to carry on the farming?—A. No; not to any extent in those two counties. Now, in Berkeley and Jefferson what are counted large farms there would be 300 acres. Three hundred acres is counted a pretty large farm there. We do not run much into those great plats.

Q. Your farms are getting smaller in area, are they not?—A. Yes; there are some of them being divided.

Q. Now, was it not the fact that mortgages or debts or incumbrances on those lands there caused a change in the ownership?—A. Yes; I think that was the cause.

Q. And did parties come in there that had little means, who were farmers, to take up those lands?—A. No; it came largely from the fact there of these people not being able to meet their obligations; struggling on, you know, until the depression came and they simply could not struggle any longer and they were sold out by the courts.

Q. Well, otherwise these men were land poor, as the expression is?—A. Yes; that is about it.

Q. (By Mr. A. L. HARRIS.) Have you any colored labor in your locality?—A. Probably one-fourth of the labor of our county is colored.

Q. What is the character of that?—A. The older class of the colored labor—men that are pretty well up in years—are a first-rate class of labor. The younger class, especially where they have a mixture of white blood in them, are a very trifling class of labor. We find that the black man is a far better laborer than the yellow man.

Q. Does he work on substantially the same terms that you have described as pertaining to the day white laborer?—A. Yes; only a great many more are hired

by the day than there are by the month, coming from the fact that farmers do not like to have to bother their women folks to have to arrange two tables and all that; so as much as possible they let them board themselves, and they are usually hired by the day, not so much by the month there.

Q. Are they trusty as a rule?—A. As a general thing they are.

Q. Work by themselves without slighting their work?—A. Yes; you can trust them pretty well. Generally pretty good to their horses, you know, and everything like that. Probably not as brutal with teams and one thing and another as you will find some of the whites.

Q. Do they supply to some extent the deficiency that you speak of of the labor going to the town instead of remaining on the farm?—A. Yes; but they have commenced to follow the same practice.

Q. They drift to the town, also?—A. They drift to the town, also.

Q. Does the white man who works by the month or by the day eat at the same table with his employer as a rule?—A. To a considerable extent. There are very few cases in which they do not.

Q. (By Mr. PHILLIPS.) But the colored labor do not?—A. No; there is no such thing allowed in the county whatever.

Q. (By Mr. A. L. HARRIS.) Have you a separate school for colored children?—A. Yes.

Q. What are your school facilities for both white and black—are they good?—

A. Yes. We can give from 6 to 8 months schooling to all.

Q. To all up to what age?—A. From 6 to 21.

Q. Have you a sufficient population of colored people to have good schools in all localities?—A. No; there are plenty of colored children that have to travel 3 and 4 miles to get to their schools on account of the sparse population. Some districts will only have 1 colored schoolhouse in the district.

Q. What do you call a district?—A. Well, our magisterial districts, answering to your townships.

Q. So many miles?—A. Yes. We have no townships; we have magisterial districts.

Q. Well, is that sufficient to give both the colored children and the white children good school facilities?—A. Yes; I suppose as good as could be devised without mixed schools, which would not work. Of course, for instance, if there is a schoolhouse in one district, why that is not made positively for the children in that district. All those living contiguous to it will be allowed to go to it, and then it is divided up pro rata between the districts. For instance, some of the districts have no colored schools because there are districts around them that have them, and their children are better supplied by having that than they would be by having one of their own. They simply pay their share.

Q. Are your colored schools taught by colored teachers?—A. Yes.

Q. Are they well qualified?—A. Yes; I believe that our colored teachers there are pretty well qualified.

Q. Is the course of study the same in both the colored and white schools?—A. Yes; just the same.

Q. (By Mr. FARQUHAR.) Is the school term the same in the white and the colored?—A. Yes; no difference.

Q. Established by law, is it?—A. Yes.

Q. (By Mr. A. L. HARRIS.) Are your colored teachers both male and female?—A. Male and female.

Q. (By Mr. PHILLIPS.) Which predominates?—A. Male.

Q. Which predominates in the white schools there?—A. Female—4 to 1.

Q. (By Mr. A. L. HARRIS.) Have you ever observed the qualification of the colored teachers?—A. Yes.

Q. Are they good or indifferent?—A. I think they are good. I think that they are very rigid in the examination of a colored applicant for a school. He has got to face a pretty rigid examination.

Q. And you have plenty of teachers?—A. Plenty of material.

Q. To supply the want?—A. Yes.

Q. How proficient do your colored children become in your school?—A. Just like the white children; some of them pass away up; can go into any sort of business, you know; others of course are just the reverse.

Q. Have you any suggestions to make in regard to your school facilities for either colored or white, or amendments to your school law?—A. Well, this is only an idea; I would like to see some of the branches taken out of the public schools and something more directly pertaining to agriculture put in.

Q. Now, if you have anything to suggest upon that line, please do so.—A. Well, I think that for the average farm boy it would be far better to give him an idea of botany and agricultural chemistry than to teach him the languages.

Q. You do not teach the dead languages in your common schools, do you?—A. We do in our towns there; yes.

Q. Well, I had reference to the country.—A. Well, a great many of our country boys go in, you know; go into the town; all that can reach the town school.

Q. To what extent would you teach branches pertaining to agriculture in the country schools?—A. Well, at least enough to develop a thorough taste for the studies; to make them interesting to them, both botany and chemistry. I would like to see them experimental, so that the children would be taught to know the reason why plants grow, and all that, and what they were fed on.

Q. Would you have text-books on that subject or lectures by the teachers?—A. I would prefer text-books.

Q. And require an examination for the teachers on that line?—A. Yes; that would be my idea.

Q. Have you ever suggested that amendment to your school law?—A. No; I have never been in a position when I could; I have had no chance of offering suggestions.

Q. Where is your experiment station?—A. Our experimental station is at Morgantown.

Q. You might briefly outline the work at your experiment station at least.—A. Well, our experimental station has spent a good deal of its time in what a great many of us thought was foolishness, proving that lettuce could be raised successfully under electric lights, and mushrooms could be grown under certain conditions, and that cucumbers could be made in a hothouse—you could raise them to have them all winter—and a great deal of that which we all think would be a great deal of benefit if we were all retired millionaires and were running our conservatories, but we do not exactly see where it interests the fellow who has bought a farm and only paid \$1,000 on a \$5,000 or \$8,000 farm. We do not see how it is going to help that fellow out.

Q. You think it is not entirely practical?—A. I think that a great deal of their experiments are of no practical value to the farmer.

Q. (By Mr. FARQUHAR.) What do you say to the practical feature of the analysis of soils, independent of plant raising? How could you ever find how to raise anything at all unless you knew what your soil was and what it lacked?—A. The schools would teach this after thorough training. I think you can almost learn by the eye. If a field was very luxuriant in its growth, we would say there was an abundance of nitrogen in that soil; that there was not any use of adding any to it. If the growth was very poor and scanty, we would say that it wanted nitrogen. If the fruit did not color well, why we would at once think that potash was what was needed or phosphoric acid to remedy that; but I do not think that it is practical to analyze soils, because there are so many conditions in one field. You might take a sample of the soil at this end of the room and at the other end, and it would be of a totally different kind. We have been trying that in the last year; sent a lot of soil samples down, quite a lot of them.

Q. (By Mr. A. L. HARRIS.) The experiment in the chemical laboratory is as to what the constituents of your soil are?—A. Yes; of course, every farmer has got to be continually experimenting.

Q. What do your farmers raise mostly upon their farms—those engaged in regular agriculture?—A. Wheat and corn. They are the staples.

Q. Are they grown pretty successfully in your climate?—A. Yes; both.

Q. What succeeds best in the way of fruit in your locality?—A. Well, on our uplands the apple and peach are the two great crops.

Q. What are your hopes for the future in the fruit raising?—A. We hope to make our county the greatest fruit county in West Virginia.

Q. (By Mr. PHILLIPS.) Can you raise plums?—A. Yes.

Q. Cherries?—A. Yes.

Q. With success, and pears?—A. Yes; the cherries with us come spontaneously. We are in an upland like that Piedmont Valley. They have the same conditions. They grow up. Every fence corner has a cherry tree whether you ever planted any or not.

Q. What kind of cherry trees?—A. Well, what we have are always sweet cherries, black hearts, gray hearts, and red hearts, and all those different heart cherries. They grow spontaneously.

Q. They were not there originally?—A. No; I suppose they were brought there from some source and simply grew up.

Q. Do you not have wild cherry in that section? Have you what is called wild cherry?—A. That has been nearly all out. It grows up in very good shape.

Q. (By Mr. A. L. HARRIS.) Where do you market your fruit?—A. Very much in the Eastern cities, Philadelphia or New York. Occasionally when there is a failure in the West we go to Chicago and Cleveland.

Q. What are your facilities for marketing?—A. Our facilities are splendid. We get into Washington here in some 3 or 4 hours; get into New York in 8 or 9 hours; Philadelphia in about 6; Pittsburg in about 6; Cleveland in about 12. We are located so that we can, by wiring, generally find the condition of the market, and we can ship from our place whichever way we want.

Q. Do you ship by express or fast freight?—A. Those who have shipments of any extent to make are using the fast freight. Those of us who have been small shippers, like myself, have the express; and there comes in the trouble to the fruit grower.

Q. You may state that trouble, if you will.—A. In shipping a crate of peaches to New York, to ship by fast freight with the refrigerator cars costs 17 cents a crate—that is about what it costs—and if we put them in by express it costs from 50 to 60 cents. The difference between the two is more than the price of the fruit.

Q. (By Mr. PHILLIPS.) More than the profit?—A. Yes; a great deal more than the profit. It is so much so that one man can get along first rate and the other man does not get anything. That is the greatest drawback to the small grower that we have.

Q. (By Mr. A. L. HARRIS.) Have you any complaint to make in regard to your facilities for shipping by fast freight?—A. No; not where we are able to have a quantity. The only thing is now to have a quantity. If we are shipping 500 crates a day—that is, a carload—we have no reason whatever to complain; but we can not get out if we have only 100 crates; we are just simply left out.

Q. How do you overcome that trouble?—A. We are attempting to overcome it. We planted last season some 40,000 trees, 8 or 10 of us together, at the same periods and at the same time, thinking that we would get together when this fruit will come to bearing and always can ship by carload. That was the only way that we could plan to get out of it. We found out, by planting just a few acres and only having 25 or 30 crates to haul in a day, that whatever we can not sell at the local market we might as well throw away. The express company gets it all.

Q. You can not ship part carload lots?—A. No; we have got to get carload lots. Our biggest growers now cut their own ice and ice their own cars and everything—our largest growers.

Q. Has that experiment been operated long enough to know what the result will be?—A. Yes; I think that the Allegheny Orchard Company has proven that that is the proper way to do it.

Q. (By Mr. FARQUHAR.) Where is the Allegheny Company located?—A. Up in Hampshire County, right above us.

Q. (By Mr. A. L. HARRIS.) That is a company?—A. Yes; it is. We are all of us individuals. We have no company in our county. We are individual growers.

Q. You expect to work together?—A. Yes; just simply cooperation among neighbors; that is, on the last planting that we did.

Q. (By Mr. CLARKE.) In other words, you entered into a sort of combine to beat the express company, did you not?—A. Yes; tried to see if we can not in some way save part of that freight.

Q. (By Mr. PHILLIPS.) How much land has this company of which you spoke, the Allegheny Company?—A. They have now about 600 acres.

Q. Are there any larger plantations than that in your section or in your part of the State?—A. No.

Q. That is the largest?—A. That is the largest.

Q. And only 600 acres?—A. Yes; that is, in bearing. They have about 1,000 acres altogether.

Q. What do you chiefly raise?—A. Nothing but peaches; they are totally in the peach business.

Q. (By Mr. FARQUHAR.) How long since your section of West Virginia went into fruit raising?—A. It is not over 15 years since they commenced to plant to any extent. There was but one fruit grower in the county before that. That was Mr. Miller, and his sons now are at the head of all the fruit industries in that end; this Allegheny Company and all the others.

Q. (By Mr. A. L. HARRIS.) Are the natural conditions of soil and climate favorable?—A. Yes; very much so.

Q. (By Mr. FARQUHAR.) The inducements, of course, of forsaking general farming and going into fruit raising are such as to make the fruit raising somewhat permanent in your section?—A. Yes.

Q. In other words, you are making more money substantially, year in and year out, than you did before in general farming?—A. Yes; those that have gone into it have more than doubled what the others have.

Q. (By Mr. A. L. HARRIS.) I wish you would state to the commission whether you have any trouble in marketing your product after it reaches the place of destination. Probably you might describe how it is marketed at that place.—A. Well, if any of you have ever had experience in shipping to commission houses—I do not know whether any of you gentlemen are commission merchants or not—but I can just describe it, as I asked Mr. Miller one time about a certain party, and he says: “I think he will cheat you a little less than any of the other fellows.” That was the highest term that he could get as regards the honesty of it. Well, now, that is not my impression, nor was it Mr. Miller’s. Mr. Miller just said that. I know some of them that are men of the very highest honor and integrity—I am certain of that—in the commission business; but it is very uncertain, shipping to the commission houses.

Q. (By Mr. PHILLIPS.) They make claims that it is damaged when you think it is not, probably; something of that kind?—A. I think there is more done in this way: That they have favorites, maybe the canning houses; that they will often unload a fine car as being damaged, when there was not any damage. For instance, I shipped to a party 100 crates on a Monday to Pittsburg. Now, we picked on Monday and shipped Monday evening. We thought that we were a little closer to the Pittsburg market than anybody else, and I looked for a drop in peaches; I thought that the time had come when there would be a drop. Well, those peaches arrived there and were sold on a Tuesday. On Tuesday I shipped 50 crates. When the returns came in for the 50 crates that we shipped the latest day, I think that I got \$1.50 a crate, but I was notified that the 100 crates had arrived there in the glut, and I think I got about 40 cents; so I was satisfied that there was something wrong.

Q. (By Mr. A. L. HARRIS.) Did you investigate?—A. There was no use for me to go and investigate.

Q. Have you any suggestions to make to better the condition of the shipper?—A. No; it does not seem to be practical.

Q. (By Mr. FARQUHAR.) Can you not make those combinations among yourselves, on the receiving and selling, and have a party in these large cities, a man known to yourselves?—A. No. For myself I have about solved it this way: To hunt out a man that I think is thoroughly honest—a commission man—and just trust him implicitly; just put the crop in and try to put it just about average; just ship the same thing right straight through; it does not do to go off and change your market every day or two. Whenever some other fellow offers you some great big price, why, look out.

Q. He is going to make it up?—A. Yes. It is hard to combine, for the simple reason that the farmer is not any more honest than anybody else. If I ship my fruit first class and the other fellow puts all his knotty and wormy ones in, and we put them in the car and pro rate them, you can see where the trouble is when they get down there.

Q. (By Mr. A. L. HARRIS.) You have to select your fruit when you ship together?—A. Yes; and that is a difficult thing to arrange. The fact is, I am puzzled a good deal about it.

Q. What are the earnings of capital invested in agricultural property as compared with capital invested otherwise?—A. Through our section the landowners claim that about 3 per cent is about what they get out of it; that is, the landowners.

Q. Now, does that mean 3 per cent after a living is taken out?—A. No; those are the owners, not the men that till. The landlord claims that he gets about 8 per cent; that is about all that the farms now are paying. That is on this basis: That the tenant will give him two-fifths of the products of the farm, and that those two-fifths will give the landlord about 3 per cent on the money invested.

Q. You might right there touch upon the subject of crop sharing—what the terms are.—A. Well, that is the general way. The tenant finds everything; the landlord has nothing whatever to do, and the tenant delivers wherever the landlord will say, we will say, will deliver two-fifths of the gross product of the farm, not the net—two-fifths of the corn and the hay and the wheat. The fodder and straw, of course, is retained on the farm. But if the landlord finds the teams and everything, the tenant gets one-third of the proceeds.

Q. Who pays the expenses, blacksmithing bills?—A. The tenant.

Q. Keeping up the utensils?—A. The tenant.

Q. To what extent does crop sharing prevail in your locality?—A. I suppose one-half.

Q. One-half of your land is taken that way?—A. One-half of the land, yes.

Q. (By Mr. FARQUHAR.) Does the farmer or cropper there furnish his own horses or implements for his farming?—A. Yes, if he gives the two-fifths; if he gives the one-third, the landlord furnishes them.

Q. Well, when you said nearly half of the farming there was based on this ownership entirely of the land, the owner receiving two-fifths and the farmer furnishing all the rest, is not that a pretty large average? Are there so many landowners that have nothing at all but the land and the buildings that can get two-fifths?—A. Yes; quite a number live largely in the towns. Our lawyers own farms, our bankers own farms, and our doctors own farms, and all of them reside in the city and own their farms.

Q. That class of farmers have their workable implements and everything of that kind there on the farm and hold three-fifths as against two-fifths and the land?—A. Yes.

Q. What is the condition of those farmers? Do they make money; are they prosperous; do they ultimately get so that they can buy land for themselves?—A. Yes; I think that the most of them, when they get on a good farm and stay on it 12 or 15 years, ultimately become owners.

Q. There is not such a thing as store liens there in West Virginia?—A. No; none whatever.

Q. Your people are in better condition than any of that class of renters?—A. Yes. As a general thing, the landlord, if there is any little something needed, will advance to the tenant. It is something almost unknown to give a lien on your crop; that is almost unknown.

Q. Does the law in the State of West Virginia allow you to make a lien?—A. Yes; you can give a lien.

Q. (By Mr. A. L. HARRIS.) What is called a chattel mortgage?—A. Yes; you can give a chattel mortgage.

Q. Any form specially for a crop lien?—A. No; still I have known one or two cases where people were leaving and wanted a little, and that was done.

Q. (By Mr. PHILLIPS.) Do the colored people do much farming on the shares you have alluded to, or is it generally the whites?—A. Generally the whites.

Q. Are there any croppers amongst the colored people in your section?—A. One of our largest farmers has a colored cropper, but he furnishes everything for him in that case.

Q. (By Mr. A. L. HARRIS.) What have you to say in regard to the taxation of agricultural property?—A. Well, that is the most serious matter, I think, that the farmers in our section have to contend with. The practice in our State is to make the real estate bear the whole burden of the taxes. If a man buys a farm for, say, \$10,000, and he only puts \$2,500 into it, he has instantly got to pay the taxes on the \$10,000, if that is the value of the farm.

Q. (By Mr. FARQUHAR.) In other words, he has got to pay his general taxes as well as his interest for purchase?—A. Yes; he pays the tax, as a rule, on his indebtedness.

Q. (By Mr. A. L. HARRIS.) Well, now, explain how he pays on his indebtedness?—A. Because, when a man buys a piece of property, say, worth \$10,000, and he pays \$2,500 on it, he has only got an interest in his farm to the amount of \$2,500, and the other man has \$7,500 in it, and the other fellow has merely got an interest in there as long as he keeps up the interest.

Q. Is there anything added for interest on account of taxes on the note?—A. Yes. The farmer goes to borrow money and he will be told that he will have to pay 6, maybe 7, per cent, because the loaner will tell him, "Well, I have got to pay 1½ cents county tax, and consequently I have got to put the interest up to cover that amount." And the farmer has got to pay the higher interest just in proportion as the tax is higher.

Q. Then he pays a tax on the real estate?—A. He pays really the tax and the tax over again to the loaner.

Q. Is this note required to be listed for taxation?—A. Our laws call for all evidences of indebtedness to be listed, but the fact of the matter is that they are not listed. The assessor as a general thing is a candidate for reelection and he does not want to have the ill will of this man. The man that loans money is generally an influential man, and he does not want his enmity or ill will, so he does not hunt him very close.

Q. You spoke a moment ago about real estate paying the taxes so largely in your county. Is that because you have no notes or mortgages?—A. It is because the real estate being in sight there and having a fixed value the assessor simply goes to the land book and he gets all that tax in a few moments. He has no bother with it, simply goes to the land book and it is taxed there. Once every 10 years we revalue our lands. He does not need to have any bother about it at all; that is fixed up simply by the county clerk; the assessor has nothing to do with our land taxation; that is a fixed tax. But the assessor, in coming around to get all these evidences of indebtedness, never finds these people, and when he does find them they simply just refuse to list the notes and securities.

Q. (By Mr. PHILLIPS.) Then have they not a right to assess them according to their own view; if a man does not make a list do not they levy the tax on him according to their own judgment, and then he has a right to complain?—A. Yes; but he can not levy a tax on notes or mortgages or that sort of thing unless he can see them, you know. He has got to know. I generally say to the assessor when he comes up to my farm, "There are the horses, there are the cows and everything; you value them, that is what you are here for." But when he goes into the house a man does not open his desk and say, "Here is this mortgage and that note and that bond." He does not show them.

Q. He then has no authority to assess taxes unless they are of record, like judgment notes or mortgages?—A. No; unless he can see them.

Q. He can not make an assessment of what a man is supposed to have and then if he complains let him prove his assessment is too much; they do not do that?—A. No; they do not.

Q. (By Mr. A. L. HARRIS.) Have you any remedies to suggest for this great deficiency?—A. The remedy that I would suggest is of a twofold nature. I would allow the borrower to simply make this a matter of record, and when he paid this tax have the State allow that to be credited on his interest to the other party. For instance, if I would pay the taxes on the \$10,000 I would have a right to a credit on my note for the tax on the \$7,500. That would be one. The other would be this, that I would require that any note or any evidence of debt that did not have the assessor's stamp on it to show that it had been listed for the purpose of taxation would simply be declared uncollectible, unless it showed that it had the assessor's stamp on it every year.

Q. (By Mr. PHILLIPS.) That would be pretty radical?—A. I think that would reach it; it is a very serious condition of affairs; I think it is the greatest drawback that the agriculturist has to contend with; that is my honest belief, that there is nothing equals that.

Q. Is there any State that has such a law, that requires an assessor's stamp in order to make a note collectible?—A. Not that I know of.

Q. (By Mr. A. L. HARRIS.) Who fixes the rate of taxation in your State?—A. The State fixes it to a certain amount.

Q. That operates equally on all property?—A. Yes, all over the State; with us 35 cents on the \$100 valuation.

Q. And the county tax—who fixes that?—A. The county then levies a tax; in our county it is 45 cents on \$100; then comes in the district and school taxes, which are added to that; the district levies so much for its schools and the county levies so much; we divide it up in several funds—a road fund, a school fund, a district fund, and county fund.

Q. Who fixes the rate in your county?—A. Our county court, composed of three commissioners.

Q. Elected by the people?—A. Elected by the people.

Q. Do the farmers have representation on that court?—A. There are always farmers on the court in our county.

Q. Who levies and fixes the rate in the district?—A. Our school commissioners.

Q. Are they farmers?—A. Yes; generally farmers.

Q. The local tax is greater and heavier than the State tax?—A. Oh, yes; by far.

Q. And the district tax is frequently greater than the county tax?—A. Yes. Of course our school tax—that is a district tax—is the heaviest tax.

Q. And your road tax?—A. Our road tax is laid by the county court, but levied on the districts; it is collected in each district so much; one district may pay 10, another 15, and another 20, according to the needs of the district.

Q. (By Mr. PHILLIPS.) How is your poor tax levied?—A. It just goes into the general county tax.

Q. (By Mr. A. L. HARRIS.) You have no suggestions to make except the one you have just made in regard to your tax laws?—A. No.

Q. Has there been any decline in the value of agricultural lands in your locality?—A. Since what time?

Q. Say 20 years.—A. No. Land is fully as high as it was 20 years ago.

Q. (By Mr. PHILLIPS.) How is it compared with war times? You spoke of that some time ago, that there had been a great many persons sold out on account of the depreciation.—A. I had probably 4 farms in view, but the one I had particularly in view was bought at \$55 an acre along about 1868 and it was sold at about \$28, and now has been resold again at about \$40, showing that \$40 was about all a man could ever afford to pay for it at any time; that the other was too high—above what it would produce interest on.

Q. Was that about the difference in the valuation of land in 1868 and now?—A. Yes.

Q. There has been a considerable depreciation since 1868?—A. It is not worth as much now as it was in 1868, but it is worth fully as much as it was in 1890. Land is worth fully as much as it was then. It was the class that bought at that particular time, just after the war, that suffered the most.

Q. Is a farm worth as much now as it was in 1868 for farming, not fruit-growing, purposes?—A. Yes; it is worth as much. There are two classes of land; our heavy limestone soils are not particularly adapted to fruit growing, but they are splendidly adapted to grain and grass growing, and these are the farms that are on the market. One at our place last Saturday—a rough limestone farm—stopped at \$39.50 an acre and will be sold again next Saturday at about \$45 an acre.

Q. What would that farm have brought in 1868?—A. The chance is it would have brought \$60 or \$70; because it seemed they had \$3 wheat, and all a man seemed to want to do was to buy a farm, no matter what the price was.

Q. (By Mr. FARQUHAR.) Three dollars, worth about \$1.50—these rates you are naming were based on the inflated currency at that time?—A. Yes; altogether, of course.

Q. (By Mr. A. L. HARRIS.) A rather abnormal condition?—A. Yes. Lots of old men in our county that I have talked with say that land in that section has been of a certain fixed value for nearly 100 years. The best land would bring to-day \$50 and \$60.

Q. (By Mr. PHILLIPS.) Speaking of inflated currency, what was land worth just before the war, in 1858, 1859, and 1860; about what was it worth then as compared with now?—A. I would have to speak totally from hearsay; but this class of land was sold at \$40 and \$50—about where it is now.

Q. (By Mr. A. L. HARRIS.) What is the advantage of organization among farmers?—A. We have two that have amounted to anything in the county, the Farmers' Alliance, which was very short lived with us; and we have the Patrons of Husbandry, which has had 25 or 30 years' existence, at least. The farmers that connected themselves with the Patrons of Husbandry, I think, improved their methods of farming, and it improved their methods of buying and selling. I think we bought fertilizers within 4 or 5 years after the Grange was organized—we had got the price down nearly one-half on fertilizers by buying in carloads; and we sold to some extent; but the great benefits, I think, derived from the farmers organizing are in the sociability produced and in the moral features. I think that is even more than the financial. The fact of farmers being so isolated caused them to become selfish, you know, and they did not care; men that were wealthy were willing to have a sort of run-down appearance about their concerns; and having committees visiting around seemingly resulted in a general looking up of the whole business. For instance, if a Grange committee was going to visit my farm I would want to put in about a week getting ready to receive them, get the briers cut out, fences straightened up, and things of that kind. I think the farmers' organizations are of great benefit in that way, as well as in the financial way. And, of course, when we meet and discuss and argue how a certain man would raise very fine crops and how another would totally fail, this means as much as the other. I think it betters the farmers' condition all right—that is, the Grange. The other one went right into politics and was apparently of no value to anyone. That seemed to be the difference. The Farmers' Alliance drifted right into the political feature. You must leave politics outdoors.

Q. (By Mr. PHILLIPS.) Were they divided in your region—some Democrats, Republicans, and Prohibitionists, or Populists?—A. Every kind. Everybody went into it.

Q. They did not use the old organization in favor of one party, but they were going into politics?—A. They were going to be a great political party without regard to the other parties. We were going to be the party and get the offices. That was the idea of the Farmers' Alliance.

Q. (By Mr. FARQUHAR.) You thought there were more farmers than other people and the farmers might as well have the offices?—A. That seemed to be the theory.

Q. (By Mr. A. L. HARRIS.) Is there any increase in the cost of production of farm products in the last 20 years?—A. I think not. I think it has been the other way.

Q. Cheapened?—A. Yes.

Q. By what means?—A. By the use of labor-saving machinery.

Q. Have you a pure-food law in your State?—A. No; not especially.

Q. Have you anything to suggest in regard to the importance of pure-food laws.—A. We ought to have one.

Q. Why?—A. Because Pennsylvania and other States have pure-food laws, and the grocery men in those States, if they would get anything that would not pass inspection in their own State—would be condemned or anything of that kind—

there is nothing to hinder them dumping it over on us where we have no law. I think the pure-food law should be general and apply everywhere.

Q. Wherein is the farmer interested any more than any other individual in the pure food law, properly executed?—A. The fruit grower, I will say, instead of the farmer, is interested very much; he would be, to a large extent, say, in the question of vinegar. The acid vinegars have largely taken the place of cider vinegars and cut the prices down as low as the acid vinegars are. So with all the different products of the fruit—sham butters that pass for apple butter may be pumpkins or turnips or things of that kind—and others that are adulterated in the same way.

Q. Do you favor Federal legislation on this subject?—A. Yes; I do on the pure-food question.

Q. Where would you lodge the power to execute the pure-food law?—A. I think it ought to be lodged in the hands of the Bureau of Agriculture. Still, I might be wrong in that. Everybody is just as much interested as the farmer. I do not know but that might be utterly wrong. The Bureau of Justice, maybe, would be better.

Q. Have you a law in your State to prevent the spread of disease among domestic animals and fruits and plants?—A. We have one for domestic animals; it is very limited. We have none for plants or fruits.

Q. Do you favor such legislation?—A. Yes; I think there should be, both State and national.

Q. Now, you may give your reasons for favoring legislation of that character.—A. Unfortunately, in our county, along about 1895 or 1896 we discovered that the San Jose scale had been sent into our county. We could trace it to New Jersey, and it infested some 3 of the orchards there in our county. One of the worst was in the hands of a progressive farmer, and he has been constantly fighting it ever since, kept it in check, with no danger of spreading from his orchard, although he has not got it completely eradicated.

Q. (By Mr. PHILLIPS.) What kind of fruit?—A. In this case the one orchard was a pear orchard and the other was an apple orchard, and also a berry farm.

Q. The same scale affects all these kinds?—A. Yes.

Q. Does it affect cherries also?—A. Yes; all classes of fruit—plums and currant bushes were simply eaten up and destroyed with it. This one man utterly neglected his and the orchards all around him became infested with it. Now, if we had a law that would give some one the authority to come in and say to this man, "You have to destroy these trees," we could have eradicated it in the county and at a very slight cost. Now, we have it in about twenty localities in the county. This season, with the aid of our experiment station, the farmers held a meeting and subscribed funds to buy material to treat these orchards with. Some of these men were not able to get their own material, and we are spraying and applying all different remedies that are known to prevent it. But all this could have been obviated if there had been a law 10 years ago to prevent the sale of any nursery stock unless it had been, I will not say inspected, but fumigated, because to say that every tree would have to be inspected would take thousands and thousands of experts. For instance, a nursery that had, say 4,000,000 young trees in it, as it takes a microscopical examination to tell whether there is any scale present or not, you can see at once it would take a vast force. It would be a first-rate place for fellows who wanted jobs, because they would have to have hundreds of them. But they could be fumigated, and that would make it certain that we were not planting disease when we were planting the trees.

Q. Can they fumigate so as to destroy the scale?—A. Yes.

Q. What is the nature of it?—A. Hydrocyanic acid. They have to have airtight fumigation houses and they put the young trees in there for 10 or 15 or 20 minutes, and that destroys everything that is living.

Q. What method do you use in eradicating it where it obtains a hold in the orchard?—A. Of all the experiments we have tried we have decided that the best is crude petroleum right out of the ground. With us that is the most effectual and the least destructive to the trees of any. I have been advocating pure coal oil very largely in the past, for if it would not kill the scale, it would at least kill the tree for the careless fellow (laughter); but we find that the crude petroleum is the best remedy, according to our judgment, put on in the winter time.

Q. Spray them?—A. Yes; just cover it, have every bit of the tree thoroughly covered, and they will all be dead; but if there is one spot left on the tree untouched and there is a scale there it all has to be done over again the following season.

Q. It would require a very considerable amount to treat a large orchard?—A. Yes; it takes a great deal. Some of us have used as much as 20 barrels of it.

Q. (By Mr. A. L. HARRIS.) With good effect?—A. Yes. Of course we are experi-

menting, trying it out, and watching the results. I have been helping our experiment-station people with the experiments.

Q. Is the farmer affected in any way by large combinations of capital in the manufacturing industries?—A. We have found in the last 18 months that what is called the wire trust has been very much to our disadvantage. It has almost stopped fence building. We have gone largely into the wire fences on account of timber getting scarce, and the advance in price from 2 cents a pound up to 4½ cents seemed to almost entirely stop it.

Q. What kind of wire?—A. Barbed wire was coming to be the popular wire we used for fencing.

Q. Is that controlled by a patent?—A. I suppose there is a patent on that.

Q. (By Mr. PHILLIPS.) How is it in regard to nails?—A. Nails have advanced, but not quite as much as wire.

Q. Have farm implements advanced largely, too, in the last 18 months?—A. No. There is some difference, some advance, but not so largely as the wire. That was the greatest advance, the most unreasonable.

Q. (By Mr. A. L. HARRIS.) That was the barbed wire?—A. The barbed wire.

Q. Do you remember what brand you used in your locality?—A. We used what is known locally as the "hog wire"—regular buckthorn barbs on it.

Q. You do not remember the brand?—A. No; it is all controlled by the one company—the Gates.

Q. The American Wire Company?—A. Yes; the American Wire Company.

Q. (By Mr. CLARKE.) Does the price keep up?—A. Yes; it keeps up; and for the last 12 months I do not suppose there has been 5 tons come in. The people are simply letting it alone. It has dropped some now. They did take it up to 4½ cents a pound, but the price they are now trying to get is 3¼ cents; but the people are not buying at that.

Q. (By Mr. A. L. HARRIS.) What was the former price?—A. We got it by the ton at 2 cents, and 2½ cents for less than a ton.

Q. Was that at retail?—A. At ton rates it was 2 cents a pound. That was the lowest it came to.

Q. (By Mr. PHILLIPS.) Have there been any corresponding benefits come to the farmers from these combinations?—A. Not any that we can see.

Q. (By Mr. A. L. HARRIS.) If the farmer did not buy, what would be the effect on barbed-wire prices?—A. My impression is the farmers would have that in their own hands. If they would do away with our fence laws, that would do away with the wire trust as far as the barbed wire is concerned.

Q. (By Mr. FARQUHAR.) In other words, is it possible for the farmers to freeze out the trust?—A. Not all; possibly that one.

Q. I mean that one?—A. Yes.

Q. (By Mr. PHILLIPS.) Have you any law governing animals running at large in your State—domestic animals?—A. No; we have to depend on our fences.

Q. (By Mr. FARQUHAR.) I would like ask you again, what is your opinion of these experiment stations; are they quite beneficial to the farming interests, or do they give as many benefits as they cost?—A. I do not think that they come quite up to their cost. At present farmers are having a better feeling toward the experiment station than they did have a very short time ago.

Q. Do you know of any other plan that could be adopted by this Government to benefit the farming interests than through these experiment stations?—A. No; I do not know of any better.

Q. You could not reach the same benefits through such associations as the Grange?—A. No.

Q. Is it not really the only way they can reach scientific experiments—through these stations?—A. I think that is the only way.

Q. Are you not getting the advantage in West Virginia of the whole experiment stations of the United States?—A. Yes.

Q. (By Mr. A. L. HARRIS.) Does your station issue bulletins?—A. Yes.

Q. Are they pretty generally distributed among the farmers?—A. They are now. The reason I have said that the experiment station was more in sympathy with the farmers of late came from this fact: That since we have commenced to hold farmers' institutes through the State and the farmers have come out and come in actual contact—not the farmers, but the members of these stations' staffs—have gone out and come in actual contact with the farmers and found out what kind of experiments the farmers wanted conducted, and are getting their experiments up to suit the farmers instead of themselves, working on lines suggested by the board of agriculture, and so on, it is coming to give a great deal better satisfaction than it did, from the fact that now, when we have anything that goes wrong, disease breaks out among plants, or anything of the kind, these men will come right to the farm and conduct their experiments right there where everybody can see that

it is a general benefit. When it is conducted up in the laboratory you can not make the average farmer believe but what it is all tomfoolery. But now they are going out right among the people. That is why I say there is a far better feeling existing toward the experiment stations than there has been at any previous time.

Q. (By Mr. FARQUHAR.) In other words, you think there was among the old farmers an antipathy toward scientific farming?—A. Yes; no doubt about that.

Q. (By Mr. A. L. HARRIS.) Does your experiment station make experiments in the growing of grain?—A. Yes; that is, in the way of distributing new varieties and sending out certain varieties and quantities of fertilizers to be used, and suggesting different methods and having careful experiments made as to results. That is a practical way.

Q. That is beneficial?—A. Yes; no doubt about that being beneficial.

Q. Do they make like experiments in the growing of fruit?—A. Yes, in fruit growing. Both the panhandles of West Virginia, eastern and western, are the fruit sections, and in both the sections we are being guided a great deal by the experiment-station people in our experiments now in reference to the coddling moth and different kinds of spraying.

Q. Have you yourself been engaged in institute work in your State?—A. To a considerable extent during 1896 and 1897.

Q. What portion of your State did you work in?—A. I have been over as far as Greenbrier County and up about the mountainous parts of West Virginia, in the greatest part, about Upshur County and down about Marshall County and over in the eastern part—Jefferson, Berkeley, Hampshire, Morgan, and Mineral counties; have been at institutes in all these counties.

Q. From your observations, are the farmers in your State laboring under any disability that can be helped by legislation outside of the matter of taxation you spoke of a moment ago, either State or national?—A. Outside of taxes, I do not think there is any chance to relieve all the ills of the farmer by legislation.

Q. (By Mr. PHILLIPS.) Are you affected by discriminating freight rates?—A. We think we are. We sell our grain largely at Baltimore and find as a general thing that grain at Baltimore and Chicago is very near on a basis, and we never could understand how the Chicago fellow got his wheat over there at the same price that we got ours down there.

Q. (By Mr. FARQUHAR.) That is, the long haul was the same as the short haul?—A. Yes. They complain that that is not just, but I am not able to suggest a remedy.

Q. (By Mr. A. L. HARRIS.) From your observation what have you to say in regard to the conditions of those engaged in agriculture, as a rule, compared with former years?—A. In our State I think there has been a steady improvement.

Q. You have some hope, then, for the future of the farmer, have you?—A. Yes; I have every hope for the future, and I do not think there is any reason to doubt the future existence of the farmer. When he goes out of existence I do not know how about the other fellow.

Q. (By Mr. PHILLIPS.) You spoke of a discrimination in freight rates. As compared with Chicago what is the difference in distance from your section, of which you spoke?—A. Chicago, I think, is about 900 miles and we are 100 miles, and yet the rates are about the same.

Q. (By Mr. A. L. HARRIS.) Have you any competition in transportation?—A. We have two roads. The only place we can get any rates is where we do not have competition.

Q. A combination between the two roads?—A. Apparently so.

Q. To maintain freight rates?—A. To maintain rates. For instance, that is more with the express companies than the railroads. We have the Adams Express and the United States Express. There is no Adams Express Company at one station, but only the United States Express Company, and yet there they will give rates 10 cents lower on the crate—speaking in regard to fruit—than they will give us a few miles the other side where we have got competition. Sometimes we have hauled our fruit down there, 12 miles, to get the advantage of these rates.

Q. (By Mr. PHILLIPS.) That is expressage?—A. Yes; and from noncompeting points we have far better chances for rates than we have from competing points.

Q. (By Mr. CLARKE.) Why is that?—A. I suppose they make an arbitrary tariff for the two offices, and agree, that they will not fight one another in the matter of rates. They will drum for business, but will not under any consideration out rates where the two roads are in the same town.

Q. You and the other farmers there generally feel that the express rates are excessive and unreasonable?—A. Yes; that is the general opinion of everyone.

Q. When your fruit is carried by the express companies is it carried in refrigerator cars?—A. No.

Q. It is not really as well treated as it is by the railroad companies carrying it as freight?—A. No. It goes better as freight.

Q. Better and cheaper?—A. Yes. For instance, express goods will have to be handled the next day; refrigerator goods can be handled in a week.

Q. Have you ever made a careful study to learn whether or not it is more expensive to the express companies to handle it than it is to the railroad companies as freight?—A. No: I have never given it a careful study.

Q. They deliver it in less time, I suppose, is all?—A. That is all. Of course they will handle one crate for us, or a thousand, whereas if we ship in a refrigerator car we have got to have a carload.

Q. (By Mr. A. L. HARRIS.) Have you any trouble in getting refrigerator cars?—A. No; they furnish them wherever you order in time.

Q. (By Mr. CLARKE.) Is there a board of railroad commissioners in your State?—A. No. The only board we have nearest to that is the board of public works.

Q. Is that a State board?—A. Yes; consisting of the governor and several of the other members—

Q. (Interrupting.) Have they jurisdiction over the management of railways and express companies?—A. No; their only say is in regard to the valuations which shall be put upon the railroads for taxation purposes. That seems to be the only thing they have to do.

Q. Do you not think it would be a good plan to have a board of railroad commissioners in your State?—A. For what purpose?

Q. For the purpose of investigating questions of rates and accommodations to determine whether they are just and equal and fair.—A. Yes. If that board could be invested with power to remedy, I think it would be just right.

Q. (By Mr. FARQUHAR.) Have you not had legislative committees investigating there in the last 10 years? Have you not had several reports to your legislature as to excessive rates?—A. Yes. Every year in the governor's message and in everything else they complained about it.

Q. Yet you have no remedy in a State board?—A. No remedy whatever.

Q. You simply depend on the protests and pleas of the public that go to the legislature?—A. Yes. We have no remedy whatever. We think we are treated far worse on the express business than we are on the railroad business. For instance, a shipper in Baltimore could put his fruit into the Wheeling market, and he often does it, at 25 cents; and we, 100 miles closer, would have to pay 50 cents.

Q. (By Mr. CLARKE.) Are not the farmers in your State numerous enough so that you can elect a legislature which will try to remedy this inequality of which you complain?—A. No. The farmers generally control the legislature, but they always divide on political lines.

Q. That is the color line very often, is it not?—A. No; we have none of that in West Virginia. There are very few colored people in the State—very few.

Q. When you say political lines you mean on the lines of national politics?—A. Yes.

(Testimony closed.)

WASHINGTON, D. C., June 7, 1900.

TESTIMONY OF MR. WELLS W. MILLER,

Secretary Ohio State Board of Agriculture.

The commission met at 10.45 a. m., Vice-Chairman Phillips presiding. Mr. Wells W. Miller, secretary Ohio State Board of Agriculture, Columbus, Ohio, was introduced as a witness, and, being duly sworn, testified as follows:

Q. (By Mr. A. L. HARRIS.) You may state your name, your post-office address, and your occupation.—A. My name is Wells W. Miller; occupation, that of a farmer. My home address is Castalia, Erie County, Ohio. My business address at present is Columbus, Ohio.

Q. How long have you been a farmer?—A. I have been a farmer all my life, with the exception of 4 years spent in the Army and 3 or 4 years after that in mercantile pursuits.

Q. You may state what position, if any, you occupy in Ohio at the present time.—A. Secretary of agriculture.

Q. You may state, if you please, how the secretary of the State board of agriculture is chosen.—A. Shall I state in detail how we get our authority?

Q. I want to show how the members are chosen for office.—A. I can state briefly how the State board of agriculture is organized.

Q. Very well, you may do that. You may begin there.—A. The laws of the State of Ohio provide for the holding of county and district agricultural societies. By complying with the requirements of the law these county and district agricultural societies are entitled to send delegates, one each, to the annual meetings of the State board of agriculture which convenes in Columbus annually in January. These delegates from the different societies, together with the 10 members, constitute the State board of agriculture for the day on which the meeting is held. They select 10 members who constitute the board during the interim between the meetings. These are not necessarily members of county agricultural societies, but are generally, almost universally, prominent farmers from the different parts of the State. These 10 members who constitute the board elect such officers as in their judgment are required for the service of the board, and the rules of the board provide for the election of a president, vice-president, and treasurer from the membership of the board, and the secretary and assistant secretary, who may or may not be members of the board. At the present time they are not members of the board.

Q. You may state, if you will, what your duties are as secretary of the board.—A. The law of the State requires that the State board of agriculture shall hold annually a State fair or exposition. The statutes of Ohio also provide that the State board of agriculture, or its secretary more particularly, shall collect and publish agricultural and stock statistics of the State, both through a corps of volunteer reporters and through the township assessors and county auditors of the State. The law also requires that the State board of agriculture shall conduct farmers' institutes throughout the State. The law also requires that the secretary of the board shall be the inspector of all commercial fertilizers sold and used in the State. The secretary's duties are to see that all of these requirements of the law are complied with, under the general direction of the board, except so far as statistics and fertilizers are concerned, which are made the duty of the secretary and over which the board has no control.

Q. You may briefly outline, if you please, the farmers' institute work.—A. The farmers' institute work was begun in Ohio in 1880, the State board of agriculture making an allowance of \$1,000 to cover the expenses of lectures and organization. That was continued 2 or 3 years, and then gradually the appropriation was increased and the general assembly came to the aid of the board in increasing its allowance for the encouragement of agriculture, so that the board was enabled to devote from \$3,000 to \$5,000 to the institute work of the State up to 1890, when a general law was passed providing for a per capita allowance from the different counties in the State of 5 mills, 3 mills to be used for local expenses of such farmers' institutes as should be held in the county, and 2 mills to be available by the State board of agriculture for the payment of its share of the expenses in furnishing speakers and other expenses. This law was amended in 1896, making the per capita allowance from the county funds of the several counties 6 mills, with the provision that no county should pay more than \$250, so that the State board of agriculture is now in receipt of from \$60 to \$250 from each county in the State, and the local societies in receipt of an equal amount for expenditure at home. The aggregate is now about \$8,300 to the board, in round numbers, and an equal amount to the local societies of the State.

Q. What body composes these local societies?—A. They organize under the laws of the State and the rules of the State board of agriculture by petitioning the board—not less than 20 petitioners—and are granted authority by the State board of agriculture; and if, in the wisdom of the board, institutes shall be held under the direct auspices of the board, the institutes are held by the board or conducted by speakers furnished by the board, which makes available for local expenses one-half the per capita allowance; the lecturers are furnished by the board.

Q. Do you hold institutes in every county in the State?—A. Every county of the State, yes; from 1 to 4. The limit is 4 legally constituted or legally held meetings of 2 days each.

Q. What is the character of the work done at the institutes?—A. Education along agricultural lines. Our speakers are selected with a view to their capacity for educating with their lectures and bringing out interesting and valuable discussions among the farmers themselves. The best work we do, we think, is to encourage the spirit of investigation in the various localities more than the actual information imparted by the speakers. One of the principal requisites of a good speaker is to so outline his work as to bring to the front the best experience of a locality. We are surprised many times in finding the very best information in a locality that has felt the great need of farmers' institutes. Among its membership we have found some of our very brightest men and our best thought.

Q. Is this institute work conducted alone by gentlemen?—A. You mean the local end of it?

Q. Local end of it.—A. As to the local end of it, we are quite different from

any other State in that matter. We are very republican in that. We give the local societies a free hand to conduct their own institutes under certain regulations adopted by the board. Partisan questions must not be discussed, nor religious questions, but the work must be confined to the farm and its interest, and in that the local societies secure the assistance of some very estimable women, who present papers and deliver lectures. The State board of agriculture has not yet seen its way clear to employ women, although there is a call for them; but there are certain reasons, which perhaps it would not be necessary to discuss here, why we do not believe it would be wise to send out women by the State board of agriculture, as we are organized in Ohio. There are States so organized and who conduct their interest in such a manner that they can very well afford to have women on their list of lecturers, although somehow a scandal has obtained in one of the sister States, which we have studiously avoided, and perhaps are severely criticised because we have avoided it so rigidly.

Q. How many State lecturers do you send out?—A. We have on our list an average of 38.

Q. Do they discuss more than one subject?—A. Yes. They are necessarily obliged to have from 5 to 15 topics that they can discuss intelligently and interestingly, because each speaker is usually on for 5 lectures, and it would be very trying indeed if he would confine himself to one line, although the speakers have perhaps 2 or 3 topics that they can discuss more intelligently than more; but they divide their lectures so as not to have less than 5, and usually not more than 15.

Q. How many days of institute work is given to the session in the county?—A. Two days and one evening. Five sessions, a morning and afternoon and evening session, and morning and afternoon session on the second day, giving the speakers an opportunity to go on to the next appointment the second evening.

Q. In addition to the county, have you exercises at the capital on institute work?—A. Yes; we have at the capital what we term a State institute, continuing two days, just previous to the annual meeting of the State Board of Agriculture, which is the middle of January annually. There we have the best men available in the Union to deliver addresses, as well as our own people from our own corps of lecturers.

Q. Are the institutes in your State well patronized?—A. Very well patronized indeed. The average attendance is about 400.

Q. Is there a growing interest in the institute work?—A. Yes; it is growing remarkably; and we have applications for several times the number that we can grant, and many independent meetings are held under the rules of the board. Such aid is given to the local institutes as we are able to give, in the way of literature, documents, reports, etc., from the Department of Agriculture.

Q. You look upon the institute work as being valuable to the farmers?—A. Most valuable; increasingly so. Some of our farmers are being encouraged and their work is being made more systematic, and the wide range of discussion has been of untold value, I think, to the farmers of Ohio. I think, perhaps, I should state that the State board of agriculture furnishes 2 speakers to each institute; and they travel in pairs. Not more than a week, however, do any 2 of them work together. That is the only reason why we have not been able to supply female lecturers, because they are traveling over the State in pairs, and the 1 male lecturer and 1 female lecturer would not round up a good programme: while in other States they do the whole work from the institute bureau, sending out from 4 to 7 speakers, one who acts as president and another as secretary, conducting the whole meeting from beginning to close. They have in some States one or two women who lecture on domestic science, etc.

Q. Do you publish in your report any of the lectures delivered at the institutes?—A. Yes; we have a committee who select the best papers that are obtainable from the local speakers, as well as some from the employed speakers, and publish annually a full institute report, which is largely made up of the lectures delivered at the different institutes held in the State.

Q. Are those papers confined to the production of one sex only?—A. No, indeed; very many of our best papers are from women, and we have encouraged the employment of women by the local societies rather than by the board. They have an equal amount of money to use, and the board has always urged the local societies to encourage the women rather than to send women by the board, so that many women are on the programmes in the institutes of the State, but not sent by the State.

Q. How are those lectures printed and distributed?—A. We publish 10,000 copies for general distribution from the department of agriculture, sending to all agricultural societies in the State, all farmers' institute societies in the State, and all farmers' organizations in the State of which we have knowledge, and the

balance are held for distribution on request. Thousands of the farmers send in requests for them. Then this institute report goes into the general yearbook of the Department, of which 24,000 copies are printed, 19,000 of which are distributed by the members of the general assembly, 5,000 by the department of agriculture; but in practice many of the representatives from the larger cities do not care for their quota for distribution to their constituents, and they are made available for distribution by the department of agriculture, so that the department really distributes on an average 10,000 to 12,000 of the 24,000 annually.

Q. Is there an increasing demand for the report of the State board of agriculture, including these lectures?—A. Yes; there was a bill before the seventy-third general assembly, the object of which was to reorganize the publication of all such documents. The committee asked me for information, and I asked the committee to give the department 25,000 copies, because we had calls enough to distribute that number, against the 5,000 which are now by law available, reducing the number available by the members of the general assembly.

Q. What is the cost annually for the printing and binding?—A. I am not able to answer that, because it is done by the State on State contracts.

Q. Have you an idea as to the cost of the volumes?—A. No; I would rather not express an opinion about that.

Q. (By Mr. CLARKE.) In these institutes new and improved methods are discussed, I suppose, quite prominently?—A. Yes.

Q. Have you knowledge of the adoption of such methods in practice by farmers as a result of the agitation in institutes?—A. Oh, yes; that is brought to our attention almost daily. We have progressive farmers. Most of our lecturers are farmers. In addition to the farmers we have five of the professors in the agricultural college of the Ohio State University, and five of the station staff of the Ohio Agricultural Experiment Station. Those men are purely scientific.

Q. Is there cordial cooperation between your State department of agriculture and the National Department of Agriculture?—A. Entirely so; yes. However, there is not much cooperation. The laws have not been so framed as to make any considerable cooperation.

Q. Each department, then, works on independent lines?—A. Yes.

Q. But somewhat necessarily on substantially the same lines?—A. Somewhat; but it is true that there are no two State departments of agriculture similarly organized. We have, perhaps, the most complete department of agriculture, except one, in the United States, and that is Pennsylvania.

Q. Does your board of agriculture encourage the holding of local fairs or exhibitions?—A. Yes.

Q. And takes charge of them?—A. No; only in the matter of providing rules, which the board is authorized to do by the general assembly of the State. Those rules are in relation to the abuses and the general manner of conducting the exhibitions. For instance, the State board of agriculture does not allow any local society to have any objectionable features on the ground during the continuance of the fairs—no sale of intoxicants, no immoral exhibitions of any kind. In that connection, if it is proper here to state it, I will say each local society which is organized under the laws of the State and is operating under the rules of the board draws a per capita allowance from the county funds of their several counties, on the order of the president and secretary of the State board of agriculture. They are obliged to file with the board a statement under oath that all the rules have been complied with, and to make a full exhibit of all their transactions.

Q. The State itself does not make an appropriation for the aid of these local exhibitions, then, except by providing that they shall have a portion of the county funds?—A. No. The State has made very generous provision for the State board of agriculture, but not for the county societies.

Q. (By Mr. FARQUHAR.) Is horse racing in vogue at these county fairs?—A. Not horse racing that is understood to be horse racing at the county fair. The horse department is supposed to encourage the breeding of improved stock along all lines, and speed is one of the requisites of a driving animal, and they show the speed as well as the style and action of the animals; but no pool selling is allowed, or gambling, or other violations of the laws of the board. We have what are called county agricultural societies in our State which are separate and distinct from those organized under law, and which do not conform in any respect to the laws of the State.

Q. (By Mr. PHILLIPS.) In those are pool selling allowed?—A. Oh, yes. They are individual and separate organizations, over which the State board of agriculture has no control—seeks no control.

Q. (By Mr. FARQUHAR.) The county allowance does not contribute to the benefit of these fairs?—A. No.

Q. (By Mr. CLARKE.) How many years has your board been in existence?—A. Fifty-four.

Q. And from that time dates the beginning of scientific and progressive agriculture in your State, I suppose, largely?—A. Scarcely from that. Our records show that there were movements made in scientific agriculture as early as 1832 by a few prominent agriculturists of the State, but they had not unified their work so as to form a State organization until 1846, although they had made an effort for 2 or 3 years before that; but the State board of agriculture was organized in 1846.

Q. Has your board given a great deal of attention to drainage of land?—A. No, not a great deal.

Q. There is some need of that, I suppose, in different parts of your State?—A. Yes, but that has not grown out of the action of the State board of agriculture.

Q. Is it not necessary for farmers in considerable numbers, and sometimes even for townships, to cooperate to secure a suitable system of drainage?—A. Yes. We have very ample drainage laws in our State, which are executed by township trustees and county commissioners.

Q. Thus making it somewhat unnecessary for the board to engage in that work?—A. Only in an educational way. The board has from its organization published important and valuable papers and lectures on the subject of drainage, and still continues to do that, but it has taken no advanced position in that more than other societies, perhaps, and individuals not connected with the board.

Q. (By Mr. FARQUHAR.) Do you know what proportion of acreage there is of the swamp lands of Ohio? What is your general idea about it? Has not your State a good many, tens and hundreds of thousands of acres there, which by drainage could be reclaimed—fine land?—A. I do not think I would express an opinion on that. I do not think Ohio has so much of the unreclaimed land as other States. I do not know of a very large amount of it.

Q. (By Mr. A. L. HARRIS.) You spoke about the ditch laws. How general have those laws been availed of in portions of the State requiring drainage?—A. Very general; almost universal.

Q. You may state whether or not the State or the county in Ohio incurs any of the expenses of that improvement.—A. Yes; they incur a considerable part of the expense in paying the engineers, and of those employed, who are the commissioners, trustees, and engineers.

Q. How is the remainder of the expense paid?—A. By assessment, according to the benefits supposed to accrue.

Q. And the deferred payments—how is that arranged for?—A. By being placed on the tax duplicate, as other taxes.

Q. Money, for the time being, being raised by selling bonds?—A. Yes.

Q. And the property benefited taxed to pay those bonds?—A. Yes. In many cases the counties themselves, where the treasuries are in proper condition, pay the expenses of the improvement and collect on the tax duplicate as other taxes are paid, without the selling of bonds.

Q. You may state whether you have a similar law in Ohio in regard to road improvement.—A. Yes; general turnpike laws, and we have what is known as the 1 and 2 mile assessment.

Q. You may state, if you please, to what extent that law is availed of?—A. Very generally. We have a very considerable part of the State of Ohio improved under those laws—the roads improved under those laws; that is, in localities by counties, some counties of the State availing themselves while others do not.

Q. (By Mr. CLARKE.) If you recall the features of the law, will you kindly explain what this 1 mile and 2 mile system is?—A. By petition the matter is taken before the board of commissioners of the county or counties through which the improvement extends, and if the prayer of the petitioners is granted by the commissioners the improvement is made, similar in its details to the improvement of water courses, and the assessment is made according to the benefits within the 1 or 2 miles. We have two separate laws.

Q. Within the 1 or 2 miles on each side of the road?—A. Yes. In many cases the cities at the termini of the improvement are assessed a very considerable share of the expenses of improvement.

Q. Does the board of county commissioners make these assessments?—A. Yes, finally. I think very generally the assessments are made by the engineers and sometimes assessed by committees, but the final work is passed upon by the commissioners.

Q. To what extent have Telford or macadam roads been built in rural districts in Ohio?—A. It is difficult for me to give a very intelligent answer to that, because we have in some counties almost all the roads improved under the provisions of these laws, while in other counties where roads in the state of nature are passable,

are fairly good, the improvements have not been made. The result is that the counties which originally had the most impassable roads now have the best roads in the State.

Q. (By Mr. PHILLIPS.) You have no general system of macadamizing throughout the State; that is left to the local?—A. That is left to the local option.

Q. (By Mr. CLARKE.) Well, those roads you speak of as being very good are usually stone roads, are they not?—A. Yes; broken stone or gravel.

Q. Are there good deposits of gravel generally throughout the State available for road building?—A. Those deposits are not uniform over the State. Some counties have ample supplies, while others have none.

Q. Do the railroad companies of your State make any special rate on the transportation of road material?—A. I do not think they do. They transport a good deal of road material. I do not know that they make a special rate because of that. They make a very reasonable rate on road material, but I do not know that I could answer your question affirmatively.

Q. (By Mr. A. L. HARRIS.) Who bears the expense of the bridges and the culverting?—A. Anything more than \$50 is borne by the counties; less than \$50, by the townships, unless in case of an improvement. The bridges are added to the assessment sometimes, but not as a rule.

Q. Ordinarily, then, the land benefited pays for the grading and macadam or graveling of the road, and the county or township pays for the bridges and culverts?—A. Yes.

Q. (By Mr. CLARKE.) Is there any broad-tire law in the State?—A. On the improved roads; not on unimproved roads.

Q. Well, how do you make the distinction, because naturally if a farmer has a wagon he uses it on all roads, whether improved or not?—A. He is not allowed under the law to haul more than 2,500 pounds on a wagon of a given tread over an improved road; that is, on the road that is improved under the law just referred to.

Q. What has been the effect of that law in changing carriages?—A. It has had the effect of multiplying the broad-tread wagons very greatly.

Q. Is it found by experience that broad tires promote good roads and protect them—save them?—A. Unquestionably. There has been a growing friendship for broad-tread vehicles for 25 years.

Q. Are they better also for the farm roads?—A. Very much better. Very many farmers now have no narrow-tread wagons. I abandoned my last one a few weeks ago.

Q. You spoke a moment ago of the Ohio State University assisting your institute work in sending out lecturers. I wish you would state, if you please, briefly, whether you have in the Ohio State University an agricultural course.—A. Yes; we have an agricultural course in the college of agriculture. There are two or three courses, short and intermediate and long courses—I think three courses—as well as special, veterinary, and dairy and other special courses.

Q. Is there a degree conferred in taking either one of those courses?—A. Yes; in the full agricultural course, and in the veterinary, and I think in the dairy as well.

Q. Are those courses satisfactory to the agriculturists of the State?—A. I think so, very much more than they were a few years ago. A pretty general complaint went up against the State University, which is the successor of the old Agricultural and Mechanical College of the State, but recently the trustees and faculty have improved and enlarged the agricultural college so that I think it is now generally satisfactory to the people.

Q. It is well patronized—the agricultural department?—A. I would not think it well patronized for a State with the agricultural population that Ohio has, although it is growing in patronage and growing in the estimation of the agricultural public.

Q. Does the college give encouragement to that course of study?—A. Yes.

Q. The fault, then, is not on account of the college?—A. Not on account of the college, but more largely, I think, on account of the expenses. They have not yet reduced the expenses at the university to so low a point as they have at many of the other educational institutions in the State, therefore prohibiting or discouraging, at least, the attendance of the poorer class of farmers.

Q. What are those expenses; is it tuition?—A. Not so much tuition, but mostly board.

Q. Well, they give facilities for what we call "batching," do they not?—A. Yes; but not elaborate facilities.

Q. They have dormitory facilities?—A. They have dormitory facilities, but not extensive at all; really it has not been encouraged very much—not much attention given to that, not as much as to the educational features of the college.

Q. Those graduating at the college, do they go back to the farm as a rule?—A. Yes, as a rule.

Q. Is the State receiving valuable aid from that education?—A. Yes; some of very best lecturers and workers in agricultural lines, while they have returned to the farm, are from those graduates from the agricultural college.

Q. Is there any opportunity for employment on the university farm?—A. Yes; they pay a certain amount—15 cents an hour, I think—for such employment as they have for those students who seek it.

Q. Then the course could be made comparatively cheap?—A. Can be made comparatively cheap, and, in fact, some students have been self-supporting; but there is not that atmosphere there that there is in some of the other institutions.

Q. The classics overshadow the agricultural department?—A. Yes; undoubtedly.

Q. (By Mr. FARQUAR.) Well, is there not enough of the general educational curriculum there in the university itself to carry the farmer all through and yet at the same time attend these agricultural classes?—A. Many of them enter the agricultural classes for a year or two and then take up the scientific or classical courses—that is the tendency—and drift into professions or preparation for professions; but the gentleman asked me of those graduating in the agricultural college, about their returning to the farms. The greater number, perhaps, change their courses and finally graduate in one of the other departments.

Q. (By Mr. A. L. HARRIS.) You spoke also of the assistance given you by the experiment station. I wish you would state, in a brief way, to what extent the farmers have been benefited by the experiment station in Ohio.—A. The experiment station conducts experiments along the lines of crop production, fertilizers, and the study of the enemies to agriculture, and has given very much needed information along those lines. Like all other scientific people, they are criticised by those who are not given to scientific investigation; but the feeling and the cooperation and the mutual good work done by the experiment station to the farmers is very greatly increasing.

Q. Do they experiment in one part of the State only, or have they branch stations?—A. They have two branch stations—one in the northwest and one in the northeast—and the principal station is in the central part of the State, in Wayne County.

Q. Is it anyway connected with the agricultural college?—A. No.

Q. You are talking about experimenting in fertilizers. In what way is that experiment made?—A. By the application of fertilizers known as commercial fertilizers, and all fertilizers, in fact, on plats of ground on which are growing the different grains and products of the soil, and making very careful determinations and deductions, and publishing the same.

Q. How is that publication made and distributed?—A. By bulletins, and distributed to those who send in their names to be placed on the mailing list; or public men, prominent men, or men with whom the station staff is acquainted, furnish lists from different localities. All others can be placed on their list by personal application.

Q. Is that information pretty generally distributed?—A. Yes; pretty generally distributed.

Q. Has the station the franking privilege?—A. Yes; being under the auspices of the General Government, aided by the State government.

Q. Who makes your analyses of commercial fertilizers?—A. You mean the individual? I am charged with that duty. Not being a chemist, I employ a chemist in the Ohio State University, who is Prof. N. W. Lord, a man of national reputation, which is a very important factor with me in dealing with the manufacturers and consumers, standing between them.

Q. How is that report distributed?—A. Ten thousand of them are published annually and distributed, mostly by mail. It also is embodied in the annual report, of which there are 24,000 copies.

Q. Does that give the actual amount of different ingredients in different fertilizers in separate columns?—A. Yes.

Q. Of every fertilizer?—A. Every fertilizer in the State.

Q. How do you get your samples?—A. I have deputy inspectors of commercial fertilizers traveling the State all the time and securing samples from the open markets, not from the manufacturers. The law requires that manufacturers send in samples to the secretary when making application for license. Those are only used for comparison. The actual analyses are made from samples very carefully drawn from stocks of goods, supplies found on the markets of the State and in the hands of the consumers. My men visit every part of the State and gather samples from every possible source, so that the report shows the result of analysis of actual goods, which is very satisfactory to the consumer and entirely satisfactory to the honest manufacturer and dealer and not satisfactory to the other man.

Q. You speak of the fertilizing law. Will you state briefly the provision of that law and the penalties attached?—A. The law provides that the manufacturers and dealers in commercial fertilizers shall, between the 1st of January and the 1st of May, annually, make application for license and pay fees for the privilege of selling and offering for sale in the State of Ohio. Twenty dollars per brand is the fee. If the application is correct in form, the license is issued by the secretary of the State board of agriculture for a year ending with the calendar year, December 31. They are obliged to affix to each and every package sold or offered for sale the fertilizing ingredients, the amount of nitrogen, or its equivalent in ammonia, phosphoric acid, and potash; and a violation of the law in not properly stamping or stenciling or marking their goods, or having less fertilizing ingredients than they claim greater than 1 per cent, subjects them to a fine of from \$200 to \$500 and to imprisonment not more than 30 days.

Q. Have you had any prosecutions or convictions under that law?—A. No convictions, but several prosecutions; but before the matter got far enough to have a conviction, they have in every case paid the penalty and promised to be good, and there have been no convictions.

Q. Is the law satisfactory to both the manufacturer and the consumer?—A. I think fairly satisfactory to the consumer. The law is not perhaps absolutely unsatisfactory to the manufacturer, but its enforcement has been unsatisfactory. But I think now it is very satisfactory.

Q. Do you collect data in your office as to the amount and value of the fertilizer used in the State?—A. Yes; through the township assessors and county auditors.

Q. Have you in mind the amount that was used, say, last year in Ohio?—A. Our records are evidently greatly at fault in that. They show about 75,000 tons, while private investigations on my own account with dealers and manufacturers established to my satisfaction the fact that in 1899 there were sold and consumed in Ohio fully 200,000 tons.

Q. Have you in mind the average cost to the farmer per ton?—A. About \$17.

Q. It would seem then to be pretty generally used in Ohio?—A. Very largely used in some sections, and in some other sections but very little.

Q. Is the demand growing from year to year?—A. Yes. Three years ago, in 1896, my estimate was 150,000 tons, so that if I am correct the increase has been or was 33½ per cent in 3 years.

Q. (By Mr. FARQUHAR.) In what section of the United States are these fertilizers mainly manufactured?—A. The sources of supply are mainly in the West—for the animal supply—Chicago, Omaha, and Kansas City; and of the mineral supply, from Florida, South Carolina, and Tennessee, while the potash comes wholly from Germany. It is manufactured all over the United States, but on the seacoast more largely than any other particular part of the United States. The next perhaps would be the cattle centers, or the cattle center, we would say, Chicago.

Q. Comes from the slaughterhouses and the condemned cattle?—A. Yes.

Q. Has there been much difference in the price of fertilizer in the past 5 years in Ohio?—A. No; not a very marked difference; a little increase last year on certain ingredients. The phosphates have been growing a little lower because of the enlarged territory from which phosphates are derived—that is, mineral phosphates.

Q. (By Mr. A. L. HARRIS.) I suppose you are acquainted with the subject of taxation of farm property in Ohio, of course?—A. Somewhat.

Q. I wish you would outline the method of taxation in Ohio and say whether or not the agriculturist has to bear more than his share of the burden of taxation.—A. The laws of the State require that all property shall be taxed at its actual value. The values for taxation are fixed by township and district assessors. The property owned by agriculturists is assessed the same as other visible property—at its true value—as provided by law. Still I believe it is generally understood that it is not placed on the duplicate for all that it would bring under the most favorable conditions of sale. I have no doubt that the farmers of the State of Ohio are paying an undue proportion of taxes, because of the fact that securities are not taxed at their full value, or, in other words, they are not placed upon the tax list. What the farmer has is visible. It is not, I think, due to any superior integrity or honesty on the part of the farmer, but to the fact that his property is exposed to view and can not possibly escape the assessor's eye, while stocks and bonds, moneys and credits can and do. In the law itself, if it could be enforced, I see no reason why the farmers should complain.

Q. Would there be any advantage in appointing instead of electing the assessors?—A. If they would appoint excellent men, it would be a great advantage to have them appointed, because men who are elected as assessors are like all other officers who are elected—small officers—paid very small incomes and greatly inclined to favor the voters of their respective districts.

Q. (By Mr. FARQUHAR.) Does politics enter into the work of the assessor—favoritism?—A. Favoritism; yes.

Q. Do you desire to make the claim of venality among the assessors?—A. No; only that there are some very incompetent men elected assessors in Ohio, and I think there is no doubt that they favor their friends sometimes.

Q. Is it an office that there is much renomination in—reelection?—A. Yes.

Q. So that you are apt to have a continuance of the same one that is in the office?—A. Yes.

Q. What is your means of appeals against the assessors?—A. Appeal to the board of equalization of the county.

Q. In many cases is it successful?—A. Not many compared to the whole.

Q. Consequently they feel discouraged and make no appeal?—A. Make no appeal as a general rule.

Q. (By Mr. A. L. HARRIS.) How often is your real estate assessed?—A. Once in 10 years.

Q. How often is your personal property assessed?—A. Annually.

Q. Is there frequently a disposition on the part of the owner of intangible property to avoid the questions of the assessor?—A. Unquestionably; and many refuse to answer at all.

Q. (By Mr. PHILLIPS.) What do they do if they do not answer?—A. The assessor makes such return as he can from the information he can secure and adds 50 per cent to it as a penalty; and many people, owners of intangible property, let this stand.

Q. The most of them do, do they not?—A. Yes.

Q. (By Mr. A. L. HARRIS.) Have you any idea of the value of intangible property that never finds its way to the duplicate in Ohio? Was there a tax commission appointed a few years ago to investigate that subject in Ohio?—A. Yes.

Q. Do you remember what their general finding was in that respect?—A. Why, that there was a very considerable part of the intangible property that was not placed on the tax rolls.

Q. (By Mr. PHILLIPS.) Was it considered that the 50 per cent would account for that, added to their own estimate—the estimate of the assessor?—A. Well, I could only answer that by supposing that it was when it was enacted. That is an old law.

Q. (By Mr. FARQUHAR.) Under the taxing law of your State has the taxpayer an opportunity to swear off his tax?—A. Yes; Many times where the tax is placed, where the returns are made by the assessor and the 50 per cent added, or even where the 50 per cent is not added, the owner of the property comes in and makes an affidavit that it is too high, and makes his own returns, which is in many cases accepted.

Q. That is, really the whole end of the matter of taxation depends on the swearing off by the taxpayer?—A. That is the end at that time, but for a few years past we have had what is known as the Tax Inquisitor Law. The counties are authorized to employ a man whose duty it is, or whose privilege it is, at least, to investigate on his own account the holdings of the citizens of the county, and if he finds that they have been escaping taxation he reports to the auditor the amount, and the matter is investigated, even though settled previously, and large amounts of property have been discovered through these inquisitors.

Q. Well, these inquisitors then are officers under your auditor of State?—A. Auditor of the county.

Q. Auditors of the counties?—A. Yes; county auditors.

Q. You have no State inspection, have you, of your taxes?—A. No; we have a State board of equalization. I think no State inspection.

Q. Do you not think that where there are claims of tax shirking in any locality in Ohio or elsewhere, that the public prosecutor, if he is attentive to his business, under the proper law could make all tax shirkers pay in time? Is it not the laxity in the execution of the law that is the trouble?—A. That is the trouble.

Q. The innocent party must pay for those who shirk?—A. For those who shirk; that is correct.

Q. And that it is proper and just that the State government or county should protect the innocent taxpayer from the shirker?—A. Yes.

Q. Is not that the remedy really that should apply in every county and every State?—A. I think that will cover the trouble if it could be properly done.

Q. And you believe that in the tangible property of the farmer there he stands a harder task with the assessor than those that have intangible property that shirk?—A. I have no doubt of it.

Q. And, on the other hand, those that have intangible property can more readily pay taxes than those that have tangible?—A. Yes.

Q. Consequently it is a positive injury to the taxpayers of the county?—A. The

owners of the intangible property actually own their property, while the man who pays the taxes on his real estate is paying for the privilege of calling it his own at some future time.

Q. (By Mr. A. L. HARRIS.) How do you assess the value of corporations, especially railroad corporations, in your State?—A. By a board composed of the county auditors through which a given railroad extends. Their practice is to assess the company so much per mile for the main track, so much a mile for side tracks, so much for termini and improvements, and so much per mile for rolling stock.

Q. (By Mr. PHILLIPS.) Do you consider that a satisfactory way of taxing railroads?—A. I don't think it is an equitable way as it is conducted.

Q. You then favor a general law in the State in regard to taxing the railroads?—A. Yes.

Q. Rather than a local?—A. Yes.

Q. (By Mr. A. L. HARRIS.) Have you any amendment to the present law that you would care to suggest?—A. Oh, I do not know that I have. It is a matter to which I have given no attention for the last several years.

Q. You are conversant with the law known as the Nichols law?—A. Yes.

Q. If applied to railroads, what effect would that have in assessing at the true value in money the railroads?—A. I think it will be very much more successful than the law that we are now operating under.

Q. You feel like recommending the Nichols law as an improvement?—A. Yes.

Q. Have you any other suggestions to make as to the amendment of the tax laws of Ohio either for individuals or for corporations?—A. I think that all property should be assessed according to its earning capacity—intangible property, stocks, and bonds. I think that the constitution of the State of Ohio should be so amended as to make it legal to impose a license or collect a license or control the sale of intoxicants.

Q. (By Mr. FARQUHAR.) Somewhat after the character of the Raines law in New York?—A. Yes; something of that kind.

Q. Do you mean so that by such a thing as the Raines law you could get a great deal larger revenue than you can now, or would it have some public virtue features?—A. I think we would have a more responsible class of people in the business of selling intoxicants and that it could be better controlled; and yes, if you please, a larger revenue would be received because the business adds greatly to the burdens of the people of the State. I think the Raines law in New York, however, is more abused. Perhaps a better license law need not be.

Q. (By Mr. CLARKE.) Have you any knowledge as to the drinking habits of farmers in Ohio compared now with former years and compared also with men in other occupations?—A. Oh, I could only express an opinion.

Q. Are you willing to give an opinion?—A. Yes. I think the drink habit is not as great now among the farmers—in fact, among any class of citizens of Ohio—as it was some years ago. There are farmers and farmers, but I think what should be considered farmers are not as a rule intemperate, and I think intemperance is not as general as it was some years ago.

Q. Is it customary with Ohio farmers generally to furnish any kind of spirituous or fermented liquors in the field?—A. Not among the American farmers—that is, American by birth. The Germans in some localities have beer; but that is not as general as it was 10 years ago.

Q. (By Mr. A. L. HARRIS.) Have you any organization of farmers in Ohio that discusses these tax questions as well as other questions pertaining to agriculture?—A. Yes; we have various farmers' organizations. The leading one, perhaps, in numbers and influence is the grange, the Patrons of Husbandry. We have in the State a good many farmers' clubs who discuss—these organizations discuss all these questions.

Q. Has any remedy ever been agreed upon by any of the farmers' organizations and presented to the legislature for relief on the subject of taxation?—A. Not agreed upon, no; except that the farmers' organizations very generally believe that franchises and intangible property should be placed on the tax duplicate at their actual value; but they have not agreed upon any formal legislation.

Q. Does the constitution in Ohio interfere in any way with the taxation of franchises proper?—A. It is supposed to.

Q. Has any effort been made to amend the constitution in that particular in the State?—A. Yes.

Q. What has been the result?—A. It has not been successful.

Q. Can you state briefly the provision of the amendment?—A. I think I would rather not undertake that.

Q. On the subject of corporations, please state whether or not there is any complaint among the farmers in regard to discriminations or high rates of fare or transportation of farm products?—A. Yes; that complaint is pretty general.

Q. Has the matter ever been brought to your attention sufficiently that you could give the commission a remedy?—A. No; I think I have not any remedy to suggest.

Q. You have a railroad commissioner in Ohio, have you?—A. Yes.

Q. For railroads and telegraphs?—A. Yes.

Q. Does he from time to time lay before the governor of the State his reports upon the subject of railroads and telegraphs?—A. Yes.

Q. Do you remember whether or not he has recommended any legislation along these lines?—A. No; I have not had any definite information.

Q. The matter has been agitated, has it?—A. Very greatly.

Q. For legislation?—A. Yes.

Q. Has there been any decline in the money value of farm lands in Ohio in the last 20 or 30 years?—A. Yes; in the last 25 years there has been a marked decline in the value of farm land.

Q. Is there an up grade at the present time?—A. I think there is. Not so much so in actual sales as in the confidence of the people generally—the owners—and there are fewer forced sales than there were several years ago.

Q. Was that decline in the value owing to a decline in the actual productive quality of the soil or from outside causes?—A. The actual productive quality of the soil is greater than it was.

Q. How has that decline in values been brought about?—A. I think two principal causes: One is the appreciation of value of money; and the other the competition of the great West, which has been so greatly opened up in the last quarter of a century.

Q. (By Mr. PHILLIPS.) You think that is the cause largely of the decline in the value of farming lands?—A. Yes; farm values in the Eastern States (New England and New York State) have depreciated much more than Ohio values have. I think that is largely because of the competition. They have suffered more from competition even than we have in Ohio.

Q. Well, are farm lands now higher than they were before the war of the rebellion—the civil war—or was the war a factor in the enhancing of the value of land for a time?—A. The war was a factor, but land to-day is principally worth more than it was before the war, because of the greatly increased betterments.

Q. Will it sell for more per acre now than it did immediately before the war?—A. I was trying to give an answer to that. You mean in the same condition?

Q. Yes.—A. In the same state of improvement?

Q. Yes, certainly; that would have to be ascertained, to ascertain the value at different times—both.—A. So far as my knowledge goes, I should say yes.

Q. That it is worth more now than it was at that time?—A. Yes.

Q. Then, immediately after the close of the war was there a very considerable advance in the price of land?—A. A very considerable advance during and immediately after the war.

Q. Had the money values anything to do with that?—A. I think very greatly.

Q. It began, then, to be settled more after we returned to specie payment?—A. Yes.

Q. Then the war was the cause, in a sense, for the advance in the price; the money conditions, in a sense, growing out of the war?—A. Yes; the money conditions growing out of the war had much, I think, to do with the increase of the value of the agricultural property of the State.

Q. (By Mr. A. L. HARRIS.) Did the increased demand for agricultural products immediately after the war have any effect on the price of farm products?—A. Undoubtedly it did, very greatly.

Q. Did it have any effect on the price of farming land?—A. Oh, yes.

Q. (By Mr. FARQUHAR.) Taken all in all, do you think the condition of the farmer before the war and his present condition are much the same?—A. No; I think he is now in a much better condition than he was before.

Q. (By Mr. CLARKE.) Are there any abandoned farms in Ohio?—A. No; I have yet to hear of one. I think the farmer complains now because he feels that he is not as prosperous as he was at a given period after the war. I am explaining my answer to the question just asked about the relative condition of the farmer before the war and at the present time. I think that the condition of the farmer at the present time is greatly better than it was before the war.

Q. (By Mr. FARQUHAR.) Do you think at the present time the farmer is in just as good condition as the merchants and manufacturers in your villages and cities, all things considered?—A. I think for a period of years his condition was as good. At this particular moment I think it is perhaps not as good. The conditions are very favorable to the manufacturer and dealer in villages and cities at the present time, and the conditions in Ohio are very unfavorable to the farmer at the present time.

Q. To what do you attribute this unfavorable condition of the farmer?—A. Oh, the loss of crops in the present year, and to the low prices prevailing for some of the products of the soil at the present time, and the exceedingly favorable condition under which the city business man is now conducting business. All of the merchandise has appreciated very greatly in value, which causes the farmer to pay a larger price for his necessities and the merchant is getting a better profit.

Q. Well, has not wool appreciated, too, in the meantime?—A. Yes.

Q. And have not meats appreciated in the meantime?—A. Yes.

Q. (By Mr. PHILLIPS.) What has caused this great advance in the prices of merchandise and manufactured articles recently?—A. Well, I think there are some natural causes, and I think there are some artificial causes. The trusts have much to do with the increase in values of some of the merchandise, and the conditions prevailing throughout the country have had much to do with it.

Q. The reaction from the panic you think had something to do with it, and the demand for more manufacturing on account of less production?—A. The stocks had been exhausted; and there seems to be a demand for more than the mills could furnish, and the price appreciated.

Q. By Mr. CLARKE.) Have you any knowledge as to whether or not prices were too low during the period of depression?—A. From general knowledge I believe they were too low.

Q. Some appreciation, therefore, has been just and desirable?—A. Yes; but it has gone to the extreme and gone too high, as is usually the case; and is now, I think, settling back somewhat to normal conditions.

Q. (By Mr. A. L. HARRIS.) You may state whether or not any of the articles that are manufactured by large industrial combinations are used by the farmers; and, if so, what are they, and to what extent—fencing, roofing, or anything of that kind?—A. Well, anything of an iron or steel nature—that is, manufactured from iron and steel—has been greatly appreciated, in some cases more than 100 per cent, and merchandise generally which the farmers are under the necessity of buying has greatly appreciated and all building material.

Q. (By Mr. PHILLIPS.) Including lumber?—A. Including lumber. Lumber is about 25 per cent higher than it was.

Q. What is the per cent of increase on nails and wire fencing?—A. It was 100 per cent; it is now perhaps 75.

Q. The farmers' products have not advanced in proportion to this?—A. Not advanced in proportion. There are some lines of farm products that have advanced, notably wool and meat products, but they do not affect all farmers. Comparatively few farmers in Ohio have wool and beef to sell.

Q. (By Mr. CLARKE.) Are not the present prices of wire fencing of various kinds and also of nails and tin plate lower than they were 10 years ago?—A. I think I can not answer that question; I am not certain.

Q. Your comparisons, therefore, are with the period of depression?—A. Yes; with the low prices. I know that the low prices are very much lower than they were 10 years ago; but I am not able to answer your question.

Q. (By Mr. A. L. HARRIS.) Are the farmers of Ohio protected by any stock law or fence law, so that they can do without the use of wire for fencing?—A. They are not obliged to fence at all. It is a matter of choice with them whether they do or do not use fences.

Q. Is there a possibility, then, so far as wire for fencing is concerned, that the farmer may be able to do without until the price comes down to the proper figure?—A. I do not think they will use as much as they would if prices were lower, but I do not think the farmers in Ohio will ever dispense with fences. They have been educated from generation to generation to the habit of fencing their farms and fields, and I think they will so continue, although in some localities it is a growing practice to discontinue the building of fences.

Q. (By Mr. PHILLIPS.) Are domestic animals permitted to roam at large in your State?—A. No; only as many other things are permitted in violation of law. I suppose you refer to the law?

Q. Yes; whether there is a law prohibiting that?—A. Yes.

Q. (By Mr. A. L. HARRIS.) Do you know of any combinations to control the prices of farm products, such as dealing in options and futures?—A. Yes; I know of them in a general way.

Q. What have you to say in regard to their effect upon prices of farm products, if any?—A. I say that at times there is no doubt that values are enhanced or depreciated, but for all time or for the average time, if you please, I am not prepared to say that they affect injuriously the interests of the farmer.

Q. It is only temporary, you think?—A. Yes.

Q. Have you any means of gathering statistics in Ohio as to grain and stock conditions?—A. Yes; we have a very complete system of gathering statistics.

Q. Are those sent out to the public?—A. Yes.

Q. Does that have any effect so far as prices settling back to their normal condition?—A. Yes; there is a very great demand for our monthly reports. They are considered by all the dealers as being very valuable and worthy of consideration. They take every opportunity to try to get them at the earliest practical moment, and prices are at times affected by these reports.

Q. But in the main supply and demand regulate the price?—A. That is my opinion. I think that is not the opinion, however, generally of the farmers of the State.

Q. Admitting that that condition exists—that the farmer is laboring under a disability, have you any remedies to suggest or have they discussed a remedy that you think is available?—A. No.

Q. Have you ever given any consideration to what is known as the Hatch law, to tax? Would you care to express an opinion upon that principle of controlling dealing in options and futures?—A. I have never had any particular confidence in it. As I say, I am perhaps not representing the average agriculturalist of the State in saying this, but this is my personal belief, that it is not a crying evil that we need to pay any very serious attention to.

Q. Do you know whether freight rates have increased any in the last year?—A. Yes; they have.

Q. Do you know what per cent?—A. No.

Q. What effect does that have upon the farmer?—A. It has the effect of reducing the value of his products at their markets. I think much more can be accomplished in the management of transportation than in the matter of dealing in options for the benefit of the farmer.

Q. (By Mr. PHILLIPS.) Can you ship farm products from Ohio east as cheaply as from Chicago, or more cheaply than they do from Chicago?—A. No. I will say this, that the people who live 50 and 100 miles east of Toledo are under the necessity of paying the freight to Toledo and from Toledo to New York. They are obliged to pay the freight from their homes to Toledo, in addition to the Toledo rate to New York, to ship their products to the seaboard.

Q. Is the Toledo rate cheaper than the Chicago rate?—A. I think it is, slightly. I am not prepared to say that the rate in Ohio is greater than the Chicago rate, but it is greater in the eastern part of Ohio than it is in Toledo.

Q. That would be one reason why your farm products are not so valuable in Ohio as they would be if you had equal rates?—A. Yes. The same in the West. And another reason is the great increase in production in the West that I referred to a little while ago in reference to the depreciation of farm values.

Q. About what would be the difference, say, from the central part of Ohio to New York, and from Chicago to New York, in distance?—A. About 300 miles.

Q. And yet, in your opinion, you pay from the central part of Ohio about as much as they do from Chicago?—A. From Chicago; yes.

Q. (By Mr. FARQUHAR.) Are you taking into account the export cereals, or is it the domestic consumption you are talking about when you speak of rates—through export rates in comparison with domestic rates?—A. I was taking into account both of them.

Q. Well, your export rates from Toledo—rates to Liverpool on cereals—are you comparing those with the Chicago rates?—A. I am not certain; I said I could not answer about Chicago.

Q. (By Mr. A. L. HARRIS.) Do you know whether the shippers in the interior points in Ohio ever have any trouble to get cars in busy seasons?—A. They do.

Q. Does that work to the advantage or disadvantage of the farmer?—A. Disadvantage, clearly. Very much of the cereal products of Ohio are shipped west before they are started east.

Q. (By Mr. CLARKE.) How far west?—A. As far as Toledo.

Q. That is a through billing, is it not?—A. Yes.

Q. Would it be advantageous to require the railroads to make all their stations through billing points?—A. Well, no, I think not; not all the smaller ones.

Q. (By Mr. FARQUHAR.) You speak of the farmer paying this extra freight. Is it common for the farmers of Ohio to ship their grain to New York or any seaport, or is that done by commission men?—A. That is done almost entirely by commission men.

Q. So that the farmer gets the going rate for his grain where it is sold?—A. Yes.

Q. (By Mr. A. L. HARRIS.) But does not the buyer often take more than is necessary sometimes in order to provide against the contingency of the obstacles he has to overcome—the merchant?—A. Yes. They make no secret of that in some cases; they say so openly, that they have to protect themselves in that way because of the possibility of their being held up.

Q. (By Mr. FARQUHAR.) But has not your Ohio farmer got an advantage now,

with the purchaser right on the spot, ready cash, immediate on delivery, and the going rate of the market gauged either by Chicago, or New York, or Liverpool, over what he ever had before. Has he not got more chances for fair play now for the products that he has for sale than he ever had?—A. I do not think his condition is worse now than it was.

Q. Well, when you had to sell to the storekeeper in the early days, do you think the farmer had any advantage at all? Was it not all on the side of the storekeeper, the merchant?—A. Oh, no. I am not inclined to be a calamity howler. I am inclined to think the farmers are in a very good condition. Being a farmer myself, I think they have evils of which they can justly complain.

Q. Well, if there is a discriminating rate, is not the cut shared by the consumer with respect to that extra discrimination, and not altogether lost by the farmer or the commission man? Does it not come on the consumer finally?—A. Well, that is a very large subject. Where values are established, we have plenty of economists that claim they are always valued at Liverpool, and they make a very fine argument that if we had an export bounty we would increase the value of the home products by the amount of the export bounty; that all prices come from Liverpool. I do not believe that. I believe that all the conditions all over the world make the prices at Liverpool, and then we locally are averaged up from Liverpool.

Q. And very often you have to sell under the conditions of a gambling market in Chicago or New York?—A. Very often; and sometimes, if you please, under the favorable conditions of a gambling market.

Q. So that sometimes it is European consumption that enters into it, sometimes bad weather, bad crops, insects, blight, and anything else that enters as much into it as the Liverpool prices?—A. These things all help Liverpool make prices, and the weakness of human nature makes prices fluctuate many times quite as much as natural conditions; and the farmer does not always get the hot end of it.

Q. (By Mr. A. L. HARRIS.) Can the farmer produce cheaper now than he could 25 or 30 years ago?—A. Yes, by reason of improved machinery and appliances.

Q. Does the farmer use as much hired help now as in former years?—A. No.

Q. Is there a demand for help in the rural districts?—A. I think so, yes.

Q. Has the price for farm help increased or decreased in the last 25 or 30 years, per day or month?—A. Compared with 30 years ago it has perhaps not increased, but compared with 40 years ago it has greatly increased.

Q. Thirty years ago we were coming out of an abnormal condition?—A. The abnormal condition succeeding the war.

Q. Have you a pure-food law in Ohio?—A. Yes.

Q. How does that work—for the benefit of the community or detrimental to the community?—A. I think so far as it is enforced it is beneficial.

Q. State whether or not it is enforced generally in Ohio.—A. To some extent.

Q. Is it a difficult law to enforce?—A. I think it is a very difficult law to enforce.

Q. (By Mr. PHILLIPS.) Do you consider your pure-food law as good as that obtaining in other States, or have you made some comparison?—A. I have not given any great attention to that, but I think we have a fairly good pure food law in Ohio.

Q. (By Mr. A. L. HARRIS.) It is enforced by the food and dairy commissioner?

A. A food and dairy commissioner, elected by the electors of the State.

Q. Who appoints assistants in different portions of the State?—A. Yes.

Q. Have you given the subject of a national pure-food law any thought?—A. Some thought; not extensively.

Q. Are you favorable to it?—A. I am favorable to such a law and I believe that is where we should have the legislation.

Q. Where would you lodge the enforcement of that law?—A. In the department of agriculture.

Q. Have you considered or examined the provisions of some of the pending bills before Congress, and those that have been before Congress heretofore?—A. Not to any great extent, but their general features.

Q. As a general thing you favor the proposition?—A. Yes.

Q. Have you a law in Ohio to prevent the spread of disease among animals and plants?—A. Both; yes.

Q. Who enforces the law to prevent the spread of disease among animals?—A. I think it is not very rigidly enforced.

Q. You have a commission?—A. Yes.

Q. The enforcement, you think, might be improved upon?—A. I think so.

Q. Is that commission paid a sufficient salary to look after?—A. (Interrupting.) I think the commission is not paid a salary. I think the 8 members of the commission receive only expenses, and they employ experts, men that conduct experiments.

Q. Is that entirely separate from your department?—A. Yes; it is called the live-stock commission of the State; is composed of 3 members appointed by the governor. It is in such repute now that I am informed that the general assembly made no provision for its existence for the succeeding 2 years—for this and next year.

Q. Have you ever thought of any amendment to the statute of Ohio that would make that law more efficient?—A. Yes. I prepared a bill two years ago which passed the senate and would have passed the house except for unfortunate differences existing between some of the members growing out of some legislation sought for one of the large cities of the State, so that it was not favorably acted upon in the house. It provided that the state board of agriculture should constitute the live stock commission of the State with authority to appoint such officers as it deemed necessary, using very largely the present law of the State. That is what ought to have been done because our board is representative of the different parts of the State and is always composed of very good material. I had in mind then the appointment of a State veterinarian with office in the department of agriculture who would be ready at all times to respond to any calls from the different parts of the State, and that matter would grow into a very considerable bureau of the department of agriculture. The principal officer of the present board is a physician with a large city practice, and I think he is not particularly interested in the work of the commission. The members of the commission are very estimable gentlemen, but the commission itself is not valuable to the farmers of the State.

Q. Have you examined the national law relative to the prevention of the spread of disease among domestic animals?—A. Yes.

Q. Have you any suggestions to make as to any amendments that could be made to that law?—A. It is mostly prohibitive as to transportation. No. That is very good. The national law also provides for the cooperation by the Bureau of Animal Industry of the United States Government with State live stock commissions where they are organized for cooperation, which ours at present is not, and which we sought in the legislature two years ago.

Q. So to some extent you lose advantage of the Federal law?—A. Almost entirely.

Q. (By Mr. FARQUHAR.) Does not the Federal law establish a quarantine for your protection?—A. Yes; that is largely its province now.

Q. It is all of its province, in fact?—A. No; not all.

Q. Almost; of course condemnation enters into it.—A. The national law provides for cooperation with State commissions in the matter of investigation and the extirpation of diseases, etc. The expense is borne by the National Government, and would be a very great aid to the commission if enabled to cooperate. I think we have perhaps as poor enforcement of live stock laws in Ohio as in any State.

Q. (By Mr. A. L. HARRIS.) They make reports from time to time?—A. Yes. Don't ask me about the reports, Governor; I suppose you have seen them.

Q. Have you a law in your State to prevent the spread of disease among plants, fruit trees, etc.?—A. Yes; they are working on that legislation now. They have had some laws in regard to that matter for some years, and this year quite an important addition is made to the laws for the suppression and eradication of the San Jose scale and other insect pests.

Q. Have you any amendments to suggest to that law further than those put on the statute book by the present general assembly?—A. I think that I have not at the present moment, but I had during the discussion in the general assembly. I thought they ought to add a good deal to it; but they are going in the right direction. They have appropriated \$15,000 and placed the matter in the hands of the board of control of the agricultural experiment station, and the board has appointed an inspector who will inspect the nurseries and orchards of the State, and I think that from that will grow a very good law.

Q. Have you any suggestion to make on your own account for the improvement of the condition of agriculturists in your State or in your locality?—A. Nothing, except as to the more equitable enforcement of the tax laws and the transportation of products. I believe farmers have the same interests that other people have.

Q. The question of transportation is almost necessarily one of Federal legislation?—A. I think so.

Q. Are you in favor of Federal control of our lines of transportation?—A. No, except so far as rates are concerned—not ownership.

Q. Have you any suggestion to make as to the best means for the Federal Government to control as to rates?—A. Nothing more than your commission has already

recommended, that the Interstate Commerce Commission's powers should be increased and enlarged and that they have better facilities for enforcing their orders.

Q. Is that view pretty generally entertained by farmers?—A. I think so. There is a feeling that there should be some State legislation especially in the matter of passenger travel. That is pretty general over the State, I think, but nothing has been done for many years. I think the general feeling is that the National Government should control the transportation of commodities.

Q. (By Mr. CLARKE.) Is agriculture in Ohio variegated or does it run to specialties?—A. Both. We have specialists and we have the general agriculturists. In Ohio it is generally mixed husbandry.

Q. Is it your opinion that it is generally more profitable in the long run?—A. I think it is the safer for the average man; the specialist would better go into special lines. By far the larger number of people engaged in agriculture, I think, would better be in general agriculture—mixed husbandry.

Q. Are as many sheep kept in Ohio as there were 15 or 20 years ago?—A. No.

Q. What is the reason for that?—A. Because of the depressed condition of the industry. The industry is very much improving now, but they have not had time yet to increase their flocks to the numbers that they contained 10 years ago. I believe that is the time you mentioned.

Q. The industry was affected by tariff legislation, was it not?—A. Yes.

Q. Is there any reason in the high cost of lands or otherwise why Ohio may not have as many sheep as it ever had?—A. With present conditions I know of no good reason why Ohio may not have as many sheep as it formerly had. The matter of making that an independent industry is affected by the high price of lands, but I think it is true that all farmers can keep a reasonable number of sheep better than not to keep them, under present conditions.

(Testimony closed.)

WASHINGTON, D. C., June 7, 1900.

TESTIMONY OF MR. A. J. WEDDERBURN,

Corresponding Secretary, National Pure Food and Drug Congress, and Master State Grange of Virginia.

The Industrial Commission met at 2.35 p. m., Mr. Phillips presiding. At that time Mr. A. J. Wedderburn was introduced as a witness, and, being first duly sworn, testified as follows:

The WITNESS. My name is Alexander J. Wedderburn. I am corresponding secretary of the National Pure Food and Drug Congress and also master of the State Grange of Virginia. I reside at Dunn Loring Post-Office, Va.

Q. (By Mr. A. L. HARRIS.) How long have you been master of the State Grange of Virginia?—A. Since 1894.

Q. How long have you been secretary of the Pure Food Association?—A. Since its organization in March, 1898.

Q. What is your occupation?—A. I am a publisher and farmer; publisher of the agricultural paper *National Farm and Fireside* at Washington and a farmer in Virginia.

Q. How long have you been engaged in the business of farming?—A. Well, off and on for about 25 years, and maybe a little longer than that—about 26 years. I was identified with the Grange before I was identified with agriculture, although I was raised on a farm from the time I was about 12 until I was about 16 or 18.

Q. Have you at any time been employed by the Secretary of Agriculture or the Agricultural Department to do any special work?—A. I have been employed under Secretaries Coleman, Rusk, Morton, and Wilson as special agent of the Department of Agriculture to investigate the extent and character of food adulteration and made reports to all of them.

Q. How long were you engaged in that work?—A. I think I made 5 different reports.

Q. On what subjects?—A. On the subject of extent and character of food adulteration.

Q. In general, or did you ever make a special report on any particular subject?—A. I made 2 reports on special subjects while engaged on the other work. One was on the adulteration of flour, during the present Administration, and the other was on the adulteration of butter and butter nostrums, which was pub-

lished by Professor Wiley, with considerable addition, as Farmers' Bulletin No. 12, of the Department of Agriculture, under the previous Administration.

Q. Was your report on the adulteration of flour used as a basis for any legislation?—A. Well, it was called for and published by order of the Ways and Means Committee, and the legislation that followed was the bill compelling the proper branding of adulterated flour and the taxing of adulterated flour—I mean the flour bill gotten through by Mr. Gallagher and his associates.

Q. Do you remember the number of that bulletin?—A. That was not published as a bulletin; it was published by order of the Ways and Means Committee of the House of Representatives. They sent for it before it was published by the Department, and published it.

Q. In what year?—A. I think 3 or 4 years ago when that bill was passed—I do not exact'y recollect. I do not think I have had but 2 copies of it, and I do not recollect now about it especially.

Q. We would like to have sufficient information, so we can get hold of it.—A. There would be no trouble in that. It was published at the time the law was enacted, or just prior to the law.

Q. In the Fifty-fourth Congress?—A. The early part of the Fifty-fifth Congress.

Q. You may state, if you will, what you know about the wages in your section of the State.—A. Well, we pay there 50 cents and board for agricultural farm labor and 75 cents without board. Occasionally higher prices are paid. Of course, in harvest time it runs from \$1.50 to \$3 a day; but I am speaking of the average wages.

Q. Paid in cash?—A. Yes. Very rarely, I think, orders are given now. They used to be; but everything is cash now.

Q. Have you employment by the month?—A. Yes. By the month wages run about \$12 with board, or \$15 or \$16; but it is generally by the day and paid weekly.

Q. Is the laborer frequently a married man?—A. Often.

Q. Does the landlord furnish the tenement house?—A. Yes, where he employs by the month or year. In my home neighborhood most of the colored people have a few acres of land and have their own house.

Q. You are speaking of colored labor; you have no white labor?—A. Very little. Sometimes we have what you might call skilled labor; not really skilled labor, but a man who does some work around the farm, such as digging ditches and wells and pruning fruit trees and things of that kind. He would get a dollar a day.

Q. Is that colored labor satisfactory to the employer?—A. Generally speaking, yes. I do not believe our people would be willing to exchange him for any other kind. We are used to him and know what he is. We know he is lazy and good for nothing, but he gets there after awhile, and we do not have to pay him very high wages.

Q. Do you find him trusty?—A. He will steal chickens and will pick up anything that is lying around loose. As one of them told me a few days ago, "Don't leave your tools around; they will take them just naturally;" but he is the best laborer we can get.

Q. Do any of these colored people farm on the shares?—A. Not in our section. In southern Virginia I think there are quite a number who farm on shares, where they are furnished house rent and sometimes provisions.

Q. As master of the State Grange you have been over the State?—A. Pretty well.

Q. And are conversant with agricultural conditions?—A. Yes; not very recently, but a few years ago I was very familiar with it.

Q. You may state if there are any general terms upon which crop sharing is done. Do they share the crop or pay money rent or how is it done?—A. Not a money rent as a rule. It depends on what the proprietor and landlord furnishes. In some places, as I said, he furnishes the land; in others, the land and team; again he advances provisions for the man and his family.

Q. Suppose the farmer only furnishes the land, and the tenant furnishes everything else, what are the terms?—A. About one-fourth. I am speaking now of the tobacco section.

Q. State what crops are raised in this section.—A. Tobacco crop. I lived there for a good many years; what is called "South Side Virginia," in counties south of the James and east of Petersburg.

Q. You may state what share the tenant gets if the landlord furnishes everything except the labor.—A. He then gets about one-third; but rather the general plan was to sell the crop, take out the advance, and then the landlord would get his fourth for the land and the balance would go to the tenant.

Q. Would the landlord furnish the living?—A. He would advance it and charge him for it.

Q. Take a lien on the crop?—A. No; I think the only lien laws we have in Vir-

recommended, that the Interstate Commerce Commission's powers should be increased and enlarged and that they have better facilities for enforcing their orders.

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Q. That is the burning question?—A. I think so. Of course we have the question of suffrage, but I do not think they would have called the convention for the suffrage question alone, because a great many white people, if an educational qualification is made, would lose their vote; it cuts both ways. But the strongest white district went strongest against the constitutional convention, and the strongest black district went the strongest for it.

Q. You do not think the color line has much to do with it?—A. Of course it had some, but not as much as the other.

Q. Does the value of your agricultural property keep up?—A. No, except under exceptional circumstances. For example, counties adjoining Washington have increased in value; valley counties and some sections where there have been a great many mining industries established, and a great many people have come in, have increased in value; but, as a rule, take the State over outside of these special localities, property has decreased in value.

Q. What is the cause of that decline in value?—A. There are two troubles. One is the decline in the profits of farming, the decline in prices of agricultural products; the other is that we have not enough population for our territory, and that population to a certain extent is kept away, as the white laborer does not come because we have the negro labor, and they do not mix very well.

Q. Have you any abandoned land?—A. No; I think not. There is some that has been sold to the State for taxes, but not what you would call abandoned land. There may be some in certain sections that I know nothing about, but the farms are generally occupied, and the houses are generally occupied by somebody. You rarely see an abandoned house.

Q. Is there any decline in the productivity of your soil?—A. No; I rather think where the soil has been properly cultivated and fertilized the yield would be larger than it has been. I know it is absolutely possible, from my own experience, to very largely increase the yield of farm products by proper cultivation and fertilization.

Q. What kind of fertilizer do you use?—A. I used to be the representative of the State Grange for several years as agent, and manufactured fertilizers largely; and for my own purpose I use potash and phosphoric acid, trying to supply the ammonia from my barnyard manure.

Q. (By Mr. FARQUHAR.) Is it a fact that the impoverishment came a great deal through the slave labor in the old days?—A. It came from most outrageous cultivation. The fact is, they would get an immense number of slaves—and up to a few years before the war, when Peruvian guano was introduced, there was no kind of fertilizer, and they knew nothing about it—and go in and cut out the trees and dig out the roots and put in tobacco; put all the stable manure that they had on that ground and plant it in tobacco until it ceased to grow tobacco, and then plant it in wheat for 2 or 3 years, and then vary with corn and oats, and oats and corn, and corn and oats, until they killed the land; and that is the cause of the impoverishment of Virginia, as well as I can understand. I saw that system in southern Virginia when I was a boy, and I am pretty well satisfied it is the system they have tried everywhere.

Q. Lack of diversity of crops and continuous cropping year by year?—A. Yes.

Q. Taking all from the earth they possibly could?—A. And putting nothing back. Take this land I have; within 12 miles of where we are sitting I own a little property: I went there and found old-field pines, cut them down, got the stumps out, and fertilized it with potash and South Carolina phosphate—about three-fourths phosphate and one-fourth potash; put it on pretty liberally and put on the leaves and muck I got on the land, and I followed that up, and can produce as good a crop on that little piece of land as anybody can. Other men who raise wheat in the county have done the same thing, and we produce as high as 30 and 35 bushels to the acre. A better system than mine but a little longer one, would be to sow the land in black-eyed peas, or rye, or any other one of the—

Q. (Interrupting.) The Vetches tribe?—A. The Vetches tribe, and then turn under the soil. You might call that simply using the green crops for improving the value of the land, and it will do it much more rapidly than anything else. I have a neighbor who bought a field of 30 acres and built a house 4 years ago, adjoining my land. It would not produce anything hardly. I do not think it would produce 3 barrels of corn per acre. He began by fertilizing it; set it out in fruit trees, and then planted between these trees this crimson clover and peas, and his ground is almost as dark as this table to-day, and his trees have grown into a magnificent orchard in this short space of time. Nobody wants a better or nicer farm. He is an employee of the Government and lives out there. His name is Snyder.

Q. (By Mr. A. L. HARRIS.) How much is your farm land worth on the aver-

age?—A. I paid \$40 an acre for mine in the woods, but we are right at the station and have a railroad running right through my land—most of it station land. I consider it worth more than that, but the land between here and Leesburg generally ranges from \$100 to \$125 an acre. It is a short distance and a great many go out there and are building up a neighborhood and community. It is just a little beyond Falls Church. I am only about 3 miles from there.

Q. Have you any knowledge of the value of the lands in the tobacco portion of the State?—A. I bought land there some years ago at anywhere from \$3 to \$10 an acre, and I expect the same could be done to-day. Thousands of acres were for sale there a few years ago, when I went down there often, at less than the cost of the improvements.

Q. Improved land?—A. Yes; and the improvements were much more valuable than the land cost if you had to put them up.

Q. Do you know how many pounds of tobacco that land would produce?—A. That would depend entirely on the cultivation and the amount of fertilizer put on it. Some sections of that country—take it around Danville—I suppose lands have gone up materially; they have gone into the bright or yellow tobacco culture. The section of the State I was more familiar with was Lunenburg and Charlotte counties. Near Petersburg and Dinwiddie they raised the shipping tobacco—and good tobacco, too—but the yield, I think, was—probably a fair average on a good piece of land would be a quarter of a pound to the hill—for the heavy shipping tobacco, you know. I guess you had better say about 5 plants to the pound. Of course the negroes who did not cultivate well or the slovenly farmers did not get anything like that, but I am speaking of a good farm, fair land, well fertilized and properly cultivated.

Q. Is the state of agriculture improving down there?—A. I could not answer. I have not been there for some little time. In our northern section I would say it is, decidedly.

Q. What is the value of farm lands in other portions of the State?—A. The valley lands have always been high. They run, according to the distance from the railroad, from \$25 to \$100 an acre, from one end of the valley to the other. Loudoun County land runs from \$40 to \$50 and maybe \$60 around villages and towns. Lands in Prince William County, within 30 miles of Washington, have sold at auction for less than \$1 an acre in the last few years.

Q. (By Mr. FARQUHAR.) What is the reason of the low price?—A. Take for example Bristow Station and Noaksville Station, a few years ago—12 or 15, maybe—the land was valueless. Northern settlers came in there and went to improving their land and raising grass, and now instead of buying hundreds of tons of hay as they did then, they ship hundreds of tons. The land has increased largely in value. It is all susceptible of improvement. Those cheap lands lie 5 or 6 miles from the depot—men came in there with sawmills and bought it, giving \$2 and \$3 an acre, cut off the heavy timber, and sold the land for anything they could get, as I say, for \$1 an acre, and glad to get rid of it; did not want to cultivate it.

Q. (By Mr. A. L. HARRIS.) Could dairies be established?—A. It would make fine dairy land.

Q. Would dairying be profitable?—A. From here to Leesburg, from here up to Manassas, I think, thousands of gallons of milk are shipped into the city here every day. There is no creamery business done. One or two started in Loudoun County, but I do not think they proved successful.

Q. Is all the land occupied that could be used profitably for dairying?—A. Oh, no.

Q. Is there not a future, then?—A. An immense future, if we could just get the people to come there and settle; if we could only get them to understand that we have the lands, right under the shadow of the Capitol, almost as cheap as they could get them by going thousands of miles away.

Q. Where did the farmers come from who settled in the neighborhood of Bristow Station?—A. I do not know. I know that there are some Iowa farmers and some from New York. They were in the grange. And I know there were one or two Ohio farmers. Mr. Dodge was from Ohio.

Q. Has the investment been a profitable one to them?—A. I would not like to answer that, because I do not know; I hope so. Mr. Dodge is a practical and a prosperous farmer and seems to be well to do. Mr. Dodge was at Manassas, Mr. Mellon was at Nokesville, and Mr. Smith was there. But these two men—I recall their names and recollect their farms—have fine farms.

Q. Are they pretty largely engaged in stock raising?—A. I don't think they raise stock very much; raise grass more than anything else. They sell grass. I don't recollect positively what they do, but I know they make hay around Nokesville, and I think Mellon made a great deal of it. Mr. Dodge has a fine place at Manassas.

Q. Have you any organizations of farmers in Virginia?—A. Practically none. We had the Grange at one time very largely organized, but it got into politics and broke up, and then we tried to keep it up for a number of years, but it is practically out of existence.

Q. Did you have the Farmers' Alliance at any time?—A. Yes; that went the same road, only a little quicker.

Q. Do you have any farmers' clubs?—A. Occasionally, here and there. The Horticultural Society is, I think, the only thing that is practically keeping up an existence in the State now. We have several very fine farmers' clubs; one in Fairfax County near the Mount Vernon place, called the Woodlawn Club, principally people who emigrated from New Jersey, Quakers; fine, elegant character of people, who have been there ever since before the war; bought some of the original Mount Vernon estate; thrifty, intelligent, industrious, and successful farmers. I know little about the neighborhood, but I know something of the people, and know them to be just what I have described them to be.

Q. You think there is a general improvement among the farmers?—A. Yes; of course there is an improvement, and yet there has been a change of farms, and a change of men. Property has been improved in certain sections. I am speaking principally of my own section. Of course we have the advantage of Washington; but as a rule I do not think the farmers have made much money, and they have had to be very economical and forced not to buy what they would like, because they do not have the means to pay for it.

Q. Is the cost of production too high for profit?—A. Absolutely; not only the cost of production, but the cost of everything that is used in the production. The farmer has had to pay a tremendous high price for everything. He has had to pay the price of the product manufactured in this country and protected by what I consider an unjust Federal law; he has been made to pay more than the real value of the product simply because the law enabled the other man to charge it; and he has had to sell in a market which gave the other man the privilege of getting his products, especially his staple products, at a price that the world gives—that was fixed in the world's markets.

Q. Now, the products that he bought, that have been high, what did they consist of?—A. Take barbed wire, for example; take every farm implement, for example; take all that he wears and everything he uses on his farm, and building material. Take glass. I have bought 50 or 60 windows for my house this year. If I had bought them 2 years ago they would have cost me, I think, at least one-third less. I know that the price has increased at least 30 per cent. On the barbed wire that I bought 2 years ago and some this year—not only barbed, but plain wire, wire fencing—the price had been advanced from \$2 to \$1. It has fallen to \$3 now, but, alas, I have bought mine. There has been an advance of 75 to 80 per cent in the last 2 years on the price of plows, and on the price of everything—every manufactured product that comes under the protective-tariff laws of the United States, so far as I am able to find out.

Q. What is the price of your fencing wire used 1 year ago?—A. A year ago the price had gotten up, but before they formed this combination called the Steel Trust I purchased wire at about \$2 a hundred. The last I bought cost me \$3.50, and it then went up to \$4. I understand it is now down to \$3. My merchant told me that a day or two ago.

Q. There is no additional tariff on wire.—A. Probably not. That is a combination. But there is upon steel and its products, is there not?

Q. (By Mr. FARQUHAR.) Is wire a patented article?—A. A great many patents.

Q. On steel wire?—A. I say there are a great many different kinds.

Q. The barbed wire usually that the farmers desire is a patented article, is it not?—A. I do not know. I presume so. But the same product that sold for \$2 was raised afterwards to \$1. I think that was due to the combination principally, and it is now, as I said, selling for \$3 per 100 pounds.

Q. (By Mr. A. L. HARRIS.) Will they be able to maintain those prices?—A. I hope not. I do not want them to lose anything, but I hope they will not keep them up, because we can split rails and put them on the place at a less rate than we can buy at \$4 a hundred pounds, I think.

Q. (By Mr. FARQUHAR.) You speak of articles that enter into the family being raised in price to the consumer by an unjust tariff. Is sugar raised? Is your clothing raised? Boots and shoes raised?—A. On boots and shoes I do not think there is any tariff. The sugar combination is all in the hands of one party, as I understand it, and they raise and lower it to suit themselves.

Q. Do you not get cheaper sugar now than you ever did?—A. Oh, no. I do not see that it is any cheaper. I am not a chemist and do not know whether it is any purer; and it is not any cheaper. I think it is a little higher than it has been. It certainly raised for a time about three-quarters of a cent retail.

Q. (By Mr. CLARKE.) I will ask you with what period you are making your comparison on sugar?—A. Probably 3 or 4 years ago it was down and retailed at 5 cents, and got up to 6 and 6½ at one time, and now I think it is probably 5½ or 6 cents, according to the quantity in which you buy it.

Q. You know under the tariff of 1890, commonly called the McKinley tariff, sugar came in free of duty?—A. Yes.

Q. And then there was a duty placed on it by the next tariff, commonly called the Wilson tariff, and that duty or some similar duty has been continued since?—A. Yes.

Q. Are you making your comparison of the present price with the price under the tariff of 1890 or that of 1894?—A. The fact of the business is I am getting a little beyond my depth, and I do not like to talk about these things; but my general impression is I paid at one time as low as 5 cents for my sugar, and it costs me 6 about now.

Q. Have you made any investigation in Virginia as to the feasibility of growing the sugar beet there and making your own sugar?—A. There was some made around Winchester, and the analysis of the beets as sent to the Department, I understand, was very satisfactory. There was some talk at Fredericksburg of establishing a beet factory, but I do not know what it has come to. I have raised some beets from the seed sent me by Dr. Wiley. They were very fine and nice. I sent them samples, but not being fixed to go into that business I never asked him what the result of the analysis was.

Q. There is no sugar-beet industry in Virginia now that you know of?—A. No. Dr. Wiley told me at one time that he rather thought that, except around Winchester and around that belt of the State, Virginia was rather out of the line.

Q. Is there much wheat grown in Virginia?—A. I do not know. There is a good deal in the valley of Virginia and through the Piedmont section and some little in southern Virginia.

Q. Any in Alexandria and Loudoun counties?—A. In Loudoun, a little. Corn is the principal Loudoun product, and in Alexandria I do not know of any wheat. A little wheat is raised in Fairfax County. Wheat does not pay us at all.

Q. Are you acquainted in western Maryland?—A. Yes. I understand that in this portion of Maryland adjacent to the District, Washington and Montgomery, they raise very fine wheat crops.

Q. Is there not a great similarity between your soil and theirs and your climate and theirs?—A. Very much the same thing. I stated that we had raised to my knowledge as high as 35 bushels per acre of wheat in Fairfax County, within a few miles of Georgetown.

Q. Is a great deal of your farming carried on by machinery?—A. No; our farms are not large. We use the mower and reaper and thrashing machine and plow. We have the binder in the larger wheat-growing sections, where a man raises 300 or 400 bushels. That is about the largest amount with us.

Q. Cultivators and seeders are used, I suppose?—A. Yes; we use the grain drill. Of course we buy for our gardens and farms the latest improved plows and cultivators we can get.

Q. Hoes, spades, and shovels are in universal use?—A. Yes; those are old means. I supposed you referred to those used on bonanza farms, etc. We have all those, of course. Our people try to use the very best they can get.

Q. Do you know how the prices of those implements and all ordinary implements like plows, harrows, etc., compare with those of, say, 25 years ago?—A. No; I do not recollect. I know that the plows and most of the steel implements are higher than they were 3 to 6 years ago.

Q. Do you know whether the prices 3 or 4 years ago were remunerative or not?—A. To the manufacturer? I do not know.

Q. Do you know how these prices compare with prices of similar articles in England?—A. No. I see from Congressional reports that some years ago, during the Fifty-second Congress probably, some machines selling in this country at certain prices were sold in Europe and Canada at considerably less prices, but I do not know that only from the Congressional report.

Q. You know that it is something of a practice with all manufacturing countries to make a lower price in foreign markets than they do in the domestic market for a while, in order to build up a trade?—A. I did not know that. I would not blame them for doing it; but the only thing I know about this whole matter is that I would like to see the farmer—I am not trying to attack the protection of the manufacturer or his products provided the farmer is given an equal protection that will enable him to buy that product. What I do not like and object to is the fact of protecting the manufacturer and making the farmer pay the bill and letting him scuffle for his price on his product.

Q. What farm product is it which does not enjoy a fairly equal protection with

the manufactured products?—A. The fact of the business is I do not believe there is any farm product except wool that has any protection at all, that I can recollect.

Q. Do you not know there is a protection on tobacco?—A. What is the good of it? Do we not export thousands and thousands of pounds where we import one?

Q. Tobacco?—A. Certainly.

Q. Have you examined the subject so that you have definite knowledge?—A. I know that for some years we exported thousands of pounds of tobacco where we imported one—I will not say thousands, but certainly many hundreds where we imported one. We import from Cuba and Manila, but—

Q. (Interrupting.) Take farm gardening now. You know that when the Wilson bill was pending in Congress the Bermuda farmers came before the Committee on Ways and Means and asked to have the duty taken off from vegetables, such as they exported to this country, and Mr. Bryan, who was a member of the committee, asked who paid the duty on these vegetables, the American consumer or the Bermuda producer, and they replied that the producer paid the duty—the exporter. Now, do you not know that these duties exist on all vegetables, such as the people of this country import from any other country?—A. I am perfectly familiar with the fact that in the tariff bill there are protective duties on products from abroad, just as they levied in the McKinley bill, a tariff on eggs. I do not know whether that was put back under the Dingley bill. They had a tariff on wheat, on tobacco, not on cotton, and yet cotton is brought in from Egypt in rather large quantities, and sufficiently large quantities to materially reduce the price of the sea-island cotton, which is the particular staple of cotton that comes from Egypt and the steppes of Russia. Now, I know that this Government has these protective tariffs; but when you come down to vegetables, practically they amount to nothing, because transportation in localities might have a great deal to do with that; but when you take the great staples of wheat and cotton and tobacco and corn, the great staples that we ship from this country abroad and which form a large proportion of our exports and bring our money here, no matter what protection is put in a tariff bill, no matter whether great or small, it amounts to nothing as a business proposition, if it is put in simply for the purpose of deluding the man who raises it. It is wrong. As a protection you might as well put your protective tariff on wheat at \$5 a bushel, and it would not amount to any more than 10 cents or 1 cent or no tariff at all. We ship these products abroad. The price is fixed at the central market of the world, in Liverpool, and we pay the same price here that is paid in the Liverpool market, less the cost of transportation to Liverpool.

Q. Is Virginia exporting any wheat?—A. Virginia is not exporting any wheat. Virginia is buying wheat. She exports tobacco.

Q. Do you know any Southern State that is exporting either wheat or corn?—A. No: they are all importers of wheat and corn.

Q. Do you not know that Bermuda vegetables and vegetables and fruits from the West Indies are delivered in New York at a lower cost of transportation than the same articles cost from the Southern States?—A. I do not know, but of course the facilities for transporting by water and rail are so different that I should presume that would be a fact.

Q. You are aware of the fact, are you not, that large quantities of garden truck and fruits, vegetables generally, are sent from the Southern States to New York and New England markets?—A. I am; and on the floor of the National Grange I advocated the proposition to give an export bounty on agricultural staple products, which I would like to emphasize here, believing it to be to the best interest of this country that such a bounty should be given. I stated on the floor of the National Grange that the New England farmer, the New York farmer, and New Jersey farmer, who were truck farmers or producers of nonstaple products—when we advanced the price of cotton and tobacco for the South and corn and wheat for the West and sent it abroad—when we made it profitable to raise the staples, we would stop the Southern competition with the Eastern trucker; but that as long as a governmental system existed in this country which aided in depressing the price of agricultural staple products, it would drive the farmer in Virginia from his legitimate work of raising tobacco, the farmer in Georgia from his legitimate work of raising cotton, and the Iowa man from raising his wheat and corn, and drive him into making butter, and in making the other fellow go into raising watermelons, compelling them to compete in their own home, in their home market; and therefore it is for the advantage of the New England farmer and the farmer around the manufactories who want to produce farm products and truck that they should do everything they could to increase the price of staple agricultural products. I believe it as firmly to day as I did in 1896, when I made that statement on the floor of the National Grange.

Q. Do you favor a duty on long-staple cotton—Egyptian cotton?—A. I would

favor a duty on long-staple cotton, if we are going to have a duty on anything. I believe if you are going to protect one class of people you should protect all. The American farmer has just as much right to be protected as the American manufacturer.

Q. Do you think the people of the South generally would favor a duty on sea island cotton—on long-staple cotton?—A. I am not in a position to answer that question. I think they ought to. They have just as much right to favor it. I don't believe they would favor it provided other things were free; but I think the Senator from South Carolina (Senator McLaurin) occupies the position I would occupy, that, as long as other things are taxed, and these men are taxed for everything they use, they have as much right to be protected as the other men.

Q. Are you sure that they are taxed on everything that they use?—A. I believe that everything that is protected has a fictitious value put upon it—that there is no person in the world that pays that tax except the man who pays for it last and consumes it—that is, if he pays for it. If it is given to him he don't pay the tax; but the man who pays for it when it comes to consumption is the man who pays the tax.

Q. If you were satisfied that the prices were no higher here than in England for the same article, where they have a different system of taxation, would you think that the consumer pays the duty?—A. You mean on American products?

Q. Yes.—A. If, for example, it was made by a manufacturer in this country and it was sold in England at the same price as sold in this country?

Q. Yes.—A. Why the difference in freight from here to England would settle that—give the Englishman the advantage.

Q. (By Mr. FARQUHAR.) Do you believe in an export bounty for anything else in the United States outside of agriculture?—A. I believe that the best system that this Government could adopt would be to pay a bounty upon everything that we ship out of the country, because by shipping a surplus of products away from the United States we bring back here money instead of goods. That is the difference between Mr. Lubin's position and mine. I have always advocated that this thing be extended to manufactures so as to build up American shipping—American marine.

Q. (By Mr. CLARKE.) To whom would you have the export bounty paid?—A. Well, it would be paid, of course, to the shipper; but I could furnish you literature of the very highest character, most of it public documents, which would demonstrate that the farmer would be bound to get his portion of it. There was a statement by the secretary of the Chicago Corn Exchange to the effect that the competition was so great among the purchasers when bidding on the stock exchange—they have a dial up there [indicating] that fluctuates back and forth, one-eighth, one-sixteenth of a cent; and a great many large transactions are made on such a close margin that the man who produces a product would be bound to get a large proportion of the proposed bounty of either wheat, cotton, or anything that was sold upon these exchanges. I believe Mr. Lubin clearly demonstrated that fact.

Q. I believe I understand your contention is that these staple farm products sent abroad from this country compete in the foreign market with similar products from other countries?—A. Yes.

Q. Suppose a bounty were paid on the exportation of these products, would not the shipper be thereby enabled to sell those products in the foreign market at a lower price than the normal price made by competition in other countries by goods from other countries?—A. Well, would it be likely that he would do it? For example, do you suppose that he would want to sell his products at any less price than the market price? Don't you suppose he would want to get the very highest market price? Now, you understand here is a relative position. [Indicating.] There is Liverpool. [Indicating.] Now, we take the wheat market for example. We ship from here [indicating]; the Argentine people ship from there, and North Africa comes in here; the Russian people come in here, and the Danubian here. There are five points which fill up this great bin with wheat until it overflows. The surplus, no matter where it comes from, India, Africa, that surplus fixes the price; and England tries to increase that surplus to reduce the price, and she pays for it in silver to still further beat down the price. The whole price is fixed in the central world's market in Liverpool, fixed by supply and demand; no question about that; and the price in the city of Washington, or in the city of Milwaukee, or in San Francisco is identical at the same time and is the same price as it is in Liverpool, less the cost of transportation to Liverpool. The world's central market fixes the price to the farmer in Washington, Oregon, California, or Virginia. He has to take the Liverpool price for his product, in competition with this cheap labor in India, in South Africa, and in North Africa, and in Russia—labor that runs from 6 cents a day to 20 cents a day. Now, you gentlemen want to protect American labor and American industries. What I am asking you is to

try and find some means to protect the greatest industry in this country, the American farmer; put him on a plane with those other people. I am talking about the producer of staple agricultural products, or the man who exports. He is the man who undoubtedly pays the entire tax in this country. He don't take it out of his pocket and pay it in a direct way, but he has to pay for the cost of everything that he uses and, being a producer of wealth, the producer of the surplus that brings money back in this country, he pays the entire tax.

Q. Does he become impoverished by his business or does he gain something?—A. Well, a few years ago, it seems as though he pretty nearly ran out. I think there are a great many changes in farms: a great many who have owned farms have become tenant farmers. I think probably this census will show more tenant farmers than we ever had in this country.

Q. Do you know any other country in the world where so many farmers own their farms free of indebtedness as in this country?—A. That possibly may be true, but I would like to just call your attention to one or two figures, if I can find them here. I hope it won't be, but I am very much afraid that this census will show a worse showing than this. They are here in Mr. Hatch's report. Now, you speak about this farming business. I have got the report of Mr. Hatch on March 2, 1895. Of course these figures, maybe, have very materially altered, but it showed that we had farms—we find the number of farms in the United States to be in 1890, 4,564,641, while in 1880 there were 4,008,907, an increase during the decade of 555,734. That is the increase in the number of farms. The percentage of increase in the decade was 16.25 per cent. Now, the number of farms in the manufacturing States of New York, Pennsylvania, New England, show a decrease of 5.40 per cent; an acreage of 5,242,115 acres, or a decrease of 7.71 per cent. Now, the point I really want to bring out—I will just show you this—here is the production: The actual increase per acre was one-tenth of 1 per cent between 1894 and 1880, but the loss in money between the same years was \$248,299,825.

Q. The loss in money?—A. Actual money loss. There was an increase in bushels, an increase in yield per acre, but a loss in money value between those years, 1894 and 1880, of \$248,299,825. The farmers' wealth of the United States in 1860 was nearly one-half of the entire wealth of this country. In 1890 it had decreased to one-fourth, held the position of one-fourth; and yet all this vast expenditure of money on farms in the United States, and the vast increase of acreage, the vast increase of capital and production on our farms, and still the census figures show that the farmer had fallen from half nearly to one-quarter owner. I think that answers your question about the prosperity of the farmer to that extent.

Q. Do you know that the increase in the average wealth of farmers in 30 years was practically from two hundred to three thousand dollars, or about that proportion?—A. No. I never saw those figures, and do not know where they came from, but I can not understand how that could be, when the farmer, as a class, had descended from the position of 50 per cent to a position of less than 25.

Q. On what are your figures based, the value of the farm products for the particular year you named or on the value of the total property that the farmers had?—A. My last figures were based on the total property that the farmers had. These others were taken from Colonel Hatch's report. Mine were based on the report of 1890.

Q. Who is Colonel Hatch and what is his report?—A. Col. William H. Hatch was chairman of the House Committee on Agriculture, from Missouri.

Q. In what?—A. Of the Fifty-third Congress; March 2, 1895. This is Report No. 1399.

Q. Why don't you take the reports of the Department of Agriculture?—A. I have taken them. I find it right in here in the statement I made. I think I used them to show the amount of production in Argentina and their competition with us here in this country.

Q. Well, now, has not that competition of Argentina and Australia and of Russia with this country enormously increased from 1880 to 1894, the periods that you are comparing?—Undoubtedly. It must have done it; yes. I do not question that. I think that is true.

Q. That would account then, would it not, for the decline in prices of such farm products as are exported?—A. Undoubtedly. That is just what I tried to make plain, as stated—that it is with this world's market and with the home market that the farmer is compelled to compete.

Q. Well, you think that the farmer loses money on everything that he exports?—A. Oh, no; I did not say that.

Q. If the farmer is growing poorer it must be so, must it not?—A. I think this. That the farmer is brought into unjust competition at home and abroad; abroad by being compelled to compete, when he pays from 50 cents to \$1 a day for labor, as against men who are paying from 6 to 20 cents for labor in the open markets of

the world; that he must take the price set by these men, with this cheap labor and cheap lands, and our American agricultural implements, as proven by Mr. Lubin and statistics of consular reports too; that he has to compete with that class of people, land, and labor, and he has at home to buy and pay on a protective basis for everything he uses to produce that.

Q. Does he have to pay any more for these things than his foreign competitors pay?—A. As I stated a little while ago, I understood in some cases that he did; but even if he did not have to do that, if the foreign competitor uses the same binder made by Mr. McCormick in Chicago, who, I see, has shipped 3,000 binders to the steppes of Russia, our farmer has got to compete with that cheap labor and cheap land and Government bounties, in some instances, to get the stuff to the market—as in the Danubian provinces, the railroads carrying practically free, or very much less than any other thing, grain exported from that country, as I understand—our farmers still stand at a disastrous disadvantage.

Q. What proportion of the farmers of this country are engaged in raising articles that are largely exported?—A. I do not know that, but I know that those who are engaged in supplying these exports produce enough not only to supply the home demand, but furnish over two-thirds of the export balances that the United States secures, of the export balances that come into this country.

Q. Is that statement based on the figures of the last year?—A. I think not; probably. I have not seen the last year basis, but prior to that it was certainly two-thirds, prior to a year ago; I have not seen the statistics within the last year or maybe the last 18 months.

Q. (By Mr. FARQUHAR.) Can you state the proportion of agricultural products that are consumed in the United States in comparison with those exported? Is it not generally conceded that between 5 and 10 per cent is exported?—A. Yes; I understand that. We fix our own price for that which we do not ship out—I mean butter, eggs, cabbages, and things of that kind—but not on these other products that we ship abroad, the products that bring money into this country; what was, as Mr. Seymour said 25 years ago, the statesmanship of the plow that enabled the American Government to resume specie payment, the surplus that goes from this country and brings back money instead of product, is furnished, two-thirds of it, by the farmers of the United States, the producers of staple products—wheat, corn, cotton, tobacco, etc.

Q. What does the farmer contribute to the \$53,000,000 the Standard Oil Company brings into America out of American product?—A. Contributes nothing in the world.

Q. So that of the balance of trade, consisting of machinery and manufactures and everything else, amounting to 5, 8, or 10 per cent, the farm exports certainly can not bear the volume that you say?—A. You will find the agricultural products exported from this country amount to even now over 60 per cent of the entire exports. That can be verified without question. I would like to show it to you for 1894 and 1895; it was 74 per cent that year—in 1893 or 1894. Why, the cotton product that we ship abroad amounts to, I would not like to say absolutely, but it is about 40 to 50 per cent of the entire product in value; there is no trouble to get those figures; I supposed they were so well known that I did not even take the trouble to bring them up here.

Q. (By Mr. CLARKE.) And yet you think the farmers are growing poor?—A. Well, I think I said that the statistics of the United States in 1890 showed that they had gone back, that their lands had gone back, the total value of all their products had gone back. They furnished that which brought wealth to this country, but unfortunately through some cause or other did not manage to keep that wealth for themselves.

Q. Have you read Mr. Mulhall's examinations of the results of the census of 1890 in this country?—A. No. I saw them at the time, but I have forgotten. I am not much of a statistician. I have the figures here right before me that in 1893 there was \$831,030,785 of exports from the United States, divided among mining, forestry, manufactures, fisheries, and miscellaneous. The total agriculture amounts to \$615,382,986. That I think you will find runs about 74 per cent, which is my statement. The last 2 years we have exported more merchandise, and the prices of agricultural products have not kept up so well except just during the war.

Q. I saw it stated a few days ago that the wheat crop of Kansas this year will amount to 80,000,000 bushels. I may be mistaken as to the figures. Is it your opinion that the growers of the wheat in Kansas are poorer by reason of it or better off?—A. Why, they certainly are not poorer by reason of it; and even if they get a reasonable fair price and make some money, there is no reason why they should not make more. There is no reason why they should have to pay more for the machinery necessary for the production of that crop and for the goods that

they are compelled to use even as luxuries or necessities, and secure no protection themselves.

Q. Do you know that they do pay more for that machinery or other goods than otherwise?—A. I do not know about Kansas, but I know I have myself, in purchasing products in the last 6, 8, and 12 months; all the prices were higher than they were several years before.

Q. Well, you don't know whether they were fairly remunerative before, do you, during the period of the depression?—A. I don't know. I hope that they were. I do know that during that period of depression the farm was not remunerative.

Q. The prices may have been advanced too much, but perhaps should have been advanced somewhat?—A. That is probable. I do not want to be misunderstood. I am not fighting the prices of others; I am not attacking anything that is legitimate or proper; but I do want to see our own people receive some benefit while others are doing the same thing.

Q. By reason of there being a large manufacturing industry in this country and also mining and transportation, giving employment to 60 per cent of the people, do you not think that the farmer gets an increasingly valuable home market which enables him to dispose of a much larger quantity of products than he otherwise would?—A. The horticulturist, the dairyman, the poultryman, and the vegetable raiser probably do; the man who produces wheat and corn, cotton and tobacco, does not.

Q. Is there not more wheat, corn, and tobacco consumed by reason of this large population?—A. That may be; but it certainly does not alter the proposition, because the prices are fixed at Liverpool. The prices of the export products are fixed abroad; not in this country.

Q. (By Mr. FARQUHAR.) Does America help to fix that price?—A. I do not think that America—

Q. (Interrupting.) Does Argentina help to fix it?—A. In a sense, it does.

Q. Does Russia help to fix it?—A. Undoubtedly; all.

Q. The Liverpool market is the world's price?—A. That is exactly what I said.

Q. And all corn-producing countries are contributors to that price?—A. It is a question of surplus which fixes the price—too much or too little.

Q. Do you think any power in the world, legislative or otherwise, could change that price?—A. No; I do not. The only legislative act which could change it would be to give a bounty on the export product. If Congress gave a bounty on the export product, it would not only put up the price on the product that was exported to, say, 10 cents a bushel, for example, on the 280,000,000—not only be this 10 cents, but it would raise the price in the whole market 10 cents.

Q. And you are also aware that every foreign country receiving these bounty-exported cereals has a right to put a countervailing duty on cereals, just as we do on German sugar to-day, so what difference does it make?—A. They have a right to. England, the market to which it goes, would not avail itself of that right, because it would not cost them one cent more. It don't make it cost them any more, and they want wheat. We are merely trying to protect our own sugar industry when we are trying to prevent Germany from shipping sugar in here; we have specific reasons for it; but England is striving for our wheat. Anyhow, I do not think that would be exactly the same thing.

Q. (By Mr. CLARKE.) You are aware that Germany pays an export bounty on sugar?—A. Yes.

Q. And that German sugar is sold in the English market for less than it is in the German market?—A. I was not aware of that, but I could see very well why it should be.

Q. Well, now, would it not work the same way on wheat?—A. No; we do not send our wheat, or very little of it, to Germany. The price is not fixed in the German market even if we sent it there. You acknowledged that the price was fixed in the Liverpool market.

Q. Would not our export-bounty wheat sell for a lower price there than it sells for here?—A. No; I do not see how it would, except the amount of the bounty. I tried to answer that question some time ago. I am sorry I did not have the ability to do that.

Q. I wanted to see how, in your mind, this wheat differed from sugar?—A. I gave you the reason; the market man in Germany is trying his best to find a market on which to sell his product. He has a tremendous surplus and will sell it at any price; but England is grabbing for the wheat of the world; she can live without sugar, but she can not live without bread.

Q. Is it not a fact there is great competition in the Liverpool wheat market between sellers?—A. I do not think so. Everything that shall be sent there and every extra bushel that goes in of course helps to depress the market; but I am not trying to discuss what is going to happen in Liverpool, whether the price is going to be lower or higher there. I am only contending for higher prices in

the United States. I am contending for the same opportunity for the wheat raiser that the manufacturer of steel is getting.

Q. I want to bring your mind to the question of what will happen there if we paid a bounty on wheat.—A. Do you believe that we will be doing any great harm if we break the prices of wheat for the English people and not hurt ourselves at all; increase our prices and break theirs?

Q. Well, if the price of wheat becomes lower there than it does here, as you think it would, is not that going to enable the industrial population of England to manufacture goods cheaper than they can be manufactured in this country?—A. That is a new way of putting the case to me, but I suppose that could be met, you know, by the gentlemen who managed to keep out those goods by raising their tariff.

Q. They do not have a tariff on those goods in England.—A. I am not bothered about what is going on in England. I am talking about keeping them out here. It does not make any difference what they are selling at in England. We are not interested in that question at all, as I can see. It is the home price that affects us.

Q. Well, if they should be able thereby to manufacture goods in England lower than they can now, so as to compete more vigorously in this market, would you favor, as an offset, an increase in duty on those goods in this country?—A. Practically and thoroughly I do not believe in protective tariff; but if we are going to have a protective tariff for the benefit of manufacturers, I favor a protective tariff, which can only be given by bounty, in favor of agricultural exports.

Q. (By Mr. FARQUHAR.) Do you think the export bounty there would give the American farmer impetus to raise more wheat?—A. It might.

Q. Do you think 100,000,000 bushels of American wheat extra put in Liverpool market would make any difference in the price?—A. Undoubtedly it would.

Q. Possibly what was gained in bounty would be lost in a large part in the general price?—A. It might do that. Mr. Wood Davis, of Wisconsin, states, and he has given the question a good deal of attention—was here in connection with the future business—and he states very positively that the area for the production of wheat in the United States is about covered, and that we can not expect to raise very much larger crops than we have now. I think that is true, too.

Q. You think those statistics are borne out by census statements at all?—A. There has been no opportunity for that since then.

Q. Between 1860, 1870, 1880, and 1890?—A. Then you developed in the great Northwest. It is developed now. Where are you going to get new wheat land? Every year you farm those lands without fertilization, without some means to improve, and rotation of the crops, I think you must depreciate their productive value. I should think so. I may be mistaken.

Q. Can you give the commission an idea how much out of the export bounty the farmer is going to get?—A. It was stated here on the floor of the Senate by several Senators. I think, in their speeches on the subject. There were, I think, five or six very able speeches made in the Senate on the subject.

Q. By farmers, statisticians, or lawyers?—A. They were Senators, Mr. Cannon of Utah, Mr. Tillman of South Carolina, and Mr. McLaurin of South Carolina. Mr. Cannon made a wonderfully strong speech, argumentative speech, on the subject. I do not recollect who the other gentlemen were, but I think there were four speeches made and some 8 or 10 votes cast at the time in favor of the amendment. They, of course, just offered it as an amendment, without any hopes of carrying it through. They got more votes than I thought they were going to get. The estimate made by Mr. Lubin and, as I stated a little while ago, by the secretaries of the exchange in Chicago, and, I believe, pretty much the same thing from the New York Exchange, that the transportation companies, the intermediaries, would get probably 2 per cent and the farmer about 8, is pretty close to the figures, and I think that would be a fair idea.

Q. What is the duty, the 10 per cent ad valorem? Is that your proposition?—A. No.

Q. How do you intend to establish your export bounty?—A. I am not caring for that myself. It was only the idea, not the details of the matter. The bill, I think, provided for a bounty of about 5 cents on a bushel of wheat, a cent a pound on cotton, and probably a cent a pound on tobacco; but the bill before the Senate changed the estimate when it was under discussion. It is not so much what they get out of it by what goes out of the country as the immense increase of the prices inside of the country. The raising of the prices in the New York market 5 cents a bushel on wheat means 25 cents for every barrel of flour consumed in the United States, and the farmers are bound to get a big proportion of it. It may seem an absurd proposition, but it is really one worth careful thought.

Q. (By Mr. CLARKE.) Well, now, in view of the fact that experience proves that the export bounty of Germany on sugar causes sugar to sell at a lower price in England than it does in Germany, is there not some danger that an export bounty

on wheat and cotton would cause those American exports to sell at a lower price in the world's market?—A. Well, so far as cotton is concerned, we have got practically no competitor at the present time. The work is opening in the Russian Steppes, where in time I am afraid we will have a great competitor. In regard to the wheat question, I do not think really that it would, because it could not; prices are fixed by supply and demand. It goes into this bin in Liverpool, and there prices are fixed; but if it did I do not believe we have anything to do with that. It don't make any difference what it sells for in Liverpool, provided we can increase prices and increase the prosperity of the man with the hoe—the fellow with the reaper.

Q. That brings us right to the point I wanted to bring your attention to in the next question. In reducing the price in the Liverpool market, how would it be possible to maintain a higher price here?—A. If the price is decreased in Liverpool, the price will be decreased here, but still it would be just that much higher here in the home market than it would be in Liverpool; whatever the bounty was, 5 cents a bushel, or 10 cents a bushel, it would still be just that much more here than there.

Q. Well, would it be any more than it is now?—A. That is a problem that I am not able to answer. I think it would.

Q. Unless we can better our condition by an effort of that kind you would not favor it, would you?—A. No, I would not favor it; but as far as I have studied this question, and I have looked into it carefully for two or three years with all the facts and figures I could get, I am of the opinion that the price will be increased here, and that the price in Liverpool would not be decreased; and I reiterate that, because there is a demand greater than the supply, and the world's consumption of wheat is greater than the supply has been in good years, therefore the price is fixed in England—in Liverpool. All these different countries sending in their supply, and with the India surplus there, and England owning and controlling that India surplus, she is compelled to throw it on the market at such a rate, and buying it for silver as she does, rupee a bushel, that would bring up another question, which I do not care to mix in just now. She has bought it for 20 odd years with her rupee a bushel; do as she pleases with it, and being a consumer she wants to bear it down. That she can not do with the Australian people, but does do that with India, and that is the price that fixes the value of wheat in the English market, if I am not misinformed.

Q. (By Mr. A. L. HARRIS.) You may state, if you please, what is the effect upon the prices of farm products of what we call dealing in options and futures.—A. Well, I believe they are absolutely ruinous. I would refer you to another report of the House Agricultural Committee on that subject for a good deal more information than I could give you. I believe, if I have a right to come in here and offer to sell something I have not got, never expect to have, and everybody knows I have not got it—if I have got a right to sell it in competition with your 50 bushels of wheat, and I offer 500 at 10 cents less than you are offering your 50, you are bound to bring the price right down.

Q. You think it interferes with the natural law of supply and demand?—A. I certainly do. It not only affects the market for the day, but you sell 50 times as much, or 500 times as much, as is raised. Of course it would not have any effect for that day's delivery, but to be delivered 6 months hence or 30 days hence it would have an effect, because men have got to deliver that wheat, and they have always got to work to keep prices down to the date of delivery.

Q. Another factor is in trying to keep the prices up—another side?—A. Yes; but I do not believe that works. I have not studied the question so thoroughly and fully as other gentlemen, but the report submitted to the House of Representatives in the Fifty-second or Fifty-third Congress by the Committee on Agriculture covers that whole subject in, I think, a most admirable and thorough manner, and in it you will find that statement of the gentleman I mentioned a minute ago. Mr. Wood Davis.

Q. Do the farmers of Virginia complain about transportation rates?—A. Yes; they complain more or less.

Q. In what particular?—A. Well, they think they are a little too high, but I do not think there is quite as much complaint as there has been in the past.

Q. To what do you ascribe that change for the better?—A. Well, probably the lack of organization. They do not get together and do not talk over their grievances so much.

Q. I have reference to the railroads, the improvement that you speak of?—A. Well, the railroads have better facilities, slightly more competition, and, I believe, really there is a better feeling between the people of the State and the railroads than there was 8 or 10 years ago, and the managers are finding out that it is probably better not to antagonize the people so much; but still there is great room for improvement.

Q. In your experience as a newspaper publisher have you heard any complaints against the Interstate Commerce Commission?—A. Well, I have heard complaints against the commission, with a great deal of praise in a general way. Yesterday I heard a statement that probably astounded me a little, by a very large merchant doing a very heavy business.

Q. In this city?—A. No; in Alexandria; several hundred thousand a year. In a public assemblage the gentleman made this remark, that the Interstate Commerce Commission under its present arrangements, not having the control of its own matters, was perfectly valueless; that he knew of instances where railroads made contracts just as they formerly did—discriminated; that if a man knows how to manage he gets just what he wants, but you have got to know how. For example, I know of a man who contracted to have, I think he said, 100 barrels of flour delivered at a certain price, and packed 500 barrels in the car. I am not using the exact figures, but approximately. In other words, the railroads make contracts for delivery to large shippers without regard to the interstate-commerce law. They contract for a smaller amount, and allow the shipper to exceed the shipment without any supervision, practically knowing that he is doing it.

Q. Have you a remedy to suggest for that condition?—A. The only remedy I could suggest would be to give the Interstate Commerce Commission the authority to enforce its rules and regulations.

Q. Have you a pure-food law in your State?—A. No.

Q. Have you given the subject of pure food any study?—A. Yes; I have; I think I have devoted most of my time to that subject for nearly 10 years.

Q. Were you an expert in the employ of the Agricultural Department on that subject at any time?—A. I was appointed several times, as previously stated, to investigate the extent and character of food adulterations by the Department, and made reports numbers 25, 32, 40, and 41, of the Chemical Division, and a special report, Farmers' Bulletin No. 12, and a report that was printed, as stated previously, in regard to flour adulteration, by the Committee on Ways and Means in the Fifty-fifth Congress.

Q. Did you make any recommendations in those reports?—A. Yes; I recommended that a national law along the line of control under the interstate-commerce clause of the Constitution be adopted.

Q. Where would you lodge the authority to enforce that law?—A. Well, for various reasons I would lodge that enforcement in the Department of Agriculture, chiefly, because the Department of Agriculture has for nearly 20 years, under the authority of Congress, been investigating the subject. They have issued in what is known as the various parts of Bulletin No. 13, analyses and reports on various food products, such as wines, liquors, beers, canned goods, coffees, lard, oleomargarine, and other products, edited and conducted by the chief chemist of that Department, Dr. Wiley. It is recognized by scientific men all over the world, as far as I can learn, and certainly by all State representatives in the various State departments largely, and food commissioners, as the most extensive and best literature on the subject of food adulteration in the world.

Q. Wherein is the farmer more especially interested in preventing the adulteration of food than other citizens?—A. Well, he has a twofold interest. In the first place he purchases a great many of these products, and is a consumer of the products, and therefore he is on exactly the same footing as any other citizen. Secondly, the farmer is a producer or manufacturer of a large majority of the products, and consequently he is not only robbed in what he buys, but he is robbed in what he sells, and is in competition with the man who sells a product which costs him nothing in comparison with what it costs the farmer to produce it, and he has to sell his goods at the reduced price of the spurious article or not at all. For example, they adulterate the honey. The farmer has to produce that through the instrumentality of the bee—the work of the bee. Well, the manipulator simply uses a little glucose and a small quantity of honey to flavor, one being worth probably 25 cents and the other 2 or 3 cents a pound. Take a can of jelly, pure jelly produced by the farmer or by the manufacturer of pure products from a pure fruit. That is an article used upon nearly every table and can only be sold at a reasonably fair price, probably \$1 or \$1.50 a bucket, while the mixture sold by adulterators is offered upon the market at 25 cents to 30 cents a bucket. This product of course reduces the value of the true product, and has driven it to a large extent from the market. It is made of refuse, parings and cores, sweetened with glucose, and where raspberry and strawberry seeds are wished to be imitated a few timothy seeds are put in their place and are used to supply these deficiencies. We might take the articles of coffee, spices, or any other product, because I do not believe, after careful investigation, that there are hardly a dozen products that are capable of imitation that are offered for food that are not imitated.

Q. What about lard?—A. Oh, lard is very largely imitated. They use instead

of hogs' lard, cotton-seed oil, stearin made from beef or hog grease, and use inferior lard to mix with these articles, the cotton seed being the product that is used to sweeten the mixture and make it palatable. In the Fiftieth and Fifty-first Congresses a full investigation was made on this subject. A bill passed the House regulating it, but it never passed the Senate.

Q. Are there any adulterations of butter?—A. There are few articles that are more adulterated than butter. The farmer produces a product that costs time and care, while his competitor in making oleomargarine furnishes a product that costs probably one-third what the real product does. And then the farmer also has to meet the manufacturer of butterine and of renovated butter; and there are a great many nostrums on the market offered to ignorant people to increase the yield of butter, some of which are very injurious. In Bulletin No. 12 the subject was fully explained and the crime traced to its founder, and I learned that the party was finally sent to the penitentiary. I do not know that to be a fact, but I understand he was caught out in Ohio and sent to the penitentiary.

Q. Are adulterations on the increase or decrease at the present time, do you know?—A. I am not sure. They are not decreasing very rapidly. I think that the agitation of the subject has probably made the adulterators a little more careful. The estimate that I gave to the Department of Agriculture, and which has never been controverted at all, was that about 15 per cent of adulteration is fraudulent adulteration and 2 per cent is injurious adulteration of the entire product—food and drugs. These figures, I believe, have been generally accepted by the State officials as conservative. Now, during my last work at the Department, my letters from every State in the Union have indicated that it was double that amount; but people are liable to be extravagant in their estimates, and I retain the original figures. I believe that they are fairly conservative. Now, I would like to call your attention to this fact, that 15 per cent does not appear to amount to a great deal, and yet if you estimate that the people of the United States number 75,000,000 and consume only \$2 a week per capita, you will find that it amounts to \$150,000,000 in a week, or \$7,800,000,000 a year, and the cost or loss to the country has only been \$1,117,000,000 a year from fraudulent adulteration, and very injurious adulteration \$156,000,000. Those figures are absolutely conservative. They were discussed in the National Pure Food and Drug Congress, composed of 200 or 300 eminent scientists and men representing nearly every State food and dairy commission and many health officers, and, as I stated above, have never been controverted. It seems to me that the Government of the United States ought to take some steps to save this immense loss to the people. I do not wish to be understood as stating that the whole \$1,170,000,000 is loss, because, of course, a great majority of the products are what you would call fraudulent adulterations. They are frauds upon the pocket, and not upon the health. But, for example, where flour and meal or flourine are mixed there is not a loss of all of it, and the percentage would not be borne out, because the corn grower gets a part of the profit. There is a demand for that much more corn, but the loss falls upon the wheat grower. It is just that much loss to the wheat, and the price is depreciated to that extent. But the loss must run into \$700,000,000 or \$800,000,000 a year.

Q. So far as the flour is concerned, Congress has taken action on that.—A. The same as it has in filled cheese. Now, some people suggest that we should have a separate law for every article. It would be absurd to talk about it. If you should tax every article we would have more money than we knew what to do with. The Government should have a standard for every article. There are thousands of different grades. All that I should like to see done would be to have every article branded as to what it was made of. That, I believe, is the desire of the National Pure Food and Drug Congress.

Q. Have you anything else that you desire to state from your standpoint, as a representative of agriculture, to the commission?—A. No. I am very much obliged to you gentlemen for your very patient hearing and allowing me to answer all of these questions, and I hope I have not been too tiresome. But there are some points that I feel a deep interest in, especially the discussion of this food question, and if your commission could in any way influence Congress to pass a law that would put a stop to the false branding of products in this country you would be doing an immense amount of good.

Q. Has any effort been made in your State to have a pure-food law?—A. Yes; there have been several efforts, but I have never taken any part in it, for the simple reason that our legislature has always met during the session of Congress, and since the Fiftieth Congress I have been here trying to get this law. I have never had any pay and I am not in the shape of a lobbyist, but I am just a kind of a crank on this subject, I reckon. I have done it in the interest of my paper, making it a specialty to do all that I could.

(Testimony closed.)

DEPOSITION OF ADOLPH GEHRMANN, M. D.,

Director of Laboratory, Department of Health, Chicago.

As any community grows in size and importance, and as larger quantities of food material are consumed in any given locality, there immediately comes to be observed in that place a tendency upon the part of dealers to make use of under-hand methods in competition with one another, and to prey upon the transient customers by using methods of adulteration and sophistication of food materials.

This condition of affairs continues and grows gradually, until after a time the entire community comes to realize that it is being systematically robbed and that the evil is slowly increasing. It is then that agitation occurs and food laws with their regulations are established.

As I have been especially interested in the milk supply of Chicago during the past few years, I desire to present a few facts that have been learned during the time that the milk question has been under consideration in Chicago.

Supervision of the quality of milk offered for sale in Chicago was established by a city ordinance passed October 21, 1892. This supervision was transferred to the department of health in September, 1893.

During 1893, out of 8,926 samples analyzed, 4,053, or more than 45 per cent, were found below grade. The first 500 samples were taken at railway depots immediately on arrival. Of these only 41 samples, or 8 per cent, were below grade. Of the next 500 samples collected—taken from dealers' wagons—374, or 75 per cent, were below grade.

This showed that at that time "the work of adulteration was chiefly done by the city dealers." See annual report of the department of health for the year 1893, Arthur R. Reynolds, M. D., commissioner of health.

The diagram on page 636 shows, by months, the results of this supervision, beginning with January, 1894.

The rise in the percentage curve of below-grade samples in February, 1894, was due to the taking of a large number of samples of milk in the poorer parts of the city, where skimmed milk was being extensively sold.

The steady fall of the curve during the rest of this year is due, July excluded, to persistent prosecution of offenders. The marked decrease during July was caused by a decrease in the total number of samples collected, owing to vacations allowed to the milk inspectors.

In 1895 the increase in the percentage of poor samples during the first five months was due to the inability of the department to secure prompt prosecution of offenders during that period.

The fall of the curve from May to September is attributable to publication in the daily press of the names of those whose samples were found below grade, without awaiting the result of prosecutions.

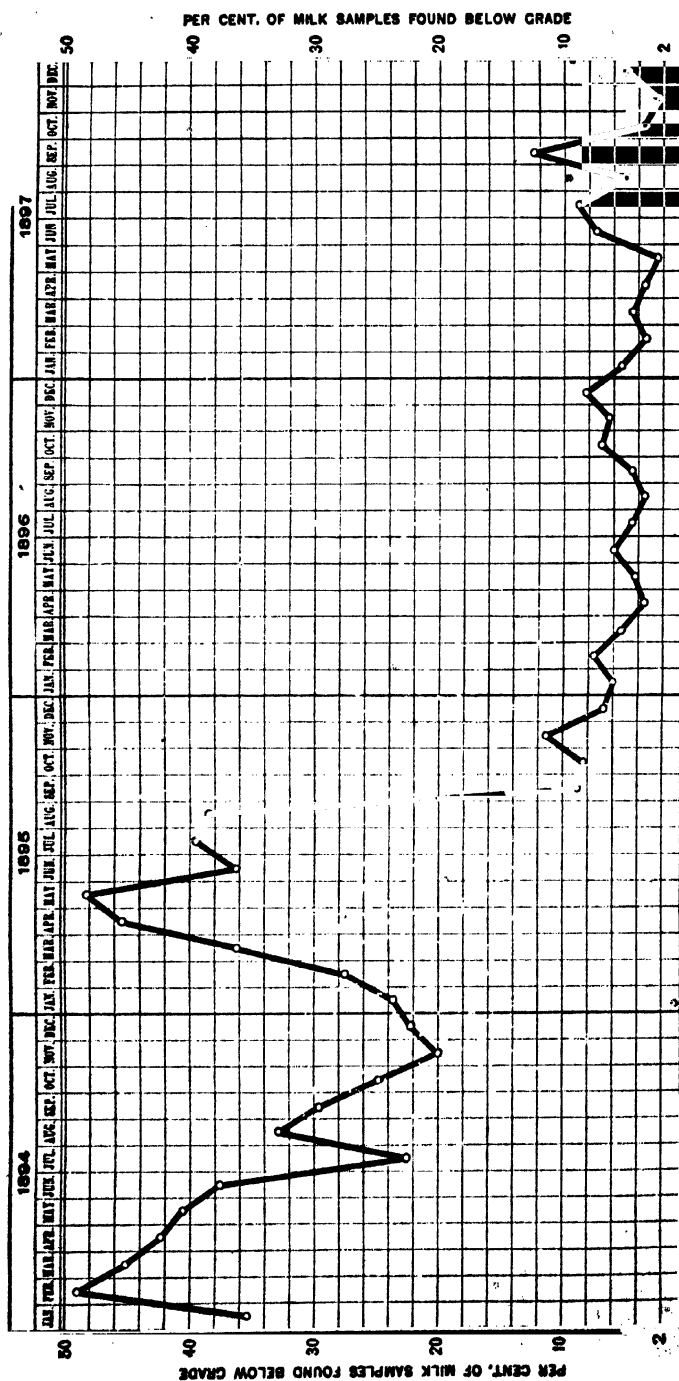
The minor rise during December, 1895, was caused by the enforcement of the prohibition of the use of coloring matter in milk and cream. Previously the use of coloring matter had not figured in the percentage of samples not in accord with the ordinance standards.

The variations of the curve during 1896 are mainly due to the extension of the inspection into new parts of the city, as in October, November, and December of that year, when outlying districts—South Chicago, Pullman, and Rogers Park—were brought under inspection.

The rise of the curve to 12.5 per cent in September, 1897, was occasioned by the "milk famine," caused by the prolonged dry weather. Milk dealers resorted to watering and other adulteration to eke out their short supply, and the result is apparent in this rise.

The principal causes leading to the practice of adulteration are to prevent loss to the owner of the goods when they remain on hand unsold. An attempt is then made to preserve them, so that they may be presented in good condition at some future time. Competition is a most pertinent reason. This is especially true when food stuffs are high priced, because then dealers do not wish to lose their customers and will at once try to meet the prices made by their competitors.

Outside of adulterations the meat question deserves special attention. This is required because a carcass from a thoroughly diseased animal may be so dressed and hung up for exhibition that only expert scrutiny will show from what character of animal it was obtained. A strict supervision of meat is required from the very moment that the stock arrives in the yard of the slaughterhouse until it is sold to the customer. The greatest danger here is that diseased conditions will



be overlooked, or that one carcass may be substituted for another, or that decomposition more or less marked will develop because of uncleanness in handling the meat.

All laws which are enacted for the protection of the public in their food supply should embody as principles certain conditions which I believe would lead to a much wider range of usefulness than is covered by many laws now in force. They should be extremely explicit in regard to the quality and quantities of constituents of foods. Generalities of laws of this kind always require interpretation before they can become legally effective. The condition therefore arises that a different interpretation is made by one administration after another, in consequence of which dealers are placed at a disadvantage and the public does not know what to expect. I should consider it highly important that food laws should be uniform throughout the various States and cities, with only such allowances as territorial conditions might demand. An addition of great advantage to all food laws, and one that is overlooked in many cases, is the requirement demanding cleanliness in the production, handling, and storage of all food stuffs, not alone those which are perishable, but those which are of a staple quality.

It has been my experience, from an extended acquaintance with public inquiry in regard to questions relating to pure food, that but a very small portion of the general public knows anything of the laws that are in force, or the rights given to the citizen under such laws. It would therefore seem proper and highly desirable that a much more extended knowledge of pure food matters be disseminated among the general public. As an instance of this condition I might recite frequent inquiries in regard to the substitution of butterine for butter. Scarcely one of the persons calling for information on this subject knows the regulations in regard to the use of signs, stamps on packages, and size of packages which are part of the law regulating the sale of butterine in shops.

After a good food law, the next important necessity is an adequate administration of the law. In most localities the first mistake that is made after a good law is framed is that its enforcement is then placed in the hands of an entirely inadequate number of inspectors. When one takes into consideration the total value of foods bought and sold per day in average cities, or per capita in States, it at once becomes apparent that scarcely any State or community in the Union has a corps of inspectors to regulate this business in any way proportionate to the value of the articles bought and sold.

Inspectors employed for the inspection of food should be persons of average intelligence. They should be interested in their work; they should not follow out their duties simply because they have the position, but should be stimulated so that there is an actual interest in doing the work properly. This work is not like the average occupation, where so much labor is laid out for the individual to complete during the day. A food inspector has a wide range. It is necessary for him to make a start at some point and to follow any opening which may lead toward the discovery of fraud that may present itself. His intelligence, his adaptedness and interest in the subject, will show him these chances, while to another man they would be lost.

The selection of a chief executive for the enforcement of food laws is most important, and there is often some discussion as to whether a business man or a scientific man is best qualified. The special qualifications of both should be combined, but the business man should predominate. A good executive, with ability to see and appreciate the importance of small occurrences, will be able to develop most out of the information which comes to hand.

Probably the greatest difficulty in the administration of food laws is the interference which comes through political or personal relations after suits are instituted. This frequently causes an added expense to the department of inspection, in that cases are dismissed and the cost of service and court fees fall upon the city. All cases for the violation of food laws should be fully tried, and the defendant should be given every advantage of a thorough hearing. I have found that every case that has been contested and has resulted in a thorough trial on its merits has added points which have given strength to the law under which it was tried.

It should also devolve upon courts that fines imposed should be collected, but beyond this the public has a means of redress which is more feared by offending dealers than any fine, and that is through publication of those prosecuted and found guilty in the daily press. There is probably nothing which will more quickly bring offending dealers to terms than notice of their offense in the newspapers.

ADOLPH GEHRMANN, M. D.

STATE OF ILLINOIS, *County of Cook, ss:*

Before me, Daniel C. Appleton, a notary public in and for said county and State, personally appeared Adolph Gehrmann, whose signature is above written, and made oath to the truth of the above and foregoing statements.

Witness my hand and official seal this 12th day of July, 1900.

[SEAL.]

DANIEL C. APPLETON, *Notary Public.*

WASHINGTON, D. C., *May 14, 1900.*

TESTIMONY OF DR. HARVEY W. WILEY,

Chief Chemist, United States Department of Agriculture.

The commission met at 10.30 a. m., Mr. A. L. Harris presiding. At that time Dr. Harvey W. Wiley was introduced as a witness, and, being first duly sworn, testified as follows:

Q. (By Mr. A. L. HARRIS.) Please state your name, post-office address, and occupation.—A. Harvey W. Wiley; post-office address, Department of Agriculture, Washington, D. C.; occupation, chief chemist of the Department of Agriculture.

Q. How long have you occupied that position?—A. Seventeen years.

Q. In that time you have given some investigation to the question of the beet-sugar industry of this country, have you?—A. Yes; from the start I have made that one of the chief studies of my division—the division of chemistry.

Q. You are acquainted with or have information of that industry in the different portions of the United States, have you?—A. Yes; in all parts of the United States and in all parts of Europe. I have made two or three trips to Europe and have investigated the conditions of the beet-sugar industry there.

Q. Have you any further statement that you desire to make preliminary to the beginning of your testimony before the commission?—A. I will state that the Department of Agriculture for many years before I was connected with it was interested in this matter. The first investigations which I can find mentioned in the records of the Department were made in 1862 by the first chemist of the Department, who had then just been appointed. He made analyses of sugar beets at that early period. The first attempt to introduce the sugar-beet industry into this country was made in 1835 by an association of agricultural and scientific men of Philadelphia. They employed a gentleman to visit France, at that time the only country making any notable quantity of beet sugar, and he visited that country and made an elaborate report on his investigations of the beet-sugar industry. As the result of his investigations, an attempt was made at Northampton, a year or two after that to grow beets for industrial purposes and sugar making, and several hundred pounds of sugar were made, but the industry did not get any hold at all at the time. However, it continued to grow in Europe, having been established as an industrial occupation by the first Emperor Napoleon.

The conditions which prevailed at that time are well known to the commission. On account of the embargo which England laid on European ports, the colonial sugar was practically excluded from France and the whole Continent of Europe, and it was to remedy this defect that the Emperor made a grant of money in the form of a subsidy to encourage the establishment of beet factories in the Empire. This was about 1809 and 1810. Of course the fall of the Emperor 2 or 3 years after that interrupted the State bounty, but nevertheless the industry had taken such a hold in France that it continued to grow after the State subsidy was withdrawn, and by 1830 France made a very considerable quantity of beet sugar—to be sure, a small quantity compared with the present production, but a very large production as measured by the markets of that period.

The Germans, who had been the first to discover the merits of the beet as a sugar-producing plant, were not slow to follow in the pace that the French had set; and such apt scholars were they that by the time of the third Emperor Napoleon, especially toward the end of his career, along in the latter part of the decade beginning with 1860, the German production had quite overtaken that of France. Since the great war of 1870 and 1871 the German production has forged ahead until now it is almost double, or quite double, the production of France.

A few figures will show the wonderful growth of this industry which has taken place in Europe. At the present time the total production of sugar in the world is probably 7,000,000 tons, and of that quantity more than 4,000,000 tons are pro-

duced from beets; so that considerably more than half of the sugar which is now produced in the world is beet sugar, and this is practically all produced on the Continent of Europe. There is so little being made in other countries as to be of very little consequence in the sum mentioned.

The beet itself is a plant which is indigenous to the European shores of the Mediterranean, and all of the varieties which are now used for beet-sugar production have been developed by selection and cultivation from the *Beta vulgaris*, which is the botanical name of the original beet growing wild along the European shores of the Mediterranean. The beet itself, in its wild state, is an annual plant, producing seeds from seed the first year. When carried to the north of Europe, however, and placed under cultivation it became a biennial plant, the seasons not being long enough in the north of Europe to produce the seed.

This is the real keynote of the success of the beet as a sugar-producing plant, because the very moment it begins to produce its seeds or seed stems that moment the store of sugar which it has put away begins to be consumed, and the beet becomes pithy and woody and loses its sweetness very rapidly; so if the beet were still an annual plant the production of sugar on a commercial scale would not be practicable.

The tendency to reversion, however, is still very marked in the beet as you go south in Europe. If you look over a field in Germany in the autumn or harvest, you will probably see one plant to every two hundred which will still adhere to its original habit of producing seeds, and you will see the seed stem running up, not maturing but being formed so that the beet is less sweet. As you go into France, which is farther south, I have myself seen as high as 5 per cent of the beets in a field producing seed, so that in looking over it it appeared as if practically a great many had run to seed. This, however, is not of sufficient magnitude to interfere very greatly with the sugar content.

This general principle is true not only in Europe but in this country, that the farther north you go the richer the beet will be in sugar, provided the season is long enough to bring the beet to its first stage of maturity; that is, to the time when it is ready to produce its seed. Now, there are two reasons for this; in the first place, the cooler summers do not ripen the beets so rapidly, and the tendency to seed production is thereby repressed; in the second place, the production of sugar is the joint function of warmth and sunlight, and as you go farther north you get longer periods of sunlight during the growing months, and hence a given surface of leaf, for instance, represented by that square [indicating sheet of paper] will produce more sugar because it works longer, just as a workman working 14 hours will do more work, other things being equal, in the same occupation, than he will in 10 hours. In the north of Europe the beet will work 16 hours in June, and it will do the same amount in each hour.

As you go farther south the hours of sunlight are diminished, and the amount of sugar product is lessened. For this reason in Russia the finest beets grown in Europe are produced. The farther north in Russia that beets can ripen at all in the first stage the higher the percentage of sugar. So in the growth of beets for sugar those sections having the longest days in the growing season are the best adapted to produce the richer beets. I will develop that fact a little farther along, when I begin to apply to it the investigations made in this country.

To go back again to the first theme brought out—the relation of the Department of Agriculture to this industry—I will say that the first systematic work which was done by the Department toward promoting the industry in this country was accomplished during the Exposition in Paris in 1878. Dr. McMurtrie, who was at that time chemist of the Department, was detailed to go to Paris in charge of the exhibit from this country, and was charged with studying the beet-sugar industry with a view to its introduction into the United States. He made a very elaborate report and a very valuable one, which has become a standard in this country, and supplemented it with investigations the next year in this country.

As a result, indirectly, of this investigation capital was largely interested in the industry along in 1879, 1880, 1881, and 1882, and quite a large sum was invested in different parts of the country, especially in the New England States and in Delaware. In Delaware a large factory was built which at that time had all the modern improvements, brought fully up to date. Another was built at Franklin, Mass., of elaborate construction, and the third in Portland, Me.

Soon after becoming connected with the Department I visited all these factories, not then in action, and had an opportunity of looking them over before they were demolished. They were all beautifully constructed of the most approved machinery known at that time, and, so far as manufacture was concerned, should have been a success. All these ventures, however, resulted eventually in disaster and solely from the agricultural side. That has been the history of the industry

ever since. From the point of manufacture, we have always kept abreast in this country, and ahead. I will say that to-day we have the best beet-sugar factories in the world, and experts are coming from all over Europe to study them. We have gone far ahead of European constructors, but we are still far behind in the agriculture of the beet, and for reasons which will appear as I continue.

In 1884, the year after I became connected with the Department, I was instructed by the Commissioner of Agriculture to study the remnants of the sugar-beet industry in this country to see if anything could be done toward reviving it. I visited these localities, as I have stated, and also went to California, which at that time had the only active factory which had remained over from the impetus given in 1878 and 1879, which I have mentioned.

I made at that time a report, which I will refer to here, and which can be cited in your records, or referred to at least. This report of my observations in 1884 is found in Bulletin No. 5 of the Division of Chemistry, pages 73, et seq. The only factory which was in operation at that time is here represented from a photograph which I had taken under my personal supervision during my visit. It was situated in Alvarado, Cal., about 15 miles south of San Francisco.

Here was one instance where agriculture had gone ahead of manufacture. This was a small factory, capable of handling only 80 tons of beets per day; but the farmers had taken such an interest in the matter there, and it had proved so profitable to grow beets in that valley that they had overwhelmed this factory with beets, and over 20,000 tons of beets were lying in one pile there. The factory was almost hidden with such a wealth of beets.

Q. (By Mr. SMYTH.) You stated that the American sugar-beet factories were much superior to those abroad. Why is that?—A. It is because our constructors are quicker to adapt themselves to the exigencies which arise than are the European machinists. In Europe anything that gets started once is followed almost blindly. They do not have the inventive and adaptive faculties which our engineers have.

Q. The American engineers improved on the system of the beet factories?—A. They improved on the system—made a better machine and made it better suited to our conditions here. I will say that a great many of our machines made in this country are now used in Europe, particularly our centrifugals or drying machines. They are recognized everywhere as being the best in the world, and you will find them in nearly all the larger and especially the newer factories to-day. It is not the only reason, but it is a very marked one, why our constructors are superior. They can adapt themselves more quickly to the circumstances which arise than foreign constructors do.

Q. (By Mr. KENNEDY.) Is it true also that European machinery is being imported into this country?—A. To a very little extent; almost none now. When the factories first began—those I mentioned as having been built in Massachusetts, Maine, and Delaware—every piece of machinery which they contained was imported from Europe. Some of the best factories in this country to-day have not a stick of machinery imported from Europe, and I doubt if there is any new factory made entirely of new machinery that is wholly European to-day that has been built within the last few years, although there are some forms of machinery still imported, like the slicers, for instance, that cut the beet up for the extraction of the sugar; but our boilers, our centrifugals, evaporating pans, vacuum pans, and our driers are all of domestic manufacture. One of the new factories built for the crop of 1899 and 1900 was equipped almost entirely with imported machinery, but I am informed that a very considerable part of this machinery is being replaced by American machinery for the crop of 1900 and 1901.

Q. (By Mr. SMYTH.) Are the factories larger, as a rule, than those in Europe?—A. The average size of our factories is larger than in Europe, and we have the largest factory in the world.

Q. Do you consider that we manufacture the sugar cheaper than in Europe?—A. Well, we pay a great deal more for labor. With the American machinery the labor is so much more efficient, and our fuel is so much cheaper and more economically used, that I believe we save practically in these ways what we expend over and above what the Europeans pay their labor. So I believe, for that reason, we can make beet sugar almost, if not quite, as cheap as it is made in Europe to-day, although we pay more for beets and more for labor than they do there—far more.

Q. (By Mr. KENNEDY.) Where is the largest factory?—A. The largest factory is in Salinas, Cal. It has a capacity of 3,000 tons of beets per day. Compare that with the first one in California of 80 tons, and you will see the force of the comparison.

Q. (By Mr. SMYTH.) Are these factories engaged throughout the whole year, or a short season?—A. Only from 60 to 120 days.

Q. And then they shut down?—A. Then they shut down.

The investigations which I started there have been continued ever since in the Department of Agriculture, and I will just give you a citation of the reports which have been published relating to it. The report which I have just mentioned was published in 1885. The next one contains the results of investigations made in 1890. During this interval investigations were made on beet sugar and other subjects. In 1890 we began another series of special investigations, with special reports, and this is Bulletin No. 30 of the Division of Chemistry, being the results of experiments made at Schuyler, Nebr., on the subject of the production of high-grade seeds.

While I am on this point I might as well develop what I have to say on that industry, which is a very important one in connection with the growth of sugar beets. You will understand that the beet is grown from the seed. The beet having become a biennial, does not produce other seeds for two years, and the whole development of the beet in sugar content has been accomplished by what we call selection; that is, beets which are exceptionally favorable for sugar production are selected for mothers. They are put away in silos during the winter, so as to protect them from frost. They are one of the earliest plants set out, because light frosts do not hurt them. In March or April they are set back in the ground in rows so they can be cultivated, and then they produce their seeds, which ripen in August.

Q. Would they be killed if left in the ground?—A. They would be killed. Freezing and thawing would entirely destroy their vitality.

Now, to produce high-grade seeds the following method is pursued, and it is the method used in these experiments which continue over a period of three years. This is the first report. Beets are grown in the usual way from ordinary seeds such as are planted for producing beets for the factory. From these, beets typical in shape and size and perfect in form are selected, as many as you desire, sometimes about a thousand, and they are carefully preserved over winter. In the early spring the silos are opened, and each one of the beets is subjected to a chemical analysis. You can take a sample for analysis without destroying its vitality, and for doing that we take a core. Bore diagonally through the beet a core, say an inch in diameter and take the pulp out. By going diagonally through you get a representative sample of the whole beet, because the sugar is not evenly distributed. Near the top there is less than in the center, and it is necessary to have a diagonal core in order to get an average representation of that beet. This core is subjected to an analysis, and the amount of sugar which it contains is determined. If it is a poor beet, containing 12, 13, or 14 per cent of sugar, we throw it away or use it for cattle food—reject it altogether. If, however, it shows 18 per cent of sugar, that is a very high grade, and we place it in that grade. If it shows 17 per cent, we put it in another grade; if it shows 16 per cent, we have another grade. In this analysis we separate these beets into four grades. One we reject, that which falls below 15, and then we have a grade of 16, one of 17, one of 18; and we rarely get a beet above 18. These beets are planted separately by grades.

Q. After they are bored?—A. Yes.

Q. It does not destroy the vitality?—A. Not at all. Of course the beet becomes a little injured, but there is still enough plant food to produce seed, and we go on the theory that like produces like; that is, the theory of evolution. Being rich in sugar, it will tend to produce seed which will produce other seed which will produce other beets that are rich in sugar.

Following that plan the beet plant has been developed from a plant containing 5 per cent of sugar to a plant containing an average of 15 per cent. That has been done in the last 100 years, and beets are still improving; but you will understand there is a limit beyond which we can not go, and that has been practically reached. It is doubtful if we can produce richer beets unless we can get a better grade of beet, like northern Russia. So we can still make some improvements and hold that which has been obtained, and not go backward. The moment the beet is neglected it begins to degenerate. It is that atavism—that tendency to go back to the type of its ancestors, just as human beings do if the opportunities of culture are taken away from them. We would all go back to barbarism if left without culture. Now, the great effort is to hold the beet up to that high grade, and that was the object in this country—to determine what could be done here in producing a high-grade beet and in holding it up to its standard.

These selected beets are planted. They produce seeds that year. These seeds are harvested and planted the next spring, and the second year we get another crop of beets. They do not come up to the pattern—some may be very inferior—but the tendency is that beets grown from a mother of a high grade will be richer

in sugar than beets grown from a mother of low grade. That has been frequently established by actual demonstration. The general tendency of the average is to be higher. So by going on patiently from year to year we have secured a type of beet seed which will grow over a whole field, under favorable conditions, a commercial beet which will have an average of 15 per cent of sugar.

Of course you understand we could never plant these seeds from analyzed mothers commercially. They could only be used for growing seeds the second, third, and fourth year. Beets grown from analyzed mothers' seeds would be worth \$5 a pound. But that one mother will produce the second year a hundred beets, and if you plant those beets they will produce seed enough to produce a whole field full.

Q. The practice of growing and testing seeds is only done in your Department, not done in the agricultural regions by the farmers?—A. No; but it is also done in the experiment stations which are devoted to the development of high-grade seeds. All the high-grade beet seeds to-day have been produced from analyzed mothers, but in the fourth generation only, after the growth of 2 crops. For instance, you order from a seed grower to-day in Europe a ton of beet seeds. These are grown from the mother produced 4 years ago and analyzed. No analysis has been made of these beets, but it is taken for granted that the seeds partake of the nature of the mother from which they were produced.

By authority of Congress a station was established in Nebraska under the control of the Department of Agriculture, which I had charge of as director, to do in this country what had been done in other countries, and especially to see what particular influence the soil and climate of the United States would have upon the production of a high-grade beet. We thought possibly we might be able to produce a beet which, under our climatic conditions, would be better adapted for growth in the United States than one produced under dissimilar conditions in Europe, and although this station was only continued for 3 years—which was not time enough to develop the idea—we did prove in the 3 years that seeds grown by ourselves under these conditions, when planted side by side with imported seed of the same character, produced in this country beets having an average of 20 pounds of sugar more per ton than those grown from European seed, which was a perfect demonstration of the fact, which will soon be recognized by our beet growers, that we should produce our beet seeds here, even if it be by a costly process.

This station was discontinued at the end of 3 years, and no further attempts have been made by the Government to grow high-grade seed, nor has any private individual or firm engaged in this business up to the present time. The result is that practically all of the beet seeds which are planted in this country to-day are imported from Europe, because no one has seen fit to undertake this very costly process.

Suppose a body of capitalists would start in to grow high-grade seeds for commercial purposes. They would have to invest a large sum of money, and it would be 4 years before they would get a dollar in return; and our people are always slow to invest in any enterprise in which they are absolutely certain to have to wait 4 years for a dividend. Hence we have never had established here a seed farm such as are found in many places in Europe. I have visited some of the largest and best seed farms in Europe where they do nothing but produce high-grade seeds.

Q. These are run by private parties?—A. Yes; because it is a very profitable business.

Q. Do any of the governments maintain seed farms?—A. The government maintains seed-control stations, which work is done entirely independent of private corporations and where experiments are conducted at the expense of the government. This is true of every European government, especially of Germany and Russia, and to a less degree in Austria and France. The German seed-control stations are about 15 in number, where they do nothing but determine experimentally the methods of improving the quality of the seeds, not only of beets, but of other plants. That is entirely independent of the private corporations that grow beet seeds for the trade. In other words, the beet grower of Europe does not grow his own seeds, because he could not bring to the production of seed that scientific experience and ability which are necessary to hold the beet up to its high standard and improve it little by little as circumstances may warrant, and therefore all beet growers buy their seed of these great farms that devote themselves exclusively to its production.

Q. The farmer beet grower buys from these same parties?—A. Yes; such as Vilmorin in France and Ad. Strandes at Zehringen, and the great Kleinwanzlebener. They are perhaps the most extensive beet farms in the world.

Q. (By Mr. CONGER.) How many acres do they contain?—A. Ad. Strandes,

where I spent a week 2 years ago, has about 1,000 acres devoted to the production of seed alone, and the Kleinwanzlebener farms are larger—perhaps 6,000 acres.

Q. (By Mr. A. L. HARRIS.) Would it be advisable for the Government to give further encouragement to these investigations? A. I think it would be very advisable for it to continue the work we did here to demonstrate how the seeds can be produced, but not to produce them commercially—nothing but experimentally. I am opposed to the free seed distribution of the Government. I think it is a bad principle. But undoubtedly it is the duty of the Government to do that work which no individual can or will do, because it is simply an expenditure of money without any possibility of any pecuniary gain; such work as we started here to determine the effect of soil and climate and take advantage of any good effect which they would produce.

Lawes and Gilbert in England are the only private parties who have devoted a fortune to just such a work. It is a very praiseworthy thing for a wealthy man to do, but very few choose to do it. In fact, I think that is the only instance where a man has given his entire fortune without any hope of pecuniary gain. Sir John Lawes has given his whole private fortune practically, amounting to over \$500,000, in trust, to continue this work which he has conducted for 60 years in conjunction with Sir Henry Gilbert, who has given his life service, in conjunction with Lawes, to this work.

But, in the absence of any such munificent private endowment, it is the duty of the Government to promote the interest of agriculture, not only in the line of beet seed but also every agricultural crop.

For instance, the Secretary of Agriculture is now conducting a research, which he has committed to my care, which arose from the fact that complaints were made by millers established on the Pacific coast that their wheat which they were grinding would not make macaroni as it did a few years ago. In San Francisco the making of macaroni is a large industry because there is a large Italian and other foreign population which uses this food a great deal, and the Pacific wheat a few years ago made an excellent article. On investigation we find that the content of gluten in the wheat has fallen so low that it is no longer suitable for making macaroni. Now, the question is what is the influence of soil and climate on the gluten content of wheat, which you know is the most valuable constituent of wheat. Now, that is an investigation which a wheat grower or a miller would hardly be willing to undertake, and if he were willing he would not have the scientific ability probably to carry it out, but it is one where the Agricultural Department, in the interest of agriculture as a whole, can exercise a wonderfully good influence and do a good work, by pointing out the causes which produce this depreciation and, if possible, suggesting remedies so that the wheat can be restored again to the condition where it will be more valuable for that particular purpose.

Now, I will say in the sugar-beet industry that the development of high-grade seeds in this country must follow, because, from a merely pecuniary point of view, we can not afford always to import our seeds. They are worth 10 cents a pound delivered in this country by the cargo, not in retail but wholesale. The seeds which we distribute from the Department of Agriculture cost on an average 10 cents a pound. At least 20 pounds per acre should be planted, and where there is anything like bad conditions at the time of planting, more; because it is highly essential to the growth of a good crop of beets that they should be thick in the row. If there are spaces like this [indicating], the beets on the end will be overgrown, and overgrown beets are never so rich in sugar; and so to prevent overgrowth we have a beet every 6 or 8 or 9 inches in the row, and to do this we have to plant a great many seeds more than enough to produce this result.

A beet seed is an aggregation of seeds. One seed contains 4 or 5 seeds wrapped up together. If they would all germinate from every seed there would be 4 or 5 sprouts, but on account of their high artificial character they have a low vitality.

Now, this is another universal principle, that the more you develop a plant or animal the less power of reproduction that plant or animal has. The reproductive powers are the vegetative powers, and when you develop other qualities you diminish the reproductive strength. The cultured nation or family does not have as many children as the one lower down the scale. There is always a tendency to develop the plant or animal out of existence, and so the beet seed has a low vitality. A great many of them produce no sprouts at all, and of those that have 4 or 5 points that ought to produce sprouts, maybe only 1 will germinate, so you have to plant them very much thicker together than if they would all sprout. Hence the actual cost of the seed, without counting the cost of putting it in, is probably \$2 an acre. That means a considerable sum where thousands of acres are planted. I suppose we spend—say we have 100,000 acres planted in beets in this country—at least \$200,000, which we are sending out of the country each year

for these high-grade beet seeds and, of course, as the industry increases, that will become a sum of great magnitude, and we must look forward to the time when the seeds will be produced at home.

Q. (By Mr. CLARKE.) Is there any beet seed farm anywhere in the country?—A. None whatever. There are places in California where they grow seed in a haphazard way without analysis, but if that practice is continued the content of sugar will run right down, because there is no control to hold these beets up to their standard.

Q. No analysis made?—A. No analysis made, and without this control degeneration will immediately set in, and the people who use these seeds will be out of the race because they can not compete with those who use the high-grade seeds.

Seed production from an industrial standpoint is one of the very greatest importance in connection with the beet industry. It requires the highest degree of skill and labor and the greatest amount of patience of any agricultural profession.

Now, continuing the result of our investigations: Following the report of Bulletin 30 comes Bulletin 33, which gives a continuation of the experiments at Schuyler, Nebr.; and Bulletin 36, which contains the result of the work the last year that it was conducted.

I might say this work was not discontinued for lack of an appropriation on the part of Congress, but the Secretary of Agriculture who took office in 1893 did not believe in any kind of paternalism, and he thought the growth of seed was "paternalism gone to seed," as he expressed it. So, although Congress had made the appropriation he abolished the station and sold all our appliances, and the station has never been restored. This bulletin gives the result of the last year's work, and shows the fact which I mentioned, that the beets grown from seeds which we ourselves produced gave a result which was very encouraging, and that the growth of our own seeds in our own climate would prove of the greatest pecuniary advantage in the process of manufacture.

Now, I think I have said enough in regard to the seed production, and I want to bring up next the studies we have made in regard to the distribution, or the location rather, of the area in this country where beets grow best. It has seemed to the Department of Agriculture that it was its duty to aid intending investors, at least in a negative way, by showing the parts of the country where it was probable they would get the best results from an agricultural point of view. We have never taken up to any extent the manufacturing side—that is, the location of factories in regard to coal and water transportation. We have studied always from the agricultural side—that is, where can you grow the beets best?

Now, acting on the idea which is so patent in Europe, that northern latitudes produce beets of the highest grade, it occurred to us that we would naturally find in this country our best beets grown along the northern borders of our country or somewhere in that region. In other words, that the farther north we could go and get a climate which would produce a crop suitable for manufacture, and get ample time before the advent of winter to harvest that crop and deliver it to the factory, the better the character of the beets would be and the more likely the industry would be to succeed.

But we did not act on that theory exclusively. We exploited every part of our country. We sent seeds to agricultural stations in every State, with instructions for cultivation, because the planting and cultivation of beet seeds must be conducted according to special methods—that is, ordinary agricultural rules will not apply to beets. It is horticulture rather than agriculture; and in order that all parts of the country might be fully represented we had a uniform system of directions for all parts. Not only did we send to the agricultural stations, but to farmers in all parts of the country who were interested and who would promise to conduct the work according to our instructions. We have distributed in the last 10 or 15 years to an average number of 6,000 farmers in different parts of the country every year, and to all the experiment stations desiring to collaborate in this work.

So far as possible we have had the analyses made at the experiment stations of the States so as to avoid long transportation of samples; but we have also always had our own laboratories and have every year made many analyses of samples sent from all parts of the country, so we have had checks on the work done in the different localities. This work has been continued more than 10 years, and we think the data accumulated in that time are valuable. They certainly are unbiased and have been obtained under as nearly as possible uniform conditions. The result has fully corroborated the theory of the culture here, and as a result we have been able to construct a provisional map of our country (herewith reproduced; see next page) showing at least the southern limit of probable profitable culture, but without trying to extend it to the north, because, as I have said, there is no limit to the north except the winter.

Q. Allow me to ask if you are familiar with the culture of the sugar beet in Canada?—A. Yes; fully.

Q. Is that business successful there?—A. The trouble there is the difficulty of

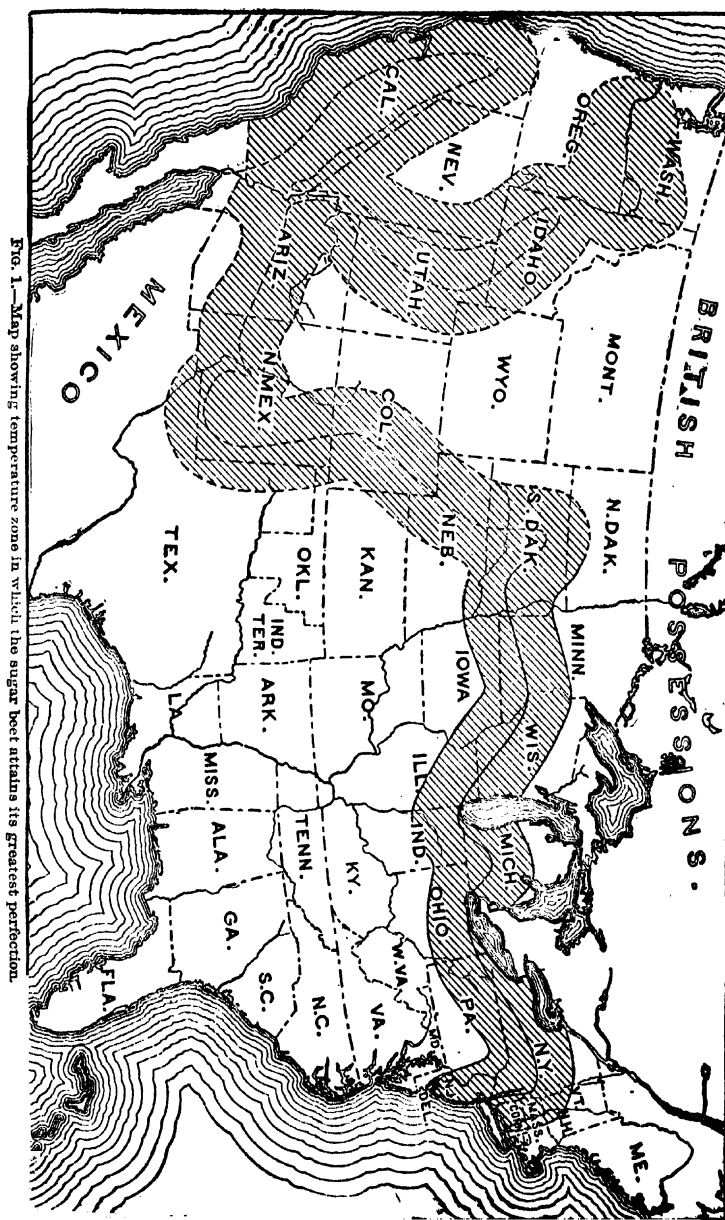


FIG. 1.—Map showing temperature zone in which the sugar beet attains its greatest perfection.

harvesting by reason of the early winter. The growth of the beet is all right. They can get an excellent quality of beet, but they are so limited for time that the industry has not proved so profitable as it has in our own country farther

south where the beets are not quite so good. We have got to take that into consideration. Now, this map, as I say, is a tentative showing of the southern limits of profitable culture; not that beets can not be grown south of this; they can, and often of a very good quality; and, as I say in my reports of this map, this is not dogmatic, it is only tentative. The probabilities are that very little successful beet culture will be found south of this region [indicating on map], although there are several factories now in operation in the South. In fact, some of the first that were established in Nebraska were south of this belt, and one in New Mexico just on the edge of it, and one in Utah just on the edge of it. This is due to the fact of this high plateau. I will say the temperature is the chief function or factor. Of course after you pass this point here you reach the arid regions. Where you have water to grow beets all beets grown along here are fine, but this great plateau has the low temperature of the southern plateau of the Rocky Mountains, so the temperature here is the same as it is here [indicating]. In the summer time it is no warmer there than here [indicating]. These lines are the isotherms of the temperature. The lower of these isotherm lines shows 71 degrees for June, July, and August; the middle line is 70 degrees, and the upper line is 69 degrees. In view of the facts mentioned you can grow beets as far north as you can go and get a harvest. South of this you can grow beets just as rich in tonnage, more so, perhaps, but contents of sugar begin to fall. Fine beets are grown on the mountains all through South and North Carolina, but the contour of the land is such that you can not get an area sufficient to supply a factory, because you have got to have contributory to a beet factory 10,000 acres for one factory of 500 tons daily capacity. You can not grow beets on the same land more than once in 4 years, so you have got to have enough land to make a 4-years' rotation, so that each acre will be planted in beets once in 4 years. Hence it requires 10,000 acres of good level land to supply one factory of moderate size. You can not grow beets on the hillside; you have got to have reasonably level land, and have got to have four times as much as is necessary to supply the factory for that one year. Some of the finest beets we have had were grown in Maryland and West Virginia on the crest of the Allegheny Mountains. I went up there last summer for the purpose of seeing if there was not enough land on these mountains to build factories. One place, I think, in Maryland and West Virginia I found where you could get enough good land to build a factory, and that would prove very profitable, because up there it is 3,000 feet high. Now, in California there is a remarkably fertile condition. That whole coast of California has the same temperature—the valleys—because they are all inundated by the winds of the Pacific Ocean. The result is that these isothermal lines instead of running east and west, as in other parts of the country, run north and south.

Q. (By Mr. SMYTH.) Due to the range of mountains?—A. No, due to the Pacific winds. Now, as soon as you go to the interior of California you get hot weather again, but so long as you stay on the coast or in the valleys on the coast, where the coast winds come in and keep the temperature down in the summer, you grow fine beets, wherever you can get water. That is the reason you see all these factories built right here.

Q. Where are beets most largely planted—what State?—A. The two States which are now taking the lead are California and Michigan. There are more beets grown in these two States than any other two. Michigan is peculiarly well suited for beet growth; also northern Indiana, Iowa, Wisconsin, and northern Ohio. All of central New York and portions of the New England States, where the land is rich enough and level enough, grow beets, and our data, which we have accumulated now, and which are found in these reports, bear out absolutely the fact which is represented in this map—that is, that although it was constructed on purely theoretical principles, before we made an investigation at all, and though it has been published now more than 10 years, the investigations made since then have shown that if we had waited to make this map until the present time the lines would have been practically what they are now. Of course there is very little of this area which is covered by this map—all these shaded portions are not suitable for beet culture. This whole region is arid, and most of it is hopelessly so; no possibility of irrigation. There are a few but not many localities where irrigation can be practiced. An arid region where, other things being equal, water can be obtained is the ideal one for beet culture. In the first place you have nothing but sunny days, get all the sunshine the beet can possibly assimilate. In the second place you control absolutely the water conditions; you can have plenty of water for the growing period, and when the crop is ready to harvest you can withdraw the water and have a dry season for harvest; whereas, in the humid regions like Michigan, there may come a September rain, nearly always does, in fact, after the beets are ripe, followed by warm weather, and the second

growth will take place greatly to the detriment of the sugar in the beets; the roads will become muddy and interfere with the harvest; so I say that the arid region where irrigation can be practiced is the ideal one for the beet grower, and you will see in the future, when this great industry takes the place which it ought to take in this country, and which it will take, that it will be the most profitable crop which can be grown upon irrigated lands, because the beet is a crop which you can grow on land worth \$300 an acre. It will pay fixed charges on such land, whereas you can not grow wheat or Indian corn on such land; a crop of wheat would not pay the interest on the investment. You have got to go into what we call intensive cultivation and then secure a large yield before you can afford to pay \$300 for an acre of land. That is about what irrigated lands cost; so it becomes peculiarly a crop suited to the highest-priced land. Now, our data have shown that after you go west of Iowa you reach a very treacherous region until you get to the arid region. The conditions of Nebraska and Dakota and all through that region there, take the seasons through, are favorable to beet growth, but there we have the most pronounced variation of meteorological conditions anywhere in the world, almost. Those hot winds from the west blow across the plains of Nebraska, and absolutely wither and cook the vegetation, and then in October they have sharp freezing weather, almost, with snow; so these rapid changes in the meteorological conditions are unfavorable to beet growth, and although two of the oldest factories in the country are established in Nebraska, yet if you will really get at the bottom opinions of the people who operate these factories, they will confess that if they were locating their factories now they would put them some place else, although now and then they get an excellent crop; so we have an intermediate and treacherous condition between the humid and arid regions. When you reach the humid region you have fluctuating conditions, and when you come to the arid regions you have more uniform forces. The conditions which obtain in Michigan and northern Ohio and New York are uniformly more favorable than in Nebraska. Our data have shown that in these localities the industry has taken root more favorably, and we find there the best results as a whole. We have repeatedly for a whole season received beets from these regions with an average of 15 per cent sugar with reasonable purity, and growing in regions where agricultural conditions are favorable, because all those regions are level. The contour of the soil is suitable to beet culture; the land is reasonably fertile; but the farmer who depends entirely upon the fertility of his soil for any crop for a series of years will become bankrupt. No land can be used continuously without feeding, no more than you can drive a work horse more than one day without giving him a meal. All land must be fed, and there is no crop which can be grown *ad libitum* on the native fertility of any soil whatever; so any radical system of agriculture—growing beets, cotton, or any other crop—must look to a period when the land must be fed, and the course is scientific, as a domestic animal is fed.

Q. Has it been necessary in Texas to manure the land?—A. Not yet. The time will come, however, when the crop will drop—when they must do something to feed it. I may mention, for example, the wheat-growing regions of the great Northwest. When they opened those regions they were able to grow 30 and 40 bushels to the acre; now they are getting 15 bushels on the same fields, and the result is that the land must be fed. You can not grow beets without fertilization. That is one crop, especially, which demands the most careful nutrition in the soil, and any system of beet culture which expects to go right along depending on the natural fertility of the soil will end in disaster. And there is another great point in this industry which the members of this commission ought to have brought to their attention; that is this, that the establishment of the sugar-beet industry in any locality is a blessing to all forms of agriculture of every description that are practiced there, because it demands a system of culture. It is scientific and just. I mean by this that the system of agriculture which robs a soil and makes it poorer is not just. The man who has a farm for 25 or 30 years and leaves it poorer than he found it has committed a crime against society. We do not bring him up before the courts and send him to jail, but he has committed a crime, because he has robbed the future. Now, I say that any system of agriculture which impoverishes the soil is a false one, but that is a rational system of agriculture which, by increasing the yield of the crops, increases the fertility of the soil. Now, if there is a crop that is grown which will teach the American farmer a lesson, the sugar beet is that crop, and there is no farmer in the world who needs that lesson brought home to him as the American farmer does. The population of the earth is constantly on the increase; the area which is subject to culture is practically exhausted. We can add in our own country only the arid regions now, little by little. Where is food to come from if not from scientific

agriculture? We can not spread our acres; we can not increase them; but what we can do, and what scientific agriculture will do, will be to increase their fertility. The beet-sugar industry has not been established long enough in this country to be an object lesson further than this, that wherever it has been established the value in farm land in dollars and cents has rapidly increased. That is a well-known fact; but I am sorry to say the fertility of the land has not increased in proportion to its value. Its value has increased some, because the beet is a more profitable crop than the crops heretofore grown on that soil; but the lesson that the farmers have not learned is that they must begin to improve the fertility of the soil in order to retain its richness. In Europe it is quite different. I have spent a great deal of time in north France, where the industry was established first, and I have collected statistics in reference to agricultural products in that country. Fifty years ago the yield of wheat in northern France—and that is the granary of France—was about 17 bushels to the acre. To-day the average yield of wheat on these same fields is 28 bushels to the acre. Now, there is a system of agriculture which increases the yield of the crop and at the same time enriches the soil. The soil of France, to-day, is more fertile than it was at the time of Cæsar, and will produce a larger yield, and that is largely due to the improvements made in the last 50 years. I think I can safely say that 50 years ago the crops produced on these beautiful fields of France were no greater than at the time of Cæsar, if as great. That whole matter has been accomplished by an application of scientific agriculture in the last 50 years, and the object lesson we have been gathering through the beet is in every case the same. The same is true of Germany. While the land is not so rich and the yields not so large, the increase has been proportionately as great. Now, what will happen in a country which simply plows and sows and sells? It will become a bankrupt sooner or later. That country will remain rich in agriculture which plows, sows, sells, and feeds its land, and the introduction of the beet as an agricultural crop will bring about that condition of affairs in this country, in my opinion, more than anything else possibly could. So, from the industrial point of view, it seems to me there is nothing touching on agriculture which is of more moment and worth more in actual dollars and cents to the American farmer than just such an object lesson as beet culture will bring. I know our fields are broad, and you may say it is wise to get fertilizer on them; but better far to grow a less area and get a larger yield than to spread over so much and impoverish and ruin the soil continuously; and, further than that, scientific agriculture will show the ways of conserving plant food so as to make it cheap and accessible to every farmer. That has already been largely accomplished, so that not only beets but every agricultural product will feel the effect of properly feeding the soil. Now, just one practical point in regard to this: The men who are putting their money in this industry to-day come to the Department of Agriculture to ask where to locate their factories, simply because we have collected the data and studied the subject, not from a monetary, but from a purely scientific point of view. We have no interest in lands one place more than another. Our interest is in the industry.

Now, there is a large factory going up in Colorado, and will be about ready for the use of this coming crop. That factory was located by the Department of Agriculture, simply by consulting, not only this map, but the data on which this map was brought out, and there were a great many localities in the State of Colorado that wanted this factory and were bidding for it here, there, and everywhere, but men who are going to put money into this industry say it is not so much the question of the bonus they get to-day, but the region that produces the most beets; that is where they want to put the factory. We had another illustration. Some capitalists desired to locate a factory near here, and went to Fredericksburg. They applied to the Secretary of Agriculture for information. He advised them not to do it, and gave them the reasons. He said, it is true you can grow beets there—very good beets—but I will show you in beets grown in that locality and 300 miles north, from the same seed, a difference of 4 per cent in the sugar content. You compete with a difference of 80 pounds per ton in the yield of sugar between these beets and those beets; you can not do it. If you were the only factory in the world you could make all the money and make sugar out of beets at Fredericksburg, but people farther north make 80 pounds per ton more sugar than you do at the same expense and of course can undersell you in any market in the world, and you had better keep out of it. That is where the practical part of such investigation comes in—pointing the investor to where the agricultural conditions are favorable and warning him from regions unfavorable. *

Q. (By Mr. A. L. HARRIS.) What ingredients of the soil are most conducive to beets?—A. Any soil that contains the ordinary elements of plant food, of a

powerful nature, is satisfactory for beets. It is more the physical condition of the soil than the chemical composition that you must consider in beet growth. A beet must have room to go straight down at least 16 or 18 inches in the soil. If it strikes hard pan it will be deflected and the tap root will turn out, and other tap roots will be produced and the beet will be stunted and ruined.

Q. (By Mr. SMYTH.) Does the shape have anything to do with the sugar contents?—A. Yes; and you will find conical beets, regular in shape, smooth in surface, with a single tap root, will, other things being equal, be the richest, and most convenient for handling; so the soil must be a pervious one, and for that reason a stiff clay is not good for beets unless it is very heavily limed. Of course you all understand that where you have a stiff soil, a very stiff soil, a liberal application of lime will flocculate it so as to make it pervious and easily penetrated by all roots of growing plants, but unless you have such treatment you want soil which is pervious. The soil of Michigan is very well suited to beet culture on account of its sand. It is a sandy loam that does not bake with rain as clay would, and so for that reason the beets have excellent physical conditions. Southern California is the same. It is mostly deposit soil in these valleys, which is not a clay soil and does not bake, but remains open and pervious. Stiff clay soils are excellent, but better for cereals that feed near the surface, like wheat and indian corn; but if they are used for beets they must be well subsoiled—in fact, all fields planted to beets must be subsoiled, and heavily limed; then beets will grow. I have seen very fine beets in Europe growing on very heavy clay soils, with a liberal addition of lime.

The manufacture of beet sugar is an infant industry in this country. When we consider the consumption of sugar in the United States and what is contributed by the beet, it is not a very large quantity—enough for two or three breakfasts; not much more. We use in this country 2,000,000 tons of sugar a year, and we produce less than 300,000 tons of all kinds—some years a little more and some years a little less. The Louisiana production, as you know, fluctuates very greatly—probably an average of 200,000 tons in periods of 5 years—sometimes more than that, sometimes less—and it is not probable that Louisiana will ever produce any more sugar than to-day. It is not far enough south for cane sugar, and it is entirely too far south for beet sugar. You all know the vicissitudes which the Louisiana cane crop has undergone the last few years, due mostly to freezing weather. The temperature has been down to as low as 13° above zero and that naturally killed practically all the cane in the State a year ago last winter. The last year's crop was a very small one. Louisiana is one of the best rice-producing States in the world. Rice is gaining and cane is losing. In 50 years Louisiana will be, in my opinion, the greatest rice-producing country in the world.

We need not expect any large increase in our cane-sugar production. It is more likely to begin to decrease than increase. Our production in Texas does not cut any great figure, although Texas has produced considerable cane sugar. Florida is likewise hardly to be considered as a cane-sugar country until at least the swamp lands are freed of water. In all localities, taking all this into consideration, I doubt if we have on an average over 300,000 tons of cane sugar in our extreme Southern possessions.

Q. (By Mr. CLARKE.) How frequently do they plant cane in Louisiana?—A. Practically every 2 years now.

Q. How frequently in Cuba?—A. Once in 15 years. I have been told that they frequently have fields that have been harvested for 50 years, but about once in 15 years they replant there. Now we are consuming 2,000,000 tons of sugar. Ten years from now we will consume 3,000,000 tons. Suppose we absorb our two so-called tropical possessions and bring their sugar in free? We would not by any means have any 3,000,000 tons. There would still be a shortage in our sugar supply, and it would take years to reestablish those industries in Cuba and the Philippines to anything like their former great figure. We have got to continue to import beet sugar from Europe or extend our own industry. My own opinion is that for 50 years to come we will need in this country from 500,000 to 1,500,000 tons of beet sugar annually, and we have got to buy it as we are buying it now, or have got to make it. Well, we are making some, but it is difficult to give a reliable estimate of the quantity. This census will give us the facts, because every locality where beet sugar is made will be visited by an expert who understands the business thoroughly, and as census agent he will get figures from all these companies. We have now got what they tell us, and we have no law in this country which compels a business man to tell any more than he wants to.

Q. Is sugar largely used in the preservation of our fruits?—A. Yes; very largely. That use is one of the chief items in the consumption of sugar in England, and

sugar is used much more extensively there than here in preserving jams, marmalades, etc.

Q. If our business of preserving fruits, jams, and marmalades was largely increased, it would call for a larger consumption of sugar?—A. Very much larger. I will say that at the present time the consumption of sugar is the greatest in England, but the consumption on the table per head is far greater in this country than in England. A great deal of the sugar that is consumed in England is used for preserving purposes and the preserved products are largely exported; it is not so generally used by the people.

Q. (By Mr. SMYTH.) In the raw state?—A. On the table and for culinary purposes. They use it for preserving, and things of that kind. We are using between 62 and 65 pounds of sugar per head in this country; in England they are using between 72 and 75; some say as high as 80, but it is a little more than it is here.

Q. Is beet sugar better adapted to preserving than cane sugar?—A. No; not so well. I think the great use for cane sugar in the future will be in that industry, while on the table for sweetening coffee and ordinary table use beet sugar will be largely employed. Beet sugar must be absolutely pure before it can be used. Cane sugar, to my taste, is a good deal better in its raw state before it is refined. I do not know of any sugar so good as the old-fashioned yellow Louisiana sugar, while beet sugar in that condition you could not eat at all, it would be so bitter. There is absolutely no difference chemically between cane and beet sugar, and they are identical in every way, but I can tell beet sugar always from cane sugar.

Q. (By Mr. CLARKE.) After it is refined?—A. Yes.

Q. How?—A. I put it in a bottle and set it away for a week, then open the bottle and smell of it, and I never saw beet sugar yet that I could not tell by its unpleasant odor. You dissolve it and sweeten with it and you can not tell any difference at all. Cane sugar, on the contrary, has a delightful aromatic odor. If you go into a beet-sugar factory, you will think you are in a soap factory, and it is a soap factory, because beet sugar contains an immense amount of potash and contains also some fat, and the odor that comes from it is a bad one and is peculiar to the manufacture of soap. You go into a cane-sugar factory and you think you are in a garden of roses, so sweet is the aroma, and so, for preserving and things of that kind, I think that the cane sugar is to be preferred for sweetening. I defy any man, woman, or child to distinguish any difference in the two pure sugars in sweetened coffee or sweetened cake. In no way is the taste different between refined beet sugar and refined cane sugar. It is absolutely the same.

I have here a list, which I will submit, of the factories in the United States which are now either in operation, or building for operation the present year. They are given in separate lists, those already built and in operation, and those building, and also a list of those which have been proposed or talked about. Some of these will materialize, and some will not, but it will all be information which you can make use of.

(The list referred to follows, giving name and location of each factory and capacity in tons of beets per day.)

FACTORIES OPERATING IN THE UNITED STATES, WITH THEIR PRESENT CAPACITY.

	Tons.
Alameda Sugar Company, Alvarado, Cal.....	800
Spreckels Sugar Company, Watsonville, Cal., formerly Western Beet Sugar Company.....	1,000
American Beet Sugar Company, formerly Chino Valley Beet Sugar Company, Chino, Cal.....	750
Los Alamitos Sugar Company, Los Alamitos, Cal.....	700
California Beet Sugar and Refining Company, Crockett, Cal., also refines Hawaiian sugar.....	500
Oregon Sugar Company, La Grande, Oreg.....	350
Utah Sugar Company, Lehi, Utah:	
Main Factory at Lehi.....	500
Slicing station at Springville.....	350
Ogden Sugar Company, Ogden, Utah.....	500
Pecos Valley Beet Sugar Company, Eddy, N. Mex.....	200
American Beet Sugar Company, Grand Island, Nebr., formerly Oxnard Beet Sugar Company.....	350
American Beet Sugar Company, Norfolk, Nebr., formerly Norfolk Beet Sugar Company.....	850
Minnesota Sugar Company, St. Louis Park, Minn.....	400
Michigan Sugar Company, Bay City, Mich.....	850

	Tons.
First New York Beet Sugar Company, Rome, N. Y.....	200
Binghamton Beet Sugar Company, Binghamton, N. Y.....	350
Spreckels Sugar Company, Spreckels, Cal.....	3,000
American Beet Sugar Company, Oxnard, Cal., formerly Pacific Sugar Company.....	2,000
Union Sugar Company, Santa Maria, Cal.....	500
Washington State Sugar Company, Spokane, Wash.....	350
Colorado Sugar Manufacturing Company, Grand Junction, Colo.....	350
Standard Beet Sugar Company, Ames, Nebr.....	500
Illinois Sugar Company, Pekin, Ill.....	700
Bay City Sugar Company, Bay City, Mich.....	600
West Bay City Sugar Company, West Bay City, Mich.....	500
Peninsular Sugar Company, Caro, Mich.....	600
Detroit Sugar Company, Rochester, Mich.....	500
Alma Sugar Company, Alma, Mich.....	500
Kalamazoo Beet Sugar Company, Kalamazoo, Mich.....	500
Wolverine Sugar Company, Benton Harbor, Mich.....	500
Holland Sugar Company, Holland, Mich.....	350
Total capacity.....	19,100

FACTORIES BUILDING IN THE UNITED STATES.

The following factories are now building at the various places in the United States. Most of them will take part in the campaign of 1900. One or two will not be operated until 1901. These factories are being constructed by the following companies at the following places:

	Tons.
American Beet Sugar Company, Rocky Ford, Colo.....	1,000
National Beet Sugar Company, Sugar City, Colo.....	500
Continental Sugar Company, Fremont, Ohio.....	400
Empire State Sugar Company, Lyons, N. Y.....	500
Utah Sugar Company, Binghamton Junction, Utah, (auxiliary to Lehi).....	350
Marine Sugar Company, Marine City, Mich.....	350
Total capacity new factories.....	3,100

PROPOSED FACTORIES THAT WILL PROBABLY BE CONSTRUCTED.

Under this head I will call attention to beet-sugar companies already organized and which give every indication at this time of constructing their factories ready for the campaign of 1900 or 1901.

The Fort Dodge Beet Sugar Company, Fort Dodge, Iowa.—Has filed its articles of incorporation. Capital, \$450,000. O. M. Oleson, president; W. T. Chantland, secretary. Most of the acreage desired by the factory has been pledged by the farmers. It looks very probable at this time that this company will materialize as an active sugar producer in the near future.

The Storm Lake Beet Sugar Developing Company, Storm Lake, Iowa.—Has recently closed contracts for total amount of acreage necessary for starting a factory at that place to participate in the campaign of 1901. It is claimed the factory is assured, provided sufficient contracts can be secured to grow beets. These contracts are now all signed, and I suppose that Storm Lake will be the first to start in the beet-sugar industry in Iowa.

The Farmers' Cooperative Beet Sugar Company, Dundee, Mich.—Have decided to build a factory this year and will begin early in the fall so as to have the plant completed by July 1, 1901. They wish to build a factory of 750 tons daily capacity.

Virginia Beet Sugar Company, Fredericksburg, Va.—This company has perfected plans for building a factory at the above place, either to commence work in the campaign of 1900 or 1901, depending upon circumstances. This project at this time seems quite probable.

The Northwest Beet Sugar Company, North Judson, Ind.—It appears that a company was organized to operate a beet-sugar factory at the above place under the name of the New England Beet Sugar Company. This company contracted for about 6,000 acres of beets to be grown by the farmers, and for some reason the New England Company could not perfect its plans and the Northwest Beet

Sugar Company was organized for the purpose of carrying out these contracts and for operating a sugar factory at the above place.

Q. (By Mr. CONGER.) Are there many being built this year?—A. Thirty factories in the United States have been in operation, with a maximum capacity of 19,100 tons of beets per day. The largest of those which I have told you is one at Salinas, which has a capacity of 2,000 or 3,000 tons per day. There are one or two of a capacity of 1,000 tons, but most of them range about 500. Some fall as low as 300, and these are maximum capacities, remember. That is, they rarely reach it, because it is seldom that you get a full 24 hours' uninterrupted work in complicated machinery like that in a beet-sugar factory, and there is always some delay with it of some kind; so you can count on about two-thirds of the maximum capacity as the real working capacity; therefore our factories now have a capacity in actual work of between 12,000 and 15,000 tons of beets per day, but we do not make altogether 100,000 tons of beet sugar. Even if working to the maximum capacity of those factories they would not make more than that. The probable yield last year was about 65,000 or 70,000 tons. This year, with the new factories and a favorable crop, the yield will reach pretty close to 100,000 tons. You see what a small quantity that is compared with the total consumption, 2,000,000 tons.

The beet factory employs all kinds of labor from the commonest to the most skilled, so from that point it is worthy of consideration. I am not an advocate of the employment of women and children as is done in Europe in the agriculture of the beet. I believe that we will be able to do with machinery in this country practically all that the women and children do in Europe and at less expense. There are some operations in the agriculture of the beet which the machinery can not attend to. There is one at least, and perhaps only one. All the rest, I believe, will eventually be accomplished by machinery, but the thinning of the beets to get a proper stand in the row must be done by an intelligent hand. You will remember what I told you about beets growing sometimes with three or four sprouts from a single seed. Now, you must leave one sprout only in the ground. If you take hold of that tuft to take it out, you will pull the beet out, hence you have got to take it between the thumb and finger and hold carefully while you detach the others. No machinery can do that, so there is one agricultural operation, thinning of the beets, that must always be done by hand, I believe. But the cultivation and harvesting, and even topping of the beets, to cut off the leaves and a portion of the upper part which contains the largest part of the injurious salts—I have spoken of potash salts—I believe all can be accomplished by machinery. Hand work is universal in Europe, and you rarely see a machine in a big field hoeing and cultivating, the work being done almost entirely by hand labor. In this country it is just the opposite. The expensive part of the agriculture, however, will be the thinning, and that we must count upon having done by hand. In addition to the field work you have the skilled laborer of the factory, which is usually the field hand in Europe, who becomes the factory hand doing day labor during the summer and skilled labor during the manufacturing season. In this way they avoid repetition of hands and give employment practically the year around, because manufacturing operations begin in the autumn in November, and there are only the probable months of January and February and part of December that there are no agricultural operations going on. During those months the factories are in operation, either working up original crops or elaborating the molasses, so the beet industry will give employment to a large number of people practically the entire year. Thus the migratory condition of labor which attaches so often to agricultural operations, as in cereal and wheat harvests, is avoided. This gives a stability to labor which is very desirable. It gives an individual interest to the labor on the farm and in the factory. In this way a better morale is established among the laborers, a more efficient corps of labor is secured, and the industry tends to advance socially and economically.

Q. (By Mr. A. L. HARRIS.) Have you a total of the amount of labor required to supply this country's need in sugar?—A. Well, you can base it on the factory say of 500 tons capacity, which will require 4,000 acres of beets under cultivation and 8,000 in other crops in rotation—12,000 acres. It will require a corps of about 120 efficient laborers the year round to conduct that business—I mean laboring men, not women and children—and if the average family is 3 or 4 persons, that is probably 400 or 500; so a beet-sugar factory supports during the entire year a laboring population approximately equal to the number of tons of its daily capacity. Four or five hundred factories of 500 tons each would supply our present needs, and in that way you can compute the number of laboring men which this business will employ. This does not include the men who make the machinery, build the factories, and repair them. That touches other branches of industry—manufacturing industry. What I have given you is actual labor

on the farm and in the factory; and this labor, as I told you, in Europe is the very best. It is an educating business. The people there of other manufacturing want to get men who have worked in the beet factories; want to get them for labor. I had a conversation a short time ago with a German who is one of the largest manufacturers in Europe. I said, "You must be oppressed by this military law which requires every man to do 3 years' service?" He replied, "On the contrary, it is the salvation of the country. It takes the young men who do not know anything and makes men of them; teaches them to be men, makes them stand straight, makes them agile and quick, and the men who go through the military service are the men we want in our factory." In that way the tendency is to build up an educated corps of laborers through the military service.

Q. (By Mr. SMYTH.) This is particularly the case of Germany?—A. Germany; I am speaking of Germany. Their military service is universal education. It is not a hardship and a curse. I had considered it a curse to the country, but after he told me, and after I investigated the matter further, I believe it is a good thing.

Q. How many tons of foreign beet sugar were imported to this country last year?—A. I have not the statistics for the last year. Year before last it was 800,000 tons.

Q. What is the duty paid on that?—A. It amounts to about 1.8 cents a pound; that is what usually comes in—about 1.8 cents a pound.

Q. What was the production of the United States for the same year of beet sugar?—A. That year about 50,000 or 60,000 tons.

Q. But the industry is growing?—A. Growing, and growing in a healthy way. It is not increasing rapidly, but has a healthy growth, which is much better.

Q. But it is absolutely necessary to import that quantity of sugar to the United States, or it would be short in its supply, would it not?—A. Can not get it anywhere else. There is no question that we needed it, and we bought it. Of course, beet sugar comes to us when we do not get the cane sugar. Our natural sugar supply from the islands was exhausted. We used to get a million tons from Cuba, and after the rebellion broke out there and until the Spanish war began, we got less than 200,000 tons from Cuba. Now, it is growing a little, but if everything was established to-day in a most prosperous way, it would be 5 or 6 years before they could get up.

Q. Don't you expect them to get back?—A. Yes; eventually they will get ahead. In the meanwhile we are eating more sugar and using more.

Q. You think, then, the increase of sugar product from Cuba will be a detriment to the German sugar?—A. Yes; as Cuban comes in, German will stay out.

Q. The duty is the same on cane as beet?—A. On the beet sugar we have a countervailing duty; that is, countries which give a bounty to export, we increase the duty to them under the present law, and as Germany gives a bounty for export, it pays us a slightly higher rate; then we learn, by as careful investigation as we can, the amount of the export bounty, and add that to the duty.

Q. (By Mr. KENNEDY.) Have you given any thought to the possibilities of the production of sugar on the island of Cuba with respect to the world's consumption?—A. I have looked into that matter quite carefully. Cuba is the natural sugar-producing country of the world. There is no other country that can compare with it. Now, I have never been in Cuba myself; I have only formed my ideas from conversation with Cubans and with people who have been there, and from reading accounts; but my impression is, based upon all the information I can collect, that Cuba has a capacity, or will have a capacity, of producing from 3,000,000 to 4,000,000 tons of sugar as a maximum per year, but to do that those immense forests have to be subjugated, railroads have to be built, marshes have to be drained, which is going to be a slow process. I will make this prophecy: If Cuba is prosperous and has a stable government, in 50 years she will produce 3,000,000 tons of sugar per year.

Q. (By Mr. CONGER.) What has been the maximum production there in the past?—A. About 1,000,000 tons, rarely gone beyond it; but in 50 years the United States will eat 6,000,000 tons of sugar, or more, so we will have the same relation to consumption and supply that we have to-day, and the same necessity for domestic industry that we have to-day. That is allowing the most favorable extension and development of the tropical regions. There is one peculiar fact concerning tropical cane: It is not susceptible to scientific improvement as the beet is. The sugar cane to-day is what nature made it, and you can not make it anything else; it has been tried ineffectually. You can improve it a little by selection. You know, in planting the cane—

Q. (By Mr. SMYTH.) Plant the joints?—A. Plant the joints. It is produced to a limited extent from seeds, to a very limited extent. It has only been done for a few years. I can remember when it was boldly asserted by botanists that cane

could not be produced from seeds, but to-day we have growing in different parts of the world some very fine varieties of sugar cane produced from the seed, and constantly producing others, but I have never heard of them for commercial purposes. When they produce cane from the seed they plant that cane just the same as old cane. Therefore, the possibilities of improvement in the manner that the beet has been improved are limited. Now, the British are good farmers, better than the Spanish, and they have possessions in the West Indies, but they never have been able, with all their skill, to compete with Cuba in producing cane sugar, and to-day the sugar industry in the British West Indies is bankrupt. You have doubtless seen the West India Commission's report. The commissioners came through here, and I had several interviews with them in regard to the industry down there. They made a thorough investigation, and the result is that the home government has given several hundred thousand pounds to keep the industry from becoming exterminated. In other words, science with the sugar beet, if necessary, can destroy the natural sugar plant in the Tropics. For instance, in the sugar-beet industry it is not the production of sugar alone that you secure. You build up around a factory a vast dairy industry. You have your pulps and other refuse and leaves to feed to the cattle, and it makes fine butter and milk. You can not do that with the refuse of sugar cane. Cattle can not live in the Tropics; you can not establish a dairy there, and it is sugar and nothing else, and you all know the great strength of the agricultural industry—that it is varied, not confined to a single idea. You know that [speaking to Mr. Smyth]. You are in a cotton country. You know if you have cotton alone that you have a hard struggle. You have got to diversify agricultural industries even in the South. A single agricultural industry does not stand well alone anywhere in the world. It is the universal history of the world that you have got to have a prop and support to it. Now, beet sugar is a support. It is held by all other allied industries that it has a better show in the fight than even the cane in the Tropics. Now, I have said that Cuba is the garden of the cane; the same is true of the Hawaiian Islands, but there nature has prevented any great expansion. Practically all the land in the Hawaiian Islands capable of growing sugar is under cultivation. It does beat Cuba, I will admit, acre for acre. It is most conveniently placed. A yield of 14 tons of sugar, not of cane, has been obtained in the Hawaiian Islands, 14 tons to an acre of land, something almost incredible; but the British, with all their agricultural skill, with their fertile soils—Barbados and British Guiana—their sugar industry has gone to the wall in competition with the beets of Europe. Now, capital can stand up in the Hawaiian Islands, for a time at least, but it may be in the future these countries will reach their limit and feel the effect of this competition. Now, we want to be in it in this country. We have a marvelous climate, with great possibilities of development. So I say from an industrial point of view the development of the sugar industry in this country is worthy of your consideration as investigators of these great industrial problems.

Q. (By Mr. CONGER.) How about the Philippine Islands as a place for the sugar industry?—A. I know less about them than Cuba.

Q. Is it your idea that those engaged in this beet-sugar industry need have no fear of the effect of their being included?—A. Absolutely none. When the Spanish war commenced and my friends commenced to write to me these despairing letters that we were going to be ruined by free sugar, I never for a moment had any fear. If we to-day were to admit absolutely free from duty every pound of sugar made in Porto Rico and Cuba and the Philippines, it would not affect the progress of our sugar-beet industry in this country. We still have to have this deficit in sugar supplied from some place, and the best place to get it is here, right in our own country.

Q. If this cane sugar from Cuba would be admitted free, would not the price of sugar be less here, necessitating the factories running at a less profit and possibly at a loss?—A. Suppose we admit free of duty this sugar. We would still have to import sugar, and the duties on sugar would probably remain the same as they are. That would tend to fix the price of sugar. By the way, it is not an unmixed evil to have a low price on an agricultural crop; it has a good many good points. In the first place, it increases consumption and the demand for the article, and that tends to restore the price. In the second place, it teaches economy in the manufacture which otherwise would never have been taught. Louisiana people, if you had told them two or three years ago that they would have to sell their sugar at 2½ cents a pound, they would have held up their hands in horror; but they are doing it and making money.

Q. (By Mr. CLARKE.) Not under their old methods?—A. No; they had to change their agriculture and manufacture and it has been to their benefit. They are in a better position now than when they got twice the price for their product.

Q. (By Mr. CONGER.) Is it not true that the great production in Germany has been secured only by bounties being paid?—A. That is true, but it has never been paid to the grower. There is a great deal of misapprehension or misunderstanding in that respect in this country. The bounty is paid to the man who exports the sugar. The grower and manufacturer, unless an exporter, get nothing.

Q. Does he not get it indirectly?—A. He may indirectly, but the man who grows the sugar has to pay a heavy tax. The German Government collects more in the tax on its beets than it has ever paid in bounty.

Q. Do you mean the industry is taxed more than other forms of agriculture?—A. The average tax on every ton of beets grown in Germany was until recently nearly \$4, revenue tax. A corresponding tax is now levied on sugar consumed within the Empire. Every factory is run like a distillery. A Government officer stands at the scale and keeps the data of all exported sugar.

Q. Can you say what sugar can be manufactured for in Germany exclusive of the tax?—A. I should say 2½ to 2¾ cents a pound.

Q. I judged from what you have said, it is your idea it can be produced as cheaply here?—A. As I said, perhaps a little bit more—perhaps 3 cents a pound under the best possible conditions which should obtain—that is, of manufacture, location, etc. The actual cost in this country has probably been more than that up to this time, because a great many unfavorable conditions have obtained.

Q. (By Mr. SMYTH.) One of which was, I suppose, the business being new and having to be learned by experience?—A. Yes; that has been the most important one, especially on the part of the farmer.

Q. (By Mr. A. L. HARRIS.) Does the sugar as it comes from the American factory require refining?—A. All the beet-sugar factories in this country, with one or two exceptions, make a refined sugar directly, so they do not have to go to the refiners at all. They are totally independent of the sugar trust. That is a great advantage, too, because they can sell the sugar to the trade. There are one or two controlled by Mr. Spreckels that make raw sugar and send it to his refinery in San Francisco, but all the other factories, so far as I know, make a refined sugar and sell directly to the trade.

I have referred so often to the German beet-sugar industry that it seems advisable to insert in the testimony a brief statistical statement showing the progress of that industry in the German Empire during the past sixty years.

The following tables abridged from a supplement of the March, 1900, number of the *Zeitschrift des Vereins für die Rubenzucker-Industrie des Deutschen Reichs*, exhibit in a striking manner the growth of the beet-sugar industry in Germany during the past sixty years.

The improvement in the quality of the beets grown and the manufacturing processes is also apparent from Table No. 1, in which it is shown that the beets yielded but 5.88 per cent of sugar in 1840-41, while in the campaign of 1898-99 the yield was 13.37 per cent of the weight of the beets.

The development, during the last three decades, of processes of recovering sugar formerly lost in the molasses has contributed considerably to this increased yield. Statistics relative to the utilization of molasses in Germany are given in Table No. 2.

During this period of sixty years the sugar production has increased from 142,056 to 16,270,720 hundred-kilogram units (from 15,659 to 1,793,539 tons of 2,000 pounds), while the importations of sugar have decreased to the very nominal amount of 1,236 tons.

At the same time the Empire's export trade in sugar has increased until now more than one-half the entire product of her factories is sent abroad. The application of scientific methods in the field and in the factory has greatly assisted in attaining this result, but it has only been possible with the aid of most favorable revenue and tariff laws, the nature and working of which are set forth in Table No. 3. A very high tax on imported sugar has been maintained since 1840, with a differential in favor of the German refiners until 1887. An export bounty also, with a differential in favor of German refiners, has stimulated production for export. From 1841 to 1892 an internal-revenue tax was levied on beets used for sugar production. Since 1889 this has been replaced by a corresponding tax on sugar consumed within the Empire. The export bounty was reduced at the same time the manufacturers were relieved of the tax on their raw material.

Among the important effects of this system of sugar laws, there must be mentioned besides the stimulation of production, the depression of domestic consumption of sugar, and the embarrassment of the refiners of sugar in England and of the raw-sugar producers in colonies of that country. Moreover, the system has yielded the Government a net revenue varying from 0.31 to 1.99 marks per capita per year.

TABLE NO. 1.—Statistics relating to the number of beet-sugar factories in the German Empire, the yield and working of the beets, and the wholesale price of sugar in the manufacturing years 1839-40 to 1898-99.

Year.	Number of factories in operation.	Quantity of beets worked.	Yield of beets per hectare. ¹	Average price paid for beets.	Average quantity of beets worked per factory.	Quantity of raw sugar obtained (all products).	Yield per 100 kg. of beets.		Quantity of beets necessary to produce 100 kg. of raw sugar.	Price of sugar per 100 kg.	
							Raw sugar (all products).	Molasses.		Raw sugar.	Refined sugar.
		100 kg. ¹	100 kg.	Mks. per 100 kg. ²	100 kg. ¹	100 kg. ¹	Kg. ⁴	Kg. ⁴	100 kg. ¹	Marks. ³	Marks. ³
1840-41.	145	2,414,867	.....	.....	16,654	142,056	5.88	3.70	17.00	.....	.....
1845-46.	96	2,227,546	.....	.....	23,263	151,534	6.80	3.10	14.70	.....	.....
1850-51.	184	7,362,155	.....	.....	40,011	533,489	7.25	2.70	13.80	.....	.....
1855-56.	216	10,019,900	.....	.....	50,555	873,502	8.00	2.35	12.50	87.00	126.00
1860-61.	247	14,677,016	.....	.....	59,421	1,265,260	8.62	2.15	11.60	69.00	91.50
1865-66.	295	21,726,387	.....	.....	73,649	1,806,956	8.55	2.70	11.70	.....	.....
1870-71.	304	30,506,456	.....	.....	100,350	2,629,867	8.62	2.60	11.60	68.00	111.00
1875-76.	332	41,612,842	.....	.....	122,328	3,580,482	8.60	3.22	11.62	54.50	85.50
1880-81.	353	63,222,030	.....	.....	160-2.70	190,696	8.70	2.61	11.37	62.00	81.00
1885-86.	369	70,703,169	.....	.....	1.40-1.80	177,200	8.061,049	11.49	2.55	8.75	60.70
1890-91.	406	106,253,194	.....	.....	1.60-2.50	261,657	12,844,853	12.16	2.50	8.27	55.00
1891-92.	403	94,880,022	.....	.....	1.80-2.30	235,434	11,443,676	12.16	.....	8.26	59.50
1892-93.	401	96,119,367	.....	.....	2.10	244,686	11,718,430	11.94	.....	8.37	55.00
1893-94.	405	108,443,515	.....	.....	2.12	262,823	13,166,046	12.34	.....	8.10	53.00
1894-95.	405	145,270,295	.....	.....	2.02	358,543	17,068,151	12.15	.....	8.23	41.50
1895-96.	397	116,728,164	.....	.....	1.77	294,025	15,375,220	13.11	.....	7.63	46.00
1896-97.	399	137,209,295	.....	.....	1.77	343,000	17,388,846	12.16	.....	7.90	46.50
1897-98.	412	136,978,920	.....	.....	1.73	340,743	17,552,290	12.79	.....	7.80	46.50
1898-99.	402	121,506,422	.....	.....	1.83	302,255	16,270,720	13.37	.....	7.48	47.50
1899-1900.	.....	124,626,769	.....	.....	.....	.....	.....	.....	.....	20.25	47.00

¹100 kilograms (= kg.) are equal to 220.46 avoirdupois pounds. Therefore, if the number expressing the quantities stated in this table in units of 100 kg. be divided by 10, the result will be in terms of the metric ton of 1,000 kg., which is approximately equal to 1 long ton (2,240 pounds).

²100 kilograms per hectare is equivalent to 220.46 avoirdupois pounds for 2.471 acres; or, roughly estimated, is equivalent to 100 pounds per acre. For example, the yield for 1898-99 is stated to be 285 100-kg. units per hectare. This is roughly equivalent to 285 hundred pounds or 14.25 tons per acre. The accurately calculated equivalent is 12.7 tons per acre. This more accurate equivalent is obtained by multiplying the number of 100-kg. units by 0.0446, i. e., 100 kg. per hectare \times 0.0446 = tons per acre.

³The German mark is equivalent to 23.8 cents. One mark for 100 kg. is therefore equivalent to 0.0108 cents per pound, or to \$2.16 per ton (2,000 pounds). One mark is equivalent to 100 pfennigs.

⁴One kilogram (= kg.) is equivalent to 2.2046 pounds. The quantities given in this column are equivalent to percentage of the weight of the beets.

TABLE No. 2.—Statistics of the production, importation, utilization, and export of molasses for Germany during the twenty-nine manufacturing years 1871-72 to 1898-99.

Year.	Molasses made in sugar factories.	Molasses imported.	Quantity of molasses used for extraction of sugar. ¹				
			Osmosis process.	Elution and precipitation process.	Lime saccharate separation process.	Other processes.	Strontium saccharate process.
	100 kg. ²	100 kg. ²	100 kg. ²	100 kg. ²	100 kg. ²	100 kg. ²	100 kg. ²
1871-72	638,917	154,639					
1875-76	1,339,524	63,145					
1880-81	1,649,842	81,730					
1885-86	1,801,775	28,942					
1890-91	2,630,942	21,302	905,538	724,861	463,450	91,346	1,104,814
1891-92	2,449,689	52,450	522,690	548,476	439,017	46,655	1,131,088
1892-93	2,418,060	4,755	232,885	408,150	299,068	42,075	1,155,728
1893-94	2,762,669	1,204	181,470	270,651	233,075	25,514	1,432,981
1894-95	3,470,932	2,682	144,369	355,658	311,760		1,676,648
1895-96	3,294,628	2,553	223,647	218,357	285,680		1,951,205
1896-97	3,423,216	1,528	99,689	162,135	294,575	18,595	2,325,734
1897-98	3,444,801	1,153	66,336	93,065	247,549	16,500	2,395,682
1898-99	3,058,692	1,052	39,479	32,713	187,419	20,590	2,266,423

Year.	Total quantity of molasses used for the extraction of sugar.	Quantity of molasses exported.	Quantity of molasses used for manufacture of spirits.	Total of quantities of molasses used for manufacture of sugar and spirits and for export.	Quantity of molasses disposed of in other ways.	Mean price per 100 kg. of molasses.
	100 kg. ²	100 kg. ²	100 kg. ²	100 kg. ²	100 kg. ²	Marks. ³
1871-72		8,563				9.40
1875-76		84,588	861,295			5.00
1880-81		160,782	680,202			9.73
1885-86		551,206	289,496			7.11
1890-91	3,050,007	421,632	734,644			4.99
1891-92	2,686,926	638,734	949,230			4.48
1892-93	2,137,906	1,000,593	374,526	3,519,025		4.06
1893-94	2,173,691	512,844	337,442	3,023,977	381,376	2.12
1894-95	2,398,365	435,158	704,591	3,598,104	687,868	1.95
1895-96	2,678,889	400,113	430,600	3,509,602	713,967	2.12
1896-97	2,930,606	290,450	445,396	3,630,542	672,768	2.25
1897-98	2,790,162	65,768	469,066	3,324,625	1,261,964	3.80
1898-99	2,546,624	68,621				4.85

¹ The process of reboiling and recrystallizing purified beet juice leaves a by-product, called molasses, which still contains approximately 50 per cent of sugar, but from which practically no sugar can be separated by crystallization. The above table includes statistics for five of the more important processes that are used for the recovery of sugar from molasses in Germany.

In the *osmosis process* the molasses is circulated on one side of parchmentized paper, while water is circulated on the other side. The salts, which prevent the crystallization of the sugar in the molasses, diffuse through the paper much more rapidly than the sugar. By this means the molasses is sufficiently purified to permit the extraction of more sugar by reboiling and crystallization. This process, as the table clearly shows, has largely been displaced by later inventions.

The *elution process* depends on a formation of a compound of sugar and lime known as calcium, or lime saccharate. This compound is treated with alcohol, in which it is insoluble. The alcohol washes out the impurities of the molasses, leaving the saccharate in a comparatively pure state. The purified saccharate is then suspended in water or in beet juice and treated with carbonic acid gas, by which it is decomposed, uncombined sugar and insoluble carbonate of lime being formed. The mixture is then passed through a filter press which retains the carbonate of lime. The clear filtrate is then evaporated for the crystallization of the sugar, which is dissolved therein. This process is likewise falling into disuse.

In the *lime saccharate separation process* saccharate of lime is formed from which the impurities of the molasses are separated by washing with water. The purified saccharate is decomposed with carbonic acid gas, and the recovery of the sugar completed as in the preceding process.

The *strontium saccharate process* is similar to the one last described, with the exception that strontium hydrate is used for the formation of the saccharate in place of lime. This process has largely replaced other processes in Germany.

² 100 kilograms (= kg.) are equivalent to 220.46 avoirdupois pounds. Therefore, if the numbers expressing the quantities stated in this table in units of 100 kg. be divided by 10, the result will be in terms of the metric ton of 1,000 kg., which is approximately equal to one long ton (2,240 pounds).

³ The German mark (100 pfennigs) is equivalent to 23.8 cents. One mark per 100 kg. is, therefore, equivalent to 0.108 cent per pound, or to \$2.16 per ton (2,000 pounds).

TABLE NO. 3.—Statistics relative to the sugar laws, inland and import bounties on sugar, gross and net revenues received by Government from these sources, quantities of sugar imported and exported, and annual consumption of sugar per capita in Germany from 1840 to 1899.

Calendar year—	References to laws.	Bounty on exported sugar of domestic production.				Import tax.				Imports.				
		Internal-revenue tax on sugar of domestic production consumed within the Empire (marks per 100 kg.). ¹	Internal-revenue tax on beets (marks per 100 kg.). ¹	Raw sugars of at least 90° polarization and refined (marks per 100 kg.). ¹	Block candy and other sugars polarizing at least 90° (marks per 100 kg.). ¹	All other sugars polarizing at least 90° (marks per 100 kg.). ¹	Raw sugars (marks per 100 kg.). ¹	Crushed loaf and white powdered sugar (marks per 100 kg.). ¹	Refined sugar (marks per 100 kg.). ¹	Strap and dutiable molasses (marks per 100 kg.). ¹	Reined sugar.	Raw sugar.	Strap and dutiable molasses.	
1840—	Tariff of Oct. 24, 1839 (P. G. S. S., 203)		0		2 36			54	60	60	24	508,245	508,798	467,020
1841—	Law of Mar. 21, 1840 (P. G. S. S., 109)		.05		36			54	60	60	24	508,245	508,798	467,020
1842—	Act of Mar. 15, 1841 (P. G. S. S., 131), taking effect Sept. 1, 1841		10		36			48	60	60	24	508,798	508,798	467,020
1843—	Act of Nov. 6, 1843 taking effect Sept. 1, 1844		30		36			48	60	60	24	508,798	508,798	467,020
1844—	Law of June 18, 1848 (P. G. S. S., 163)		30		36			48	60	60	24	527,365	527,365	482,149
1845—			30		36			48	60	60	24	386,385	386,385	386,385
1846—	Act Apr. 4, 1853, taking effect Sept. 1, 1854 (P. G. S., 427)		1.20		36			48	60	60	24	467,020	467,020	467,020
1847—			1.20		36			48	60	60	24	125,265	125,265	125,265
1848—	Act Feb. 16, 1859, taking effect Sept. 1, 1859 (P. G. S., 276)		1.50		35			48	60	60	18	53,869	53,869	53,869
1849—			1.50		35			48	60	60	18	263,228	263,228	263,228
1850—	Act Mar. 15, 1861, taking effect Sept. 1, 1862 (P. G. S., 420)		1.50		16.50	18		36	44	44	15			
1851—			1.50		16.50	18		36	44	44	15			
1852—			1.50		17.50	18		36	44	44	15			
1853—			1.50		17.50	18		36	44	44	15			
1854—	Law of June 21, 1859, taking effect Sept. 1, 1859 (P. G. S., 252)		1.60		18.80	23	21.60	24	30	30	15			
1855—			1.60		18.80	23	21.60	24	30	30	15	145,273	145,273	145,273
1856—			1.60		18.80	23	21.60	24	30	30	15	22,664	22,664	22,664
1857—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1858—	Law of July 7, 1883, taking effect Aug. 1, 1883		1.60		18.80	23	21.60	24	30	30	15	24,526	24,526	24,526
1859—			1.60		18.80	23	21.60	24	30	30	15	12,063	12,063	12,063
1860—			1.60		18.80	23	21.60	24	30	30	15	18,763	18,763	18,763
1861—			1.60		18.80	23	21.60	24	30	30	15	48,307	48,307	48,307
1862—			1.60		18.80	23	21.60	24	30	30	15	33,220	33,220	33,220
1863—			1.60		18.80	23	21.60	24	30	30	15	32,516	32,516	32,516
1864—			1.60		18.80	23	21.60	24	30	30	15	18,763	18,763	18,763
1865—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1866—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1867—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1868—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1869—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1870—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1871—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1872—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1873—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1874—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1875—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1876—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1877—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1878—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1879—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1880—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1881—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1882—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1883—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1884—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1885—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1886—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1887—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1888—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1889—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1890—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1891—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1892—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1893—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1894—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1895—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1896—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1897—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1898—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577
1899—			1.60		18.80	23	21.60	24	30	30	15	15,577	15,577	15,577

Manufacturing year—

1875-76.

1880-81.

1884.

1885-86	Law June 1, 1886, taking effect Aug. 1, 1886.	1.60	18.00	22.20	20.80	24	30	30	15	12,300	28,203	28,942
1886-87	-----	1.70	18.00	22.20	20.80	24	30	30	15	14,618	15,675	27,166
1887-88	-----	1.70	17.25	21.50	20.15	24	30	30	15	15,798	40,780	26,842
1888-89	Law July 9, 1887, taking effect Aug. 1, 1888.	.80	8.50	10.65	10.00	30	30	30	15	19,078	20,164	21,241
1889-90	-----	.80	8.50	10.65	10.00	30	30	30	15	27,607	38,940	21,302
1890-91	-----	.80	8.50	10.65	10.00	30	30	30	15	34,993	42,198	52,499
1891-92	Law Mar. 31, 1891, taking effect Aug. 1, 1892.	1.25	1.25	2.00	1.65	36	36	36	36	10,064	8,960	4,740
1892-93	-----	1.25	1.25	2.00	1.65	36	36	36	36	4,482	5,900	1,700
1893-94	-----	1.25	1.25	2.00	1.65	36	36	36	36	4,482	7,830	2,682
1894-95	-----	1.25	1.25	2.00	1.65	36	36	36	36	4,446	7,648	2,553
1895-96	-----	2.50	2.50	3.55	3.00	40	40	40	40	7,845	6,653	1,528
1896-97	Law May 27, 1896, taking effect Aug. 1, 1896.	2.50	2.50	3.55	3.00	40	40	40	40	7,089	5,134	1,153
1897-98	-----	2.50	2.50	3.55	3.00	40	40	40	40	7,107	4,106	1,068
1898-99	-----	2.50	2.50	3.55	3.00	40	40	40	40	7,107	4,106	1,068

¹ The German mark is equivalent to 23.8 cents. One hundred kilograms (= kg.) are equivalent to 220.46 pounds avoirdupois. One mark per 100 kg. is therefore equivalent to 0.108 cents per pound, or to \$2.16 per ton (2,000 pounds).

² Export bounty on raw sugar exported in the form of refined sugar.

³ In addition to this the German sugar producers pay a manufacturers' tax which varies with the amount annually produced by each factory as follows: Manufacturers making 4,000,000 kilograms or less, pay a tax of 0.10 mark per 100 kilograms; those making 4,000,000 to 5,000,000 kilograms pay a tax of 0.125 mark per 100 kilograms; those making 5,000,000 to 6,000,000 pay a tax of 0.15 mark per 100 kilograms, etc., the tax per 100 kilograms increasing by 0.025 mark for each 1,000,000 of annual production.

TABLE No. 8.—Statistics relative to the sugar laws, inland and import taxes and export bounties on sugar, gross and net revenues received by Government from these sources, quantities of sugar imported and exported, and annual consumption of sugar per capita in Germany from 1840 to 1899—Continued.

Calendar year:	References to laws.	Exported sugars subject to export bounty or rebate.			Total revenues yielded the German Government by sugar taxes.						Annual consumption of sugar per capita in Germany.
		Haw sugars.	Block candy, etc.	Other hard sugars.	Tax on sugar and raw material consumed within the Empire.	Tax on imports.	Sum of inland and import taxes.	Export bounty.	Net yield of revenue.	Per capita based on the population for the year for which each amount is given.	
		100 kg. ¹	100 kg. ¹	100 kg. ¹	Marks. ¹	Marks. ¹	Marks. ¹	Marks. ¹	Marks. ¹	Mks. ¹	Kg. ²
1840.....	Tariff of Oct. 24, 1839 (P. G. S. S. 305).	20,640			211,290	16,143,584	16,354,893	625,008	15,729,885	0.58	2,32
1841.....	Law of Mar. 21, 1840 (P. G. S. S. 106).	24,532			182,685	17,583,788	17,776,473	435,675	17,340,798	0.62	2.37
1842.....	Act of May 6, 1841 (P. G. S. S. 131), taking effect Sept. 1, 1841.				659,175	21,242,067	21,901,242	1,373,062	20,528,180	.71	2.80
1843.....	Act of Nov. 5, 1843 taking effect Sept. 1, 1844.	89,492			1,389,413	12,423,047	13,812,460	2,358,408	11,454,052	.61	3.00
1844.....	Law of June 18, 1848 (P. G. S. S. 165).	97,848			3,119,739	11,804,206	14,923,945	2,338,080	12,585,865	.62	3.00
1845.....		92,910			11,257,589	11,799,789	23,057,378	1,945,674	21,091,704	.64	3.10
1846.....		110,101			11,804,772	14,239,450	26,034,222	1,970,430	24,063,792	.73	3.55
1847.....	Act Apr. 4, 1853, taking effect Sept. 1, 1854 (P. G. S. 427).	95,447			27,917,685	3,942,135	31,859,820	1,207,221	30,652,599	.91	4.79
1848.....	Act Feb. 18, 1858, taking effect Sept. 1, 1859 (P. G. S. 276).	38,028			24,473,403	1,876,887	26,350,290	550,800	25,799,490	.76	4.16
1849.....					24,134,097	6,731,257	30,865,354	626,313	30,239,041	.87	4.30
1850.....	Act Mar. 15, 1861, taking effect Sept. 1, 1862 (P. G. S. 430).	65,146			33,063,811	3,919,386	37,003,200	1,183,542	35,819,657	1.00	5.34
1851.....		429,752			36,150,386	1,906,539	38,056,925	6,806,808	31,250,117	.87	4.50
1852.....	Law of June 28, 1869, taking effect Sept. 1, 1869 (P. G. S. 225).	234,632			41,351,507	1,880,087	43,131,594	3,700,515	39,431,119	1.03	4.94
Manufacturing year—											
1876-76.....		458,942	47,125	25,329	60,580,546	5,672,131	72,252,677	8,888,608	63,364,069	1.49	7.60

Year	Law of July 7, 1883, taking effect Aug. 1, 1883	Law June 1, 1886, taking effect Aug. 1, 1886	Law July 9, 1887, taking effect Aug. 1, 1888	Law Mar. 31, 1901, taking effect Aug. 1, 1902	Law May 27, 1886, taking effect Aug. 1, 1886	One mark per 100 kg. is
1880-81	2 214 420	353 757	246 514	101 163 069	1 450 967	1 02 044 936
1884-85	4 011 701	640 480	248 670	142 080 180	1 490 457	96 372 270
1885-86	4 040 715	640 196	248 689	142 125 068	1 490 457	96 372 270
1886-87	4 896 801	1 313 789	258 328	163 867 000	1 528 040	106 821 544
1887-88	3 447 108	1 313 789	258 328	163 867 000	1 528 040	106 821 544
1888-89	4 896 801	1 313 789	258 328	163 867 000	1 528 040	106 821 544
1889-90	4 896 801	1 313 789	258 328	163 867 000	1 528 040	106 821 544
1890-91	4 896 801	1 313 789	258 328	163 867 000	1 528 040	106 821 544
1891-92	4 896 801	1 313 789	258 328	163 867 000	1 528 040	106 821 544
1892-93	4 896 801	1 313 789	258 328	163 867 000	1 528 040	106 821 544
1893-94	4 896 801	1 313 789	258 328	163 867 000	1 528 040	106 821 544
1894-95	4 896 801	1 313 789	258 328	163 867 000	1 528 040	106 821 544
1895-96	4 896 801	1 313 789	258 328	163 867 000	1 528 040	106 821 544
1896-97	4 896 801	1 313 789	258 328	163 867 000	1 528 040	106 821 544
1897-98	4 896 801	1 313 789	258 328	163 867 000	1 528 040	106 821 544
1898-99	4 896 801	1 313 789	258 328	163 867 000	1 528 040	106 821 544

¹ The German mark is equivalent to 23.8 cents. One hundred kilograms (= kg.) are equivalent to 220.46 pounds avoirdupois. One mark per 100 kg. is therefore equivalent to 108 cents per pound, or to \$2.16 per ton (2,000 pounds).
The German mark (= M.) is equivalent to 2.2046 avoirdupois pounds.

¹ The German mark is equivalent to 23.8 cents. One hundred knoggrams of wheat cost 43.0108 cents per pound, or to 32.16 per ton (2,000 pounds).

One kilogram (= kg.) is equivalent to 2.2046 avoirdupois pounds.

(At a subsequent meeting of the commission, May 15, 1900, during the examination of Prof. Robert C. Kedzie on the same subject, Dr. Wiley was recalled, and, pursuant to a motion of Mr. Clarke, was interrogated by Dr. Kedzie touching certain features of the latter's testimony, and answered as follows:)

Q. (By Professor KEDZIE.) I desire Dr. Wiley to state the results of their constant investigations in regard to the question of the deductions to be made from the total amount of sugar found in the beets, and to explain how he arrives at what is commonly known, technically known, as marc, and the importance of this as related to the sugar-beet industry as between the farmer and the factor.

Dr. WILEY. The usual commercial method of determining the amount of sugar in a beet is an indirect one. We proceed for the purpose of convenience and speed by expressing the juice from the beet, and determining the amount of sugar in that expressed juice, and then from that calculating back to the per cent of the beet. Now, it may seem strange to you that a body as firm as a beet is almost all liquid. What is not liquid is solid in solution. In other words, a body which seems so firm is 95 per cent liquid, or solid in solution, and only 5 per cent of the whole mass is really solid matter, insoluble. That insoluble matter in technical language is called marc, a French word which came into use with the French method of analysis. We call it fiber or pith. Now, in order to determine the amount of sugar in the beet, the amount of marc must be known, otherwise we would not be able to compute from the percentage of sugar of the juice the relation which that percentage bore to the original beet before the juice was expressed. Now, you can easily see, if 95 per cent of the whole weight be liquid or solid in solution, that only 5 per cent insoluble matter would remain; therefore the percentage of sugar measured in the juice would have to be multiplied by a factor, point 95, to determine the amount which would be in the original beet. For example, suppose you have a juice which polarizes 14 per cent. This measures the amount of sugar in that juice, but the juice represents only 95 per cent of the whole weight; therefore you have to use that factor to reduce it to the original weight. The beet would not contain as much sugar itself as the juice would, because the beet weighs more than the juice, and you have to divide the total amount of sugar by the whole weight. Now, beets are sold by the percentage of sugar which they contain. It is important to the farmer, as well as to the manufacturer, that a fair method of computation be agreed upon. The usual custom has been to use the factor point 95, assuming the beet contained 5 per cent of insoluble matter, and thus the farmer and the manufacturer have been satisfied. That has been the rule which has been in vogue mostly in this country. It is a rule we have had in our own investigations at the Department, and I think it is a fair one, but of course there are variations in the amount of marc which the beet may contain—if it is grown at an exceptionally dry time, if it is exceptionally ripe, if it contains a second growth, or if it suffers any accident that would change it from its normal condition. In the too ripe beet the tendency is to increase the percentage of marc and decrease the soluble matters; as, for instance, if the mother beet grows and produces its seed, almost everything left is insoluble; the juice is all gone. That is an extreme case.

Q. (By Mr. CONGER.) I would like to inquire if in making this showing of marc it would vary according to the efficiency of the machine for pressing out the juice.—A. No; not at all. We do not express all the juice; don't attempt to. We have no machine that will do that. In making an analysis we only express a portion of the juice, but experience has shown that the juice which remains has practically the same composition as that which is expressed. An ordinary press will not take out more than 50 or 60 per cent which the beet contains. That is the reason the press can not be used in commercial operations as in the case of sugar cane. A good strong sugar mill properly adjusted will take out from 80 to 83 per cent of the juice which the cane contains, but you could not express by any kind of press that much juice out of the beet.

Q. (By Professor KEDZIE.) Supposing a factory assumes a factor of 88 instead of 95, what have you to say in regard to that?—A. Well, it would be a case where a load of beets would have 12 per cent marc; good for the companies, but an injustice for the farmer.

Q. Established for the whole?—A. To establish a factor so abnormal and apply it to a normal beet is unscientific and unjust. The principal thing is to establish a factor for a normal beet, and then if there are abnormalities they must suffer one way or the other, because you can not have a different standard. You must apply what would be a fair standard to a normal condition of affairs. Now, it is stated by the advocates of higher marc that in extracting sugar in alcohol it is found that the marc sometimes corresponds to a marc of 8, 10, or 12 per cent. That is not a fair statement of the question. Alcohol dissolves sugar with great

difficulty, and the stronger the alcohol is the more difficulty there is in dissolving the sugar, and it is the common experience of the chemist that if you use alcohol for extraction you can, if you continue the operation long enough, extract all sugar, but in the ordinary time, when such extractions should continue half an hour to 2 hours, quite a considerable percentage of the sugar will not be extracted. There is a method, however, that has come into use in France in the last few years and which seems perfectly fair and can apply to all, because by this method they determine the percentage of sugar in the pulp of the beet without expressing the juice by means of what is called aqueous diffusion, not using alcohol, but using water. The truth of this depends on the fact that by using a peculiar form of rasp you can obtain from the beet an impalpable pulp; that is, a pulp in which the beet cells containing sugar have been ruptured. Then when you mix that with water the sugar content passes into solution, and you polarize it directly after adding clarifying agents and filtering, giving a perfectly clear solution. Such a method as this would give a correct percentage of sugar in every case. That method has in the last 10 years come into very general use commercially in France, and if the friction continues in this country between the factory and farmer I would strongly advise the introduction of the method here. That would give a result that nobody could question.

Q. (By Mr. CLARKE.) How would that work, practical?—A. It is almost as rapid as the ordinary method of expressing the juice. We have not used it in this country, because the uniform custom has been to use the other method. We have used it in our laboratory to determine the absolute factor 95, which we find on the average is a correct one, but in certain abnormally favored conditions such as exist in California, and such as existed last year in Michigan, it might be well, in the interest of harmony, for all parties to adopt this method. All the accounts for Michigan last year show they had abnormal conditions there, and probably the marc was in many cases more than 5 per cent; it may have amounted to 8 per cent. That is hardly likely even in abnormal conditions, unless they have a second growth, and so the factories may in some instances have had a just ground for increasing the quantity of the marc for these reasons; but it would be very unfair to apply them this year, perhaps, where beets are perfectly normal. Now, this all goes to show that the actual percentage of marc for the normal beet is a little less than 5 per cent, so taking this 5 per cent we make some concession to the manufacturer after all, and the farmer is in favor of letting it go at that, but I certainly would protest in the interest of the farmer against a factor as high as 8 per cent; even 6 per cent would be, in my opinion, a little bit too high. Of course it is only a small increase, and I believe I said finally of Michigan, where the manufacturers were contending for a factor of 7 per cent and Dr. Kedzie and his people for one of 5 per cent, that I would be willing to make a compromise and accept 6 per cent to settle the difficulty, so that each one would receive a little concession. But to make it 14 per cent is certainly—the language which is attributed to me here would not be too strong, to characterize that as robbery, because such a condition would never occur except in very exceptional instances in a few beets; but never in a field of beets that have grown even under abnormal conditions.

Another point which Dr. Kedzie asked me to say something about is in regard to the removal of the friction between the farmer and the manufacturer, by cooperation. Of course the interests of the manufacturer and farmer are identical. What is good for one is good for the other. If a manufacturer wishes to in any way get the advantage of the farmer he is cutting his own throat, and the farmer who wants to get the best of the manufacturer is defeating his own interests. Success is a mutual benefit to both. That is where higher success lies, but suppose they can't see that. These things will all adjust themselves in the course of time, however, and they have adjusted themselves in Germany largely through cooperation. Practically about one-half of the beets grown in Germany belong to the farmers who have shares in the factories.

The most complete data which I have before me on the subject relate to the "campaign" year 1894-95, and they were collated and published in 1896. The area under cultivation for the year covered by the data was 1,090,801 acres, or 441,441 hectares. The yield of beets was 32.9 tons per hectare, or 13.3 tons per acre. Of the above crop, 41.64 per cent were grown by the factories and 58.36 per cent were bought by the factories. This percentage varies slightly from year to year, but represents upon the whole very closely the relative magnitude of the cooperative beet growth as compared with the total magnitude of the industry in Germany.

It is evident that if such a system of cooperation could be established in our own country it would be very much more satisfactory to the farmers and to the factories as well, inasmuch as the former would be factory owners.

I believe that is the best solution of this whole difficulty. It is a little hard on people who are not in the cooperation—farmers, for instance—because there is a mutual understanding in the cooperative factories that the price paid for beets shall be very low, so that those who are not in the cooperation get squeezed while those who are in get the benefit. For this reason the statistics for the price of beets in cooperative factories in Germany are unreliable, because all the cooperative factories pay less for beets than the noncooperative factories; but still cooperation makes a perfect unity of feeling between the grower and manufacturer, because they are practically the same person. I believe in the course of time the cooperative factory will be a very large element in this industry in this country. However, as Dr. Kedzie says, these difficulties will adjust themselves. Last autumn the farmers of Michigan were up in arms and swore they would not grow any more beets, but now they are planting, as you see, and getting almost their full complement and full acreage. The farmers, I think, should have the first concession, because it is to the farmer that the first success must be looked for. Without successful agriculture nothing else is possible. The best appointed factory, best managed factory, with no beets will make no sugar, while the poor factory with plenty of beets will make lots of sugar; so first of all the agriculture must be set upon its feet in this industry. The wise manufacturer will concede to the farmer a little more than may be just in order to help him along and secure the establishment of the industry in a proper way.

Q. (By Mr. SMYTH.) In the testimony you gave us yesterday you were telling us about the experiments, as I understood, in the Agricultural Department here, in testing the percentage of sugar in other beets; and you stated it was below 15 per cent, one class, 16 per cent another, 17 per cent another, and 18 per cent another. I want to ask for information, Does the quantity of sugar in the beet increase with the increased percentage? In other words, a beet that contains 18 per cent has a good deal more sugar than one that contains 16 per cent?—A. It has 40 pounds per ton more. Each per cent of increase in sugar amounts to 20 pounds to the ton of 2,000 pounds of beets.

Q. It is all taken to make the analysis?—A. Yes; when we speak of 16 per cent, we mean 16 pounds in the hundred.

Q. Shows an actual increase in the quantity of sugar?—A. That is 320 pounds in the ton as the actual weight of the sugar. When we state the per cent we refer to 100 pounds of raw material.

Q. That is the point, whether the percentage is based on the single beet?—A. On one-hundredweight of beets.

Q. It costs no more to raise beets containing 18 per cent than 16 per cent?—A. Just the same, exactly.

Q. The same amount of fertilizer per acre?—A. You may have to use a little more fertilizer to make a little more intensive culture.

Q. It pays the farmer, however, to try to get the largest percentage in the beets?—A. Yes, it does pay the farmer, and it certainly pays the manufacturer, because every additional percentage of sugar in the beet means a clear yield of 20 pounds more sugar per ton, because the amount of waste in the manufacture is just the same. In fact, you waste more in the lower percentage, because the character of the juice deteriorates; you get a less percentage of sugar proportionately; so to the manufacturer the high percentage of sugar is even more important than to the farmer.

Q. Now, does the farmer get that advantage of that increased value of beets when it contains a high degree of sugar?—A. Yes; he gets more for it; say 12 per cent is the basic price; each additional per cent of sugar, so much increase. That is the general form of the contract throughout this country. The farmer has a direct interest in growing beets with a high per cent of sugar. That is secured largely by using high-grade seeds and by planting very thick so as to prevent the beets from growing more than a pound in weight. In this way you will get the highest percentage of sugar.

Q. (By Mr. CONGER.) That custom in doing more for a higher grade of beets is practiced in Europe as well, is it not?—A. In most parts of Europe. In France they buy beets simply on flat prices per ton, knowing about what they will be from year to year, but wherever that has been practiced, the tendency has always been to have a low degree of beets. It is only where beets are paid for by the quantity of sugar they contain that the higher results have been secured. I will state here the average yield of beets per acre in Germany is about 18 tons, based upon a long series of years. In France it is a little over 11 tons an acre, in Austria about 10½ tons, and in Russia it is less.

Q. In this country?—A. This country nobody knows, but I imagine if you take all the fields planted to beets since the industry started, that the average yield would not be 5 tons to the acre.

Q. (By Mr. CLARKE.) What do you think it will be when beets are properly cultivated?—A. I think we will do as well as Germany. But it will be many years before we do have an average yield of that kind. I have visited hundreds of beet fields myself, and I have been surprised to see the number of poor ones. I saw thousands of acres in California last year that would not yield a ton to the acre.

Q. (By Mr. CONGER.) That was practically a failure of the crop, was it not?—A. Absolute failure, you might say. Now and then you would run across a field of 20 tons.

Q. (By Mr. SMYTH.) To what do you attribute that condition there?—A. Sometimes it is a natural condition of drought, but more often where it is not that it is carelessness in culture. Two years ago one of the land agents of a western railroad in Minnesota applied to the Department for a large quantity of seeds, which he was going to have grown along the lines of his railroad—and lands which are well suited to grow beets, too, both by location and fertility. In July of that year, at his request, I went with him on a tour of inspection to see the result. We spent a whole day hunting for beets in the grass as high as this table. We found only one plot out of fifty we visited where any attempt had been made to cultivate the beets at all. I have no doubt you can corroborate these observations in a great many localities. In that one field we found beets, splendid beets, and the others were absolutely neglected, and that has been the history of beet culture on a large scale. That is an extreme case of neglect—in the first place, ignorance. It is a pretty hard thing for even an intelligent man, if he has never seen beets grown, to prepare the soil and cultivate the beets correctly. Now, I went out the other day to plant beets on the Department beet farm—3 acres. Well, I never had set a beet drill. I did not know how to set a drill to sow 20 pounds of beet seed to the acre. I got a hard place in the road where the beets would not go in the ground, and I measured a distance—I knew the number of seeds in a pound—and I ran that drill until I got, by counting the seeds, the rate at which 20 pounds would be planted to the acre. It took me an hour to find out how to set the drill to drop these seeds. Now, suppose a farmer never made a calculation of that kind. How is he going to get the right amount of seeds to the acre? He probably would not hit it one time in fifty. He might have a few beets 5 pounds in weight, having 8 or 10 per cent in sugar, instead of growing 1 pound in weight with 15 per cent. So these things have to be learned. The chief misfortune of our beet culture in this country has been the lack of knowledge on the part of the grower; and sometimes with knowledge comes the lack of willingness to bend your back and crook your knees to give the beet the proper form of culture; but these things will come with time, and of course the yield per acre will greatly increase, until we reach a fair yield. I should say that it would be fortunate for American farmers if they can begin at 10 tons per acre over the country; and if they can do so there would be no more kicking on poor results on the part of the farmers, if they got that much, even.

(Testimony closed.)

WASHINGTON, D. C., June 13, 1900.

TESTIMONY OF MR. FRANK H. HITCHCOCK,

Chief of the Section of Foreign Markets, United States Department of Agriculture.

The commission met at 10.35 a. m., Mr. Farquhar presiding. At that time Mr. Frank H. Hitchcock, of Washington, D. C., chief of the Section of Foreign Markets, United States Department of Agriculture, was introduced as a witness, and, being duly sworn, testified as follows:

Q. (By Mr. A. L. HARRIS.) You may state your name, your address, and your occupation.—A. My name is Frank H. Hitchcock; my occupation is that of chief of the Section of Foreign Markets, United States Department of Agriculture; that is also my address.

Q. How long have you been connected with the Department of Agriculture?—A. Since the autumn of 1891.

Q. And all that time in this bureau?—A. No. I went into the Department as a biologist, passing the civil-service examination. I served in the biological work for 1 year and then took up the statistical work. I worked in the statistical bureau until about 5 years ago, when I was transferred to the Section of Foreign Markets soon after its inception. My work has therefore been statistical for about 8 years.

Q. Your examination has been exclusively in the line of the extension of foreign markets for agricultural products?—A. Yes; since I have been connected with my present office.

Q. What means have you had for procuring your information in regard to the expansion of foreign markets for agricultural products?—A. We have had, first of all, the published information that is issued by the various foreign governments. We depend upon the official reports, as far as possible, for our information, especially for our statistical information. We have also had the cooperation of the United States consular service through the courtesy of the State Department. The consuls have furnished us with reports on stated topics, the inquiries being transmitted to them through the Department of State. In addition to that we have had some assistance from employees of our own Department abroad. There have been several special agents (so called) employed to study agricultural conditions in foreign countries, and they have reported to the Department. For information on the subject of our own export trade we are of course dependent very largely upon the reports of our customs officials as published by the Treasury Department.

Q. You may state, if you will, in your own way, the past conditions of the foreign markets for agricultural products, the present conditions, and the hopes for the future.—A. The extent to which American farmers depend upon foreign markets for the disposal of their surplus products may be gathered from the fact that during the past fiscal year 1899 our agricultural exports reached in value close to the enormous sum of \$300,000,000. The agricultural exports probably comprise about 25 per cent of the total production of American agriculture. With this enormous surplus the acquirement and maintenance of a ready foreign market is of the greatest importance to our agricultural interests. In order to prevent the glutting of the home market we must ship our surplus produce to foreign countries.

During the last 40 or 50 years our agricultural exports have increased with great rapidity. In 1860 their value was about \$258,000,000; in 1870 it amounted to \$363,000,000; in 1880 to \$693,000,000; in 1890 to \$635,000,000; and in 1899 to \$793,000,000. Comparing 1860 with 1899, the last year for which we have figures, a period of about 40 years, we find an increase of over 200 per cent.

Every indication points to the probability of a still further increase in our agricultural export trade, provided proper measures are taken to foster it. Modern transportation facilities are revolutionizing the character of the trade. The introduction of cold storage and of refrigeration service on railway cars and steamships is making it possible to market in foreign countries across the sea products that we were formerly unable to export; and it is along this line of development that the increase of our export trade in agricultural products in the future may be chiefly expected—in the exportation of perishable products, such as meats, butter and cheese, perishable vegetables, and fruits.

Thus far the chief example of trade development along this line is found in the case of fresh beef. In 1880 our exports of fresh beef were valued at about \$7,000,000. Last year, 1899, they were valued at \$24,000,000.

Some of the other products that show an increased exportation, but mainly for other reasons, I will now mention. Corn is a notable example. In 1870 we exported a little over \$1,000,000 worth of indian corn. Last year we exported nearly \$70,000,000 worth. The development of the dairy industry all over the world and the discovery in foreign countries that American corn forms a cheap and desirable feed stuff for live stock have led to an enormous increase in our exportation of that grain.

Another conspicuous example of increase is wheat flour. Going back to 1870 we find that the exports of wheat flour were valued at about \$20,000,000. Last year, 1899, they were valued at \$73,000,000. The remarkable development of the milling industries in this country, resulting in a very large production of high-grade flour at a low cost, has made it possible for us to export flour in competition with other producing countries and gradually to get the trade. Flour affords one of the most notable instances of increase among our agricultural exports.

Another case of development in the agricultural export trade is that of the shipment of cattle. In 1870 our cattle exports amounted in value to less than \$500,000. In 1899 they amounted to over \$90,000,000. This trade has been greatly aided, of course, by the changes in the methods of transportation, the improvement of transportation facilities, the shortening of the time in which live cattle can be transported, not only across the continent but across the sea, and by the measures that have been taken by the Government to protect and foster the trade. The official inspection of export cattle, guaranteeing a standard in condition and quality, has greatly benefited the export trade.

Q. (By Mr. CLARKE.) What do you think it will be when beets are properly cultivated?—A. I think we will do as well as Germany. But it will be many years before we do have an average yield of that kind. I have visited hundreds of beet fields myself, and I have been surprised to see the number of poor ones. I saw thousands of acres in California last year that would not yield a ton to the acre.

Q. (By Mr. CONGER.) That was practically a failure of the crop, was it not?—A. Absolute failure, you might say. Now and then you would run across a field of 20 tons.

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Q. (By Mr. A. L. HARRIS.) You may state your name, your address, and your occupation.—A. My name is Frank H. Hitchcock; my occupation is that of chief of the Section of Foreign Markets, United States Department of Agriculture; that is also my address.

Q. How long have you been connected with the Department of Agriculture?—A. Since the autumn of 1891.

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The increase shown by the Asiatic and Oceanian trade is proportionately very much greater than the increase shown in any other direction. It is about the most interesting feature of our recent foreign-trade development.

Q. What are the branches of our trade that are increasing in the last three or four years from the Pacific coast?—A. As regards the agricultural exports, the chief articles are cotton and wheat flour. I will quote from one of my reports statistics to show how the export trade in cotton has developed. Our total exports of raw cotton to Japan, China, and Hongkong increased from 23,500 pounds in 1889, ten years ago, to nearly 119,000,000 pounds in 1898. The present trade represents the growth of little more than a decade. To show how rapidly it has developed in the last year or two, I will say that in 1897 the exports amounted to only 32,000,000 pounds, as compared with nearly 119,000,000 pounds in 1898.

Q. Have you any figures to show the increase of the production of China during this same period? Were they increasing materially in the production of cotton?—A. Not materially. Very little increase is shown by the statistics of cotton production in China.

Q. So that the inference, then, is that they are wearing more cotton, they are consuming more cotton goods?—A. The raw cotton. I will say, goes chiefly to Japan, where the manufacturing of cotton is rapidly coming into great prominence. The Japanese are now manufacturing enormous quantities of cotton goods. Their manufacturing has increased very rapidly in the last few years, and they are now drawing upon us quite extensively for their raw cotton. The natural inference would be that the use of cotton cloths is increasing in that portion of the world.

Our gains in exportation, however, are not confined entirely to the exports of the raw product. Our exports of cotton manufactures to the Orient also show a considerable increase. They have fluctuated considerably from year to year, but taking 1889 to 1898, a period of ten years, we find an increase from \$1,600,000 worth in the former year to \$5,300,000 worth in the latter year.

Q. Just in 1 year?—A. No, in 10 years.

Q. In 10 years an increase of 4,000,000. Well, is this a peculiar kind of cotton goods?—A. It is the style of cotton goods, of course, that is generally sent to tropical countries, largely cheap cottons of the coarser grades.

Q. From what section of the United States are these goods exported?—A. They come from the cotton manufacturing sections in New England and also from the South. I do not know as to the exact distribution, but I understand that the South is now beginning to export quite largely to the Orient.

Q. The South is manufacturing an article that is very largely consumed in the Orient, is it not?—A. I understand it is beginning to.

I spoke also of the exportation of wheat flour to the oriental countries; I will quote statistics to show the gain in the shipment of that product. In 1889 our exports of wheat flour to Japan, China, and Hongkong amounted to 408,000 barrels. In 1898 they amounted to 1,120,000 barrels. The increase was particularly marked in the last few years of the decade. In 1894 they had increased to only 676,000 barrels; the advance to over a million occurred in the years following that.

At Senator Kyle's request I will now take up the leading products I have mentioned as showing gains in exportation and state briefly the principal destinations to which we are now sending them. Indian corn is the first item on my list. I will ask Senator Kyle whether he would prefer to have me state the distribution by quantities or by values?

Senator KYLE. I think value probably would be a sufficient indication.

Q. (By Mr. A. L. HARRIS.) Have you the bushels or weights in your statement?—A. I have both quantity and value wherever they can be stated. In the case of some items—for instance, fruits—only the value is recorded.

Q. (By Mr. FARQUHAR.) In the case of cereals, however?—A. The separate cereals are all stated by both quantity and value. To get at the volume of the exports it would be important, of course, to have the quantity as well as the value; but where you are simply showing the proportion of export trade that goes to the different countries the value forms a satisfactory basis as regards the distribution. In fact, it makes very little difference in a given year whether we take the quantity or the value for that purpose. Such statements, whether stated in quantity or in value, are merely comparative. However, I can quote, if you wish, both quantities and values.

Mr. FARQUHAR. I think the commission would like to have both the quantity and the value.

WITNESS: To give a fair idea of the distribution I will take the average for the 5-year period 1894-1898, stating the quantity and value for that period.

Speaking now of indian corn, our shipments of this grain to the United Kingdom

averaged 50,000,000 bushels a year, the value being about \$18,000,000. That gave the United Kingdom, taking the percentage of quantity, about 43 per cent of the total exports. Germany ranked next to the United Kingdom as a market for our corn, taking about 20,000,000 bushels a year, or about 17 per cent, the value being slightly more than \$7,000,000. Canada was a market for about 10,500,000 bushels, the value being about \$3,700,000—Canada took about 9 per cent of the total. The Netherlands, with 10,400,000 bushels, valued at \$3,800,000, received nearly 9 per cent. Denmark took nearly 8 per cent, receiving about 9,000,000 bushels, with a value of about \$3,000,000. These five countries—the United Kingdom, Germany, Canada, the Netherlands, and Denmark—were the chief markets for our indian corn during the period under consideration. After these countries France and Belgium may be cited as the most important markets.

Wheat flour is the next item that I will mention. Of the wheat flour exported in the 5-year period 1894-1898, the United Kingdom took about 58 per cent. The quantity sent to that country was, taking the annual average, about 9,000,000 barrels, and the value about \$35,000,000. Other destinations, the chief of which, however, the Netherlands, took only about 6 per cent, were, in the order of their importance, the Netherlands, Hongkong, Brazil, Canada, the British West Indies, Cuba, and Germany. I have mentioned all the destinations to which an average annual export of more than 200,000 barrels was sent.

Q. (By Senator KYLE.) Did you mention the Asiatic countries there in that list?—A. I mentioned the chief one—Hongkong. Hongkong ranks third.

Q. About what per cent?—A. It takes about 5 per cent of the flour.

Q. I would like to ask you whether the East Indies are finding a market for wheat and wheat flour in the Orient?—A. My impression is that they are not to any considerable extent. You refer to India?

Q. India; yes.—A. Not to any large extent. India is not developing as a wheat-exporting country. That country has not the importance that it formerly had as a source of supply. I have here the wheat production of British India. It fluctuates, of course, from year to year, but the general tendency has been downward.

Q. You may state for the information of the commission something about the production of British India.—A. There have been indications that the wheat production of India was declining, if anything, in recent years. For instance, the average annual production for the past 5 years, 1895-1899, amounted to something less than 230,000,000 bushels, whereas the average for the preceding 5 years, 1890-1894, was about 240,000,000 bushels. The average for the 5 years 1885-1889 was still larger, amounting to about 260,000,000 bushels.

I was about to speak of the distribution of our export trade in cattle. The United Kingdom takes nearly 95 per cent of the live cattle shipped from the United States. The average number of head exported to the British market during the 5 years 1894-1898 was about 350,000 and the value about \$33,000,000. It is the only market of importance we have for export cattle. The remainder of the trade is widely distributed among other countries.

I will mention as an interesting fact that we have recently been shipping quite a number of cattle to Cuba. In 1898 we shipped about 40,000 head. The importation of American live cattle into Germany, France, Belgium, and the Netherlands was prohibited some years ago, although I should say that Belgium has since removed the prohibition.

Q. (By Mr. A. L. HARRIS.) What was the reason of the prohibition?—A. The prohibition was enacted on the supposition that there was danger of introducing infectious diseases. Several years ago—I believe it was in 1894—there were some alleged cases of Texas fever in American cattle shipped to Hamburg. On the strength of that Germany prohibited the importation of live cattle from the United States, and these other countries afterwards took similar action.

Q. What action has been taken, if any, on the part of our Government to insure against the disease of Texas fever in the shipments from this country?—A. The inspection system of the Department of Agriculture is believed to be a very sure preventive of the exportation of diseased cattle. I think there is little danger of sending diseased cattle out of this country under that system.

Q. But so far you have not been able to convince those countries that there is no danger?—A. There has been a great deal of correspondence between our Government, through the State Department, and foreign governments on that subject, but it has been very difficult to convince them. I do not know whether I should say this formally or not. I should like to say to the committee, informally, that it is believed to some extent that the restrictions put upon our exports are simply a pretext to keep them out in order to prevent competition. That is one reason why it has been so difficult to get some of these restrictions removed.

Q. (By Mr. FARQUHAR.) Is the action of Germany traceable to the so-called

Agrarian party, or the Farmers' party, in the exclusion of the American product?—A. It is generally believed that the Agrarians are back of all these movements against our products and that the real object is not so much to protect the German people from injury through disease as it is to protect their products against competition.

Q. (By Mr. A. L. HARRIS.) Where is the estimate of value placed, here in this country or where the cattle are delivered?—A. In the statistics I am quoting the value is the declared value here.

Q. (By Mr. FARQUHAR.) In the American custom-houses?—A. In the American custom-houses. I am now using United States statistics. The Germans in preparing their statistics of importation take the value in their own ports, based on the market price.

The next product I have on the list is lard. The United Kingdom is also the chief market for our lard, Germany ranking second. A large part of the lard is sent to those two countries. During the period 1894-1898 the United Kingdom annually took about 194,000,000 pounds on the average, the value being about \$13,000,000. Germany took during the same period about 144,000,000 pounds, valued at \$9,000,000. The United Kingdom's proportion of our total lard exports was 36 per cent and Germany's 27 per cent. We also shipped considerable lard to the Netherlands and Belgium. The average yearly shipment to the Netherlands was about 45,000,000 pounds, with a value of \$3,000,000; that to Belgium was about 33,000,000 pounds, valued at about \$2,000,000. The Netherlands took about 8 per cent, and Belgium about 6 per cent, of the total. Among other countries to which we shipped in lesser quantities were Cuba, France, Brazil, and Denmark.

Q. (By Senator KYLE.) What percentage did France take?—A. France took about 5 per cent.

Q. In your list of destinations you mention England, Germany, Belgium, and the Netherlands, and seldom ever include France among them. What is the reason that France consumes such a small proportion of American products? Do they produce largely in all these lines?—A. France, of course, is to a very large extent, an agricultural nation, producing from its own soil an abundant food supply, and so we have always found it difficult to market our agricultural products there. The difficulty is increased by rather stringent tariff legislation enacted in the interests of French agriculture. I think there is also, to a certain extent, a prejudice in France, as in Germany, against some American products, especially meat products. At any rate, it has been the history of the trade that the French have not taken their proportion of our meat products.

Q. Not even considering the question of obstruction?—A. I think not.

Q. You bring in the hog before you get through, do you not? I would like to have that next to the lard; the hog is a very important institution in this country.—A. The hog is certainly a very important institution in this country, but it is not sent out alive to any considerable extent.

Q. Goes as pork, of course?—A. It goes in the form of pork; the packing is done here. Our average annual exports of live hogs during the five years 1894-1898 amounted to only about 14,500 in number; the value was about \$144,000. They went chiefly over our borders to Mexico and Canada. We sent an average of about 10,000 head to Mexico, valued at about \$115,000; and to Canada about 2,000 head, valued at about \$11,000. We also exported an average of nearly 2,000 head to the Hawaiian Islands, the value being about \$10,000. Of the total number of hogs exported, Mexico received 67 per cent, Canada 15 per cent, and the Hawaiian Islands 13 per cent.

Our exports of fresh pork averaged only a little over 3,000,000 pounds a year and went chiefly to the United Kingdom, the shipments to other countries being inconsiderable. The total value was about \$220,000.

Of pork, salted or pickled, we exported about 70,000,000 pounds a year, the value being about \$4,000,000. Of this product the United Kingdom took 23 per cent, the amount being about 15,000,000 pounds and the value about \$1,000,000. The remaining exports of salted or pickled pork went chiefly to Haiti, Canada, British West Indies, Porto Rico, British Guiana, and Germany.

Q. Germany comes last in the list in regard to importance?—A. I have named only the most important countries; there are many other countries, of course, of lesser importance.

Q. Is Germany named in the order of importance?—A. Yes; they were all named in the order of importance.

Q. Germany tailing the list?—A. Germany took a little over 3,000,000 pounds a year during that period, the value being about \$200,000. Germany's share was less than 5 per cent of the total.

Of bacon we exported annually about 490,000,000 pounds on an average, and

the value was about \$33,000,000. The United Kingdom took of this amount about 77 per cent, or 377,000,000 pounds, valued at \$30,000,000. We sent 31,000,000 pounds, or about 6 per cent, to Belgium, the value being \$2,300,000; to Germany we sent about 5 per cent, or 23,000,000 pounds, worth \$1,500,000. We shipped about 16,000,000 pounds to Brazil, or slightly more than 3 per cent, the value being \$1,200,000. The Netherlands took about 2 per cent, or 11,000,000 pounds, valued at \$900,000. These five countries were the leading destinations.

Of hams we exported about 137,000,000 pounds a year, the value amounting to about \$13,700,000. The United Kingdom took 111,000,000 pounds, valued at \$11,000,000, this being 81 per cent of the total. After the United Kingdom, Belgium was the most important market, taking about 8,800,000 pounds, valued at \$880,000, or about 6 per cent. We shipped about 4,000,000 pounds a year to Cuba, the value being \$435,000; Cuba took about 3 per cent of the total. To Germany we also sent about 4,000,000 pounds, or 3 per cent, the value being \$383,000. To Canada we sent about 2 per cent, or 3,000,000 pounds, worth \$292,000. The only other country that took hams to the extent of 1,000,000 pounds a year was the Netherlands, the shipments to that country averaging about 1,400,000 pounds, or slightly more than 1 per cent of the total, the value being about \$147,000.

Another item I mentioned as being of interest because of the rapid growth of its exportation was oil cake and oil-cake meal. The exports are recorded under two heads, oil cake and oil-cake meal made from cotton seed and that made from flaxseed or linseed.

As to the cotton-seed oil cake or oil-cake meal, we shipped of this product annually during 1895-1898 about 609,000,000 pounds on an average, the value being about \$5,400,000. It was sent chiefly to Germany and the United Kingdom, the former country taking about 47 per cent of the total, or 289,000,000 pounds, valued at about \$2,600,000, and the latter country, the United Kingdom, about 27 per cent, or 165,000,000 pounds, valued at \$1,400,000. After these two countries the most important market was Denmark, which took on an average about 11 per cent of the total, or 66,000,000 pounds, worth \$585,000. To the Netherlands we sent 57,000,000 pounds, worth \$518,000, or about 9 per cent; to Belgium 17,000,000 pounds, worth \$150,000, or about 3 per cent; and to France 12,000,000 pounds, worth \$100,000, or about 2 per cent. The shipments to other countries were comparatively unimportant.

Now, taking up flaxseed oil cake and oil-cake meal, we sent of this product to foreign markets about 377,000,000 pounds, the value being close to \$4,000,000. The United Kingdom received about 48 per cent, or 181,000,000 pounds, valued at nearly \$2,000,000; Belgium about 26 per cent, or 98,000,000 pounds, valued at \$1,000,000; the Netherlands about 14 per cent, or 54,000,000 pounds, worth \$371,000; and France 5 per cent, or 17,000,000 pounds, valued at \$172,000. To Germany we shipped 12,000,000 pounds, or about 3 per cent, the value being \$126,000. We also sent about 3 per cent to the British West Indies, which took 11,700,000 pounds, worth \$186,000. These were the most important markets for flaxseed oil cake and oil-cake meal.

I also mentioned cotton-seed oil, stating that the exports of this product amounted to about \$12,000,000 in value for the year 1899. The average for the 5 years 1894-1898 was about \$7,000,000 in value, and in quantity about 25,000,000 gallons. Of these exports, we sent to France 6,700,000 gallons, worth \$1,800,000, or about 27 per cent of the total.

Q. (By Mr. KENNEDY.) There must have been a remarkable growth in the exportation of cotton-seed oil; for the year 1899 you say it was \$12,000,000, while the average for the 5 years 1894-1898 was \$7,000,000. Where did the increase come; all along, or was it remarkable for any one or two years?—A. There was a marked increase in 1898 and 1899. There was a considerable increase in the preceding years, but in the last two years there was a very decided increase. The quantity exported increased from 27,000,000 gallons in 1897 to 40,000,000 gallons in 1898 and to 51,000,000 gallons in 1899.

Next to France in importance as a market for cotton-seed oil come the Netherlands, to which country we exported during 1894-1898 an average of about 5,800,000 gallons a year, or about 23 per cent, the value being nearly \$1,800,000. After France and the Netherlands, which took over half of the total, the principal markets were the United Kingdom, Germany, Austria-Hungary, Mexico, and Italy. We sent to the United Kingdom about 9 per cent, or 2,200,000 gallons, worth \$595,000; to Germany about 8 per cent, or 2,000,000 gallons, worth \$648,000; to Austria-Hungary also about 8 per cent, or nearly 2,000,000 gallons, worth \$573,000; to Mexico about 6 per cent, or 1,500,000 gallons, worth \$386,000; and to Italy about 5 per cent, or 1,300,000 gallons, worth \$382,000. These were the only countries to which we sent average annual exports exceeding 1,000,000 gallons.

Another product for which I will give statistics of distribution is oleo oil. Our exports of oleo oil for the 5 years 1894-1898 averaged about 110,000,000 pounds, and the value about \$3,357,000.

Q. (By Senator KYLE.) What was the average exportation of butter during these years, and also give the valuation?—A. The average exportation of butter was 18,764,000 pounds and the value about \$2,858,000.

Q. As against 110,000,000 pounds of oleo oil?—A. Yes. Of these exports of oleo oil, the Netherlands took about 60 per cent, the average quantity being about 66,000,000 pounds and the value about \$5,000,000. Germany was the second market of importance, taking 23 per cent of the total, or about 25,000,000 pounds, with a value of about \$1,900,000. Our exports to the United Kingdom, which ranked third as a market, averaged 8,000,000 pounds, or about 7 per cent, the value being \$645,000. To Sweden and Norway we sent about 4 per cent, or 4,320,000 pounds, worth \$300,000, and to Denmark about 3 per cent, or nearly 3,000,000 pounds, worth \$233,000. Belgium took slightly more than 1 per cent, or 1,400,000 pounds, the value being \$110,000. Shipments to other destinations were comparatively small.

The oleo oil exported to the Netherlands is used chiefly for manufacturing oleo-margarine, or imitation butter, which forms an extremely important industry there. In some of the other countries I have mentioned our oleo oil is used quite extensively for the same purpose.

Q. (By Mr. A. L. HARRIS.) You may state, if you can, what effect this increase in the export of oleo oil had on the dairy interests of the country.—A. I was about to refer to the exportation of the dairy products, butter and cheese, as presenting the most striking example of decline in our agricultural export trade. I have tried to cover some of the most important instances of increase in the products I have already mentioned. Butter and cheese present the most striking cases of loss, and to illustrate the falling off that has occurred I wish to give a few figures from our export records. Going back to 1880 we find that there was an annual export of nearly 40,000,000 pounds of butter. I will give the exact figures, which are 39,237,000 pounds, valued at \$6,691,000. That year represented about the height of our export trade in butter. In 1890 the exports were 29,748,000 pounds, valued at \$4,187,000, a decline of nearly 10,000,000 pounds for the decade. In 1895 our exports had dropped as low as 5,599,000 pounds, valued at \$916,000. That was about the low-water mark in our butter export trade. For the last two or three years the trade has been picking up a little. In 1899 we exported about 20,248,000 pounds, worth \$3,284,000.

Q. (By Senator KYLE.) Still very much less than in 1890?—A. Only about one-half what we exported 20 years ago.

Q. (By Mr. A. L. HARRIS.) Is that quantity accounted for solely on account of the increase of the export of oleo oil?—A. No.

Q. To what other cause can you attribute that falling off?—A. Of course the increase in the production of imitation butter and its increased consumption abroad have naturally affected the consumption of butter, but they haven't caused this great falling off in our export trade. In spite of the increased consumption of butter substitutes there has been an increased exportation of butter from most of the dairy countries. They have increased their trade while ours has been dropping off. The chief cause of this decline is found in the unfortunate management of our export trade. The chief cause of the decline was the inferior grade of butter that our exporters sent to foreign markets, and especially to the United Kingdom, which is our chief butter market. After we had established a trade of considerable importance and created a fair reputation for our butter in the foreign market, unscrupulous exporters began to take advantage of the situation to dispose of inferior butter, and the lack of any Government inspection of export butter in this country made it possible for them to ship almost any kind of butter. What I suppose you might call adulterated butter—process butter—renovated butter—they were able to label as they pleased, and large quantities began to be sent to the English markets, and this naturally brought the American butter as a whole into disrepute. I should have said in the first place that as a rule we did not send our best butters to the British market; inferior grades that could not be readily disposed of in our domestic market were sent abroad in large quantities, and it is generally admitted that this was the cause of the loss of our export trade in butter.

Q. Any recent tariff discriminations, or anything of that kind?—A. No. Our chief market, you see, is the United Kingdom, where butter is admitted free of duty.

In contrast to this decline in our own export butter trade was the experience of certain other butter-exporting countries, and especially Denmark. In 1880, the

first year I referred to as regards our own exportations, the Kingdom of Denmark exported about 27,498,000 pounds of butter, having a value of about \$6,805,000. By 1890 the Danish exports had increased to 98,873,000 pounds, worth \$20,808,000. In 1898, the last year for which we have their export returns, Denmark exported 160,143,000 pounds, worth \$34,576,000.

Q. Where did Denmark find the market chiefly?—A. Denmark sends her butter almost exclusively to the British market—the greatest butter market of the world. Denmark caters to that market, and makes her butter with a special reference to its requirements. Only a very small per cent of Danish butter goes to other destinations.

Q. What percentage of the oleo oil does Denmark take?—A. About 8 per cent. Q. Our people, then, have discredited their own product?—A. Exactly.

The butter export trade of Denmark is practically under government supervision. It has been the policy of the Danish Government, first of all, to establish a reputation for its products in foreign markets, and then to compel its producers and exporters to maintain the high standard of those products.

Q. Please state how they succeed in enforcing that requirement. Do they have inspections at the borders?—A. Yes; the butter for export is carefully inspected, under the direction of the Royal Agricultural Society, acting for the Government, and no butter is allowed to go out of Denmark that does not come up to the required standard. It is a remarkable fact that Danish export butter is all of one grade. The importers in England simply give an order for so much "Danish butter" at the market quotation. This fact speaks volumes for the character of the product that is shipped from Denmark.

Q. (By Senator KYLE.) Very similar to our buying the Elgin butter in this country, is it not?—A. Somewhat similar to that, perhaps.

Q. Elgin creamery butter—people know what that means when they ask for it and pay for it?—A. Yes; but in the case of Danish exported butter the British purchaser practically has a government guaranty that the butter will be of a certain grade and up to a certain standard.

Q. What have you to say in reference to the United States inspection?—A. We do not have any such thing as regards export butter, and that is the great difficulty; that is exactly what we need. I believe we should have a system of Government inspection for dairy products similar to that applied to our meat exports; and, in fact, our Secretary of Agriculture, Mr. Wilson, in his last annual report recommended that such a system be established, requiring our export butter to be inspected and labeled as to grade and sent abroad with the Government certificate upon it, guaranteeing to the foreign purchaser that the butter is of the grade claimed by the exporter, and thus preventing the fraud now possible in the exportation of this product.

Q. And that it is butter and not oleomargarine?—A. Certainly.

Q. It would be a very good thing if we could get the same guaranty for the American consumer?—A. Yes.

In Canada they are adopting a policy very similar to that in vogue in Denmark.

Q. (By Mr. KENNEDY.) Where does the Canadian butter go?—A. It also goes chiefly to England.

Q. (By Mr. FARQUHAR.) How many years is it since Canadian butter and cheese have run American butter and cheese out of the English market?—A. I spoke of 1880 as being within the period of our greatest development in the butter trade.

Q. That was the high-water mark?—A. As regards butter, yes. I do not refer to Canada as a competitor in the butter export trade especially. It is in the cheese export trade that we have lost to Canada. The Danes have developed the butter export business much more extensively than Canada, although latterly the Canadians are taking steps to push their butter export business just as they have been doing with the cheese export business.

Q. Can you give figures to show how far the Canadians have come into the United States market with butter product, even as against the tariff?—A. Only to a very small extent. I have not the exact figures here. Their total exports of butter are not large, however, although they are now beginning to develop. In 1899 Canada exported to all destinations about 20,000,000 pounds of butter, the value being about \$3,700,000. In 1890 very little export business was done, less than 2,000,000 pounds going abroad. The Canadian trade fell off at about the same time as that of the United States.

Q. And fell off for the same reason?—A. Presumably the same, although I have not looked into that matter so carefully.

I will quote now the 1880 figures for Canada. In that year Canada exported 18,535,000 pounds of butter, worth about \$3,000,000. In 1890, as I have said, the shipments dropped to less than 2,000,000 pounds, the value being only \$340,000.

In 1899, under the measures taken to reestablish the butter export business, the amount shipped came up to about 20,000,000 pounds. In other words, the Canadians export about as much now as in 1880. That is the history of their trade. Their efforts to push the butter export business are comparatively recent, much more so than their efforts to push the cheese export trade. They are now taking measures similar to the Danish methods to put their butter into the British market, and that is one reason why it is very important for us to take some such measures.

(At this point the commission took a recess until 2 o'clock, and requested Mr. Hitchcock to continue his testimony at 10 a. m. Friday, June 15, 1900, at which time the hearing was continued, as follows:)

Q. (By Mr. A. L. HARRIS.) Professor, the other day you were testifying in regard to the decline of dairy products. Have you anything more to say in regard to the cause of the decline in dairy products?—A. I called attention to the fact that there was a very remarkable falling off in our exports of butter, beginning soon after 1880, when the trade had reached its high-water mark. I explained that this decline was largely due to the shipment of an inferior and in some cases an adulterated product. In contrast to the falling off in our own export trade in butter I mentioned the remarkable development of the export trade of Denmark, where it has been the policy to permit the shipment of no inferior products. The Danes started in to establish a reputation for their butter, and, having established it, they took measures to maintain it, and the result has been the remarkable growth of trade that I set forth statistically. I also mentioned the fact that Canada has recently taken measures to extend her export trade in butter, and with marked success. I wish also to mention the case of the Australasian colonies of Great Britain. The butter exports from these colonies to the United Kingdom, which is their chief market, increased from less than 4,000,000 pounds in 1889 to over 40,000,000 pounds in 1899. In Australasia measures similar to those carried out in Denmark have been adopted, and results almost as notable in the way of increased trade have followed. Other countries that have developed an important export trade in butter within the last decade are Sweden and Finland. These countries produce a butter that is practically the same as Danish butter, and they are shipping it now to the British market in increasing quantities each year. I should explain that quite a large quantity of this butter from Sweden and Finland has hitherto gone to Denmark, being practically the same thing as Danish butter, and a considerable portion of it has undoubtedly been reexported by the Danes as their own butter, with which it is to all practical purposes identical. Even Russia is also beginning to develop an export trade in butter. The Baltic provinces, especially, are giving their attention to this industry, and are taking active measures to develop it—measures similar to those taken by Denmark. The Russians are engaging Danish experts to install their creameries and to instruct their butter makers. Already they are beginning to ship a high grade of butter, some of which is sent to the British market, and finds there a ready sale.

These various countries, none of which has greater dairying possibilities than the United States, are thus developing and widening their export trade in this commodity, while we, because of our unbusinesslike methods, have been losing the little export business that we formerly possessed. I believe that this product as a factor in our export trade should receive special attention. I think it would be profitable to take measures to develop an export trade in butter.

Q. Could that be best accomplished by legislation, or do you think voluntary associations could bring about the result?—A. I think that legislative aid would be of great assistance. I am strongly in favor of official inspection of exported butter. I think that is the most feasible plan for preventing the shipment of inferior produce.

Q. You would recommend an inspection similar to that that is now required for our meat products?—A. Yes; the same system could be extended so as to include butter and other dairy produce. As I stated at the last hearing, the Secretary of Agriculture has made the recommendation that butter and cheese and milk for export be subjected to an official inspection, that a grade be established, and that produce that comes up to that grade be certified to by the Government inspector, labeled, and the Government certificate placed upon it as a guaranty to the foreign importer of its quality. Such a measure is very strongly recommended by the Department, and I think that it would meet with the approval of the dairying industry. Some inquiries have been made in this regard and the general feeling, as far as tested, seems to be in favor of Government inspection for these products.

Q. (By Mr. FARQUHAR.) Are you through with the butter?—A. Not fully.

Q. Has the Department of Agriculture made any investigation as to the process

of manufacturing butter in Denmark and Sweden in comparison with America and Canada?—A. Yes.

Q. Have you any sufficient, obtainable reports to show the difference in the quality of the milk and cream that enters into the manufacture of the butter?—A. Several years ago the Department sent a special agent to Denmark to investigate the dairying industry. The agent was commissioned toward the close of Secretary Rusk's administration, as I remember. He went to Denmark and spent several months there investigating the dairy methods, and afterwards made a very thorough and comprehensive report, which was published in the last Administration. The Department has not made similar investigations in the other countries you have mentioned.

Q. Was the Denmark manufacture at that time as far progressed as it is now, as perfect?—A. Probably not as perfect, because the Danes are perfecting their system every year, but it had reached a condition that made it rank as the foremost in the world. The Danes are regarded as the pioneers to a certain extent in butter production by modern methods. They have been the models, not only as regards production, but as regards export methods, for these various other countries I have mentioned—these countries that are now developing very rapidly an export trade in butter.

Q. Do you know whether the Danish butter is made from the sour cream or just simply from the milk after having extracted the cream from it, what we call the body of the milk?—A. I am not an expert in the dairy business, but I understand that the Danish butter is made almost altogether from pasteurized cream; a very large percentage of the Danish butter is pasteurized, and to that fact is attributed its remarkable uniformity.

Q. In other words, it is a cream butter?—A. Oh, yes; it is a cream butter.

Q. Is it possible under any inspection for the American butter to compete with the cream butter of Europe? Has the Department discovered that, or has it gone into the investigation of it?—A. The Department thinks it is possible for us to put a butter into the British market that is equal in quality to the Danish.

Q. Certainly, provided that they take the same class of cream to make the butter, but no other way?—A. Of course, it goes without saying that they would have to use an equally good material.

Q. Is it not a fact that you have investigated that really the Americans are putting a butter there that has not the full fatty substance of butter and is not perhaps equal to the cream butter of Europe, to the English, Scotch, Irish, or Danish?—A. In the past that was the great difficulty with our export trade. Our butter was often of an inferior quality. That can not be denied.

Q. Inspection would not improve it?—A. Inspection would not improve the inferior butter, but the idea, as I understand it, is to establish a high grade. Butter that reaches that grade will carry a certificate. Inferior butter will go without a certificate. The foreign importer, knowing that we are certifying to the grade of high-class butter, will naturally demand butter bearing such certificate. The inferior butters will therefore be at a great disadvantage. At present they are not at such a disadvantage, for the reason that neither the inferior nor the best butter bears any distinctive label or anything to guarantee that one is inferior and the other high grade.

Q. All the Danish butter is labeled in the London market?—A. All the Danish butter that is exported is of a certain grade, a high-grade butter. It is called Danish butter; it is purchased in England simply as Danish butter. The English buyer merely orders so many pounds or casks of Danish butter, and that is the extent of the contract. He pays the price quoted in the market on the day of his purchase.

Q. Are you aware that there is a very wide difference in the price of butters, between the high-grade British and Danish and the ordinary American and Canadian?—A. There is a difference of 3 or 4 cents a pound.

Q. Do you mean pennies or cents?—A. I mean cents; I am quoting in United States money. There is a difference of 3 or 4 cents a pound. The import price in England of Danish butter in 1890 was 23 cents a pound. That was the average import price of all the Danish butter sent into the United Kingdom during the calendar year 1890.

Q. That is what is called 11 pence half-penny a pound, British figures?—A. The price averaged 22.95 cents for the entire year, but the quotation would naturally vary somewhat from day to day.

For the same year, the calendar year 1890, the butter imported into the United Kingdom from the United States averaged 19.2 cents per pound, and the Canadian butter imported into the United Kingdom averaged 19.4 cents per pound. In that year the Canadian brought a trifle more than the United States butter; but

you see there is a difference of nearly 4 cents between the price of the Danish and the United States and Canadian butter.

Q. Is it not also a fact that the Danish butter holds its price in the market almost against any changes, and it is a very high price, while there are fluctuations in the butter that comes from the United States and Canada?—A. The Danish butter is noted because of its uniformity; the high price is uniformly maintained. I do not mean to say that the same price is maintained, but I mean to say that Danish butter has a high price always, as compared with the price of other butter. The Danish butter brings the highest price of any butter imported into the United Kingdom, except the fresh butter. The fresh butter that comes in from Normandy brings a higher price, of course, but that is a peculiar trade. The Normandy butter comes in within 24 hours from the churn, and is perfectly fresh. It is unsalted, while the Danish butter, like the other imported butters, is a salted butter.

Q. (By Mr. A. L. HARRIS.) Do the same conditions exist in regard to cheese, substantially, that you have described in regard to butter?—A. In our exportation of cheese we have had practically the same experience as that described for our butter export trade. In 1881 our exports of cheese reached the highest figures ever attained, amounting to 147,996,000 pounds, having a value of \$16,380,000. From that time the exports declined. In 1890 they had fallen to 95,376,000 pounds, valued at \$8,591,000; and in 1899 they amounted to only 38,199,000 pounds, valued at \$3,316,000. During the past 20 years there was a loss of over 100,000,000 pounds in our export trade in cheese, and the reason for this was essentially the same as that given for the decline in our exportation of butter, namely: The shipment of an inferior product, chiefly the shipment in large quantities of so-called filled cheese. Soon after 1880 it became the practice to export filled cheese. This adulterated product was sent abroad in the guise of first-class or full-cream cheese. The result was that the British purchaser very soon discovered that he was being defrauded. The inferior quality of the filled cheese soon became known in the British market and our trade began to fall off. Our export trade in cheese was lost to Canada, where measures were taken to prevent such an experience. The Canadian government not only prevented the manufacture of filled cheese, but took measures to improve the quality of the Canadian product and to secure its ready sale in the British market. They saw an opportunity to establish a trade when that of the United States began to fall off, and they made the most of it, as is shown in a striking manner by their export figures. In 1880 Canada shipped abroad 40,369,000 pounds of cheese, valued at \$3,893,000. In 1890 the trade had increased to 94,260,000 pounds, having a value of \$9,372,000. During the past year, 1899, the exports of cheese from Canada reached the enormous total of 189,828,000 pounds, having a value of \$16,777,000. In the space of 20 years the Canadians increased their shipments from about 40,000,000 to nearly 190,000,000 pounds.

Q. How do you account for that enormous increase on the part of the Canadian export of cheese?—A. That increase is accounted for very largely by measures taken by the Canadian government to develop the cheese industry and to establish an export trade. The Canadian government began by helping the manufacturers. It gave liberal bonuses for the building of factories and, under the supervision of the ministry of agriculture, established a system of instruction and inspection that brought about a rapid improvement in the methods of cheese production. As the surplus above domestic requirements increased, the government took measures to place that surplus in the foreign market by securing for the exporters favorable transportation facilities. And while I am discussing what has been done by the Canadian government for the cheese export trade, I wish to include also the export trade in butter, because the measures taken by Canada for the shipment of butter and cheese naturally go hand in hand.

Q. There is a possibility then of having a system of inspection that would insure a pure cheese?—A. The inspection system that I spoke of would be particularly valuable in the case of cheese, for the reason that no filled cheese would go out as honest cheese under the government certificate. The probability is that after the system of inspection had become introduced the filled cheese exported would be at such a great disadvantage without a certificate that it could not maintain its market as it does now.

Q. Would this inspection be at the factory?—A. The inspection would probably be in part at the factory, just as the meat inspection is in part at the packing house.

I said that the Canadian government has assisted in the establishment of cheese factories by giving liberal bonuses, and I can also say that it has done the same as regards the manufacture of butter. It has not only done that, but it has estab-

lished a system of cold-storage transportation from the factory or the creamery to the foreign market. The measures for the development of the butter export trade began to be taken in 1896, I think. The Canadian government offered a bonus of \$100 to creameries that should install and maintain cold-storage facilities in connection with their creameries. This \$100 was to be paid during a period of 8 years, \$50 the first year, \$25 the second, and \$25 the third. The government also secured cold-storage facilities upon railroads, so that the butter after being cooled at the creamery would go directly into a refrigerator car for safe transportation to the point of ocean shipment. At the terminal of the railroad the government established a cold-storage warehouse in order that the butter could be safely kept between the time of reaching the railway terminal and the loading upon the ship. The government also secured refrigeration service on steamship lines to the British ports. This cold-storage system was installed according to instructions prepared by the department of agriculture, and, in some cases at least, Parliament defrayed the expense of installation. To give the trade a start, the government contracted with the steamship companies for cold-storage space, put in the necessary refrigerator chambers, and then guaranteed to the steamship company the full freight charges for the service. Under these conditions very favorable transportation rates were procured, and as the initial expense was borne partly by the government, it was possible for the Canadian producers to send their dairy products to the British market at very low rates. In this manner a great inducement to exportation was offered.

The Government also watched very carefully the quality of the product shipped, issued instructions as to methods of packing, branding, labeling, etc., and in fact practically supervised the entire exportation. Numerous trial shipments were also made by the Government, the Government purchasing the produce and sending it over and disposing of it through its own agents abroad. I might mention, too, that other than dairy products were shipped experimentally. Canadian fruits, for instance, were sent abroad in trial shipments.

Q. (By Mr. KENNEDY.) Is it your belief that if America is to compete with Canada for this trade in foreign markets we must copy the methods of the Canadian Government?—A. I do not think that it will be necessary for us to do what the Canadian Government has done as a whole. The Canadian Government has gone pretty far in the matter. I believe that if the trade can once be given a fair start and the American producer convinced that there is a profit in it the facilities will be forthcoming; the producers themselves will take the necessary action to get the required transportation facilities. But first of all it is important, it is necessary, to show that there is a possibility of establishing such a trade on a profitable basis. The initial experiments can very properly be made by the Government, and in fact they are in a small way now being inaugurated. The United States Department of Agriculture, by direction of Secretary Wilson, has been making experimental shipments of butter during the last two or three years, and with considerable success. We began in 1897 to send high-grade American butter in small lots to the British market. The Department purchased this butter from leading creameries in several States. In 1897 lots were procured from eleven different States, I believe, such creameries being chosen as had made a favorable reputation for their butter. Under directions from the Department this butter was put up in the form thought to be best suited to the requirements of the British market, not only as regards quality but as regards packing. The butter preferred in the British market is a mild butter, lighter than ours in color, and with less salt, and the butter sent abroad was so made. It was packed in a variety of packages, experimentally, in order to ascertain as far as possible what packages would be most desirable for future use. As a result of the experiments in the first year, the Department adopted for subsequent shipments a cubical box similar to the Australian box, but tapering slightly from top to base, in order to facilitate unpacking the butter. Aside from the taper it is identical in size and shape with the standard Australian box that is in such favor in the British market.

Trial exports have been continued during the past year, some of the shipments going to new destinations. Butter has recently been shipped to the Orient to some extent. Experimental shipments were first sent to London, then to other English cities, and later to Paris. It is, of course, only the beginning of experimentation in this line, but I think I can say that the result has been on the whole highly satisfactory. We have convinced the British butter merchants, to some extent at least, that a high grade of butter can be made in the United States, but that is equal to the best butters imported from other countries. That, of course, was the chief object of the experiment—to show the British consumer that all American butter was not inferior, but that, on the contrary, we were making

here a first-class article. These experimental shipments of butter will probably be extended, and further beneficial results are hoped for.

Q. I infer from what you said the other day about the large shipments to the Netherlands of certain ingredients which entered into the manufacture and composition of imitation butter that there must be a large manufacture of imitation butter at certain points in Europe. Can you say where that imitation butter finds a market?—A. The manufacture of oleomargarine, or artificial butter, is carried on most extensively in the Netherlands. The exports from the Netherlands exceed 100,000,000 pounds a year. Of these exports by far the largest part goes to the United Kingdom, while the remainder is distributed quite generally over Europe and also to some extent through tropical countries.

Q. So that there is a demand for that artificial butter in Europe?—A. Artificial butter is used now quite extensively in Europe; it is probably used most extensively in England and Germany; but, although the manufacture of artificial butter has increased very largely, the consumption of real butter has also increased. There is a more general use of butter throughout the world; the poorer classes of the people are beginning to use it much more than formerly, and for that reason the production of oleomargarine has not destroyed the market for butter. The United Kingdom, of course, is the important butter market of the world, and to show you what has been the increase of the demand in that market I will quote some statistics I have on the subject. In 1886, which is the first year for which we can give separate statistics of the imports of butter into the United Kingdom (prior to that year butter substitutes were grouped with butter, oleomargarine being included in the butter imports as recorded; we can not divide them prior to 1886), the imports of butter into the United Kingdom from all sources amounted to about 173,000,000 pounds. In 1899 the imports of butter into the United Kingdom amounted to about 380,000,000 pounds. Thus in a period of fifteen years the demand of the British market for imported butter more than doubled. Practically each one of the past fifteen years has shown a marked increase in the imports of butter into the United Kingdom. The increasing exports from the various countries that I have mentioned as showing rapid development are chiefly due to this growing demand of the British market. Those countries are supplying this demand; they send their butters to Great Britain almost exclusively. It is the great butter market of the world.

Q. (By Mr. A. L. HARRIS.) In the experiments in shipping that you are making in the Department, do you find the necessary conditions or facilities for cold storage?—A. There are excellent facilities on the railways of the United States. We have probably the best cold-storage transportation facilities by rail of any country, but there is a lack of sufficient accommodations on the ocean steamships. The cold-storage chambers on the steamships plying between the United States and Europe are very largely monopolized by the meat interests. They are contracted for and controlled by the packers. The meat exporters take measures to procure the amount of space required for their trade and the necessary refrigeration facilities, but aside from that industry there is not sufficient cold-storage service, and it has been found difficult at times in our experimental shipments to get the facilities needed. That is one thing, of course, that would have to be remedied. Another great difficulty is the lack of cold-storage facilities at the docks. One of the chief dangers in shipping butter and other perishable products is that they will arrive at the port of shipment some time in advance of the sailing time and become damaged during the wait. We need cold-storage facilities at the docks, so that products that are brought on the refrigerator cars can be transferred at once into cold storage, awaiting the time when they can be put aboard ship.

Q. Have you anything further on the subject of dairy products?—A. I should like to say that practically the same measures that have been taken by Canada for the development of an export trade in dairy products and in other perishable products have been taken within the last few years by the Australasian colonies.

Q. Do you think it would be advisable for the Government to give some attention to this question of proper facilities for shipment?—A. I do most assuredly think it would be well for the Government to take some measures. I do not know that it would be best for the Government to provide cold-storage and cold transportation facilities as Canada has done, but I think that the Government can very well in an advisory capacity make recommendations, and I do think that the Government should first of all take into its hands the matter of inspection. I think that is the most important measure to be taken, so as to prevent inferior and fraudulent produce going abroad under false colors, as is now possible.

Q. You touched the other day upon the subject of the grain export. Have you

anything additional to say in regard to conditions favorable or unfavorable for the exportation of grain?—A. Within the last few years many complaints have been made in foreign ports as regards the condition in which some of our grain arrives. The grains that have been complained of chiefly are Indian corn, wheat, rye, and barley. Complaints have been made as regards Indian corn, that in many cases that grain has reached the European port in a damaged condition, caused by sweating. It has been claimed that much mouldy grain has come into European ports, and not only that, but to some extent it has been claimed that grain of a grade inferior to that of the certificate upon which it was purchased has been received. As a rule our grain is sold on the certificates of inspection that are furnished by the boards of trade and chambers of commerce at the ports of shipment in the United States. The foreign importer contracts for the grain on the strength of that certificate, and under the rules adopted by our commercial bodies that inspect, the certificate is conclusive. The importer who has bought a cargo of grain upon the certificate issued by one of our boards of trade practically has no redress if to his idea the grain does not correspond to the grade that is certified to by the inspector.

It may be that there is some carelessness in the inspection of export grain in the United States, but from what attention I have given to the matter I am inclined to think that the complaints based on the ground of fraud are mostly unfounded. Unfortunately, the methods of inspection in vogue in the United States lack uniformity. Each board of trade or chamber of commerce adopts its own rules of inspection and its own regulations for grading. In most cases the grades are changed somewhat from year to year, following the average condition of the crop, but the changes made at the several ports are not always uniform. The result is that the certificates issued at different ports do not always mean exactly the same thing. Suppose, for instance, an importer buys a cargo of corn shipped from Baltimore and certified to be number 2 mixed corn, sail grade, and then a little later buys a cargo shipped from Galveston, Texas, bearing the same certified grade, and it so happens that owing to different standards of inspection the one cargo differs somewhat in quality from the other. The importer who has received one certified grade and then, under a similar certificate, receives an inferior quality, not understanding the conditions, would naturally feel that the second consignment fell short of the standard called for by its certificate.

Q. Is it possible to fix a standard grade for all the ports of the United States?—A. I believe that it would be possible.

Q. Have any steps been taken in that direction?—A. Not so far as I am aware.

Q. If so fixed would it not be much to the benefit of the exporter from this country?—A. I believe that it would be. If we could have a uniform system of grading for all ports of shipment, so that this variation could not arise under proper inspection, I think it would be a great advantage to the export trade.

Q. (By Mr. FARQUHAR.) Do not all the boards of trade in the United States endeavor to conform to the Chicago inspection and grade or the New York inspection and grade, in those two markets, at fixed prices?—A. In a general way, of course, the great ports are followed, but as a matter of fact they are not followed absolutely. Grain inspection is had, of course, at practically all of the ports. A great deal of grain is now shipped from our Southern ports, such as Galveston, New Orleans, and Newport News, and the commercial organizations that control the inspection there establish their own rules of grading, and these rules sometimes differ slightly from those in force at New York and Chicago. We made inquiries recently in regard to that very matter, and from the replies received at the Department it is evident that there is, in a number of cases, an appreciable difference between the grades established in a given year at the several ports.

Q. You are speaking of the changes that occur there in grading. Do not these changes nearly always—in 90 per cent of the cases—occur through the difference of the character of the crops of the season?—A. Where changes are made they are supposed to be based upon that very thing.

Q. It is not an arbitrary thing on the part of the inspector of the board of trade at all, but it is simply that the very grain that comes out of the very section in one year will be graded possibly below or above what it was the year before?—A. Exactly. The grades are based of course on the average crop; but the changes in the average crop are not followed as carefully in some ports as in others. We had replies from some ports indicating that the grades established there remain practically the same from year to year.

Q. They do on winter wheat, for instance; they hardly ever change. But will you not find always a great many changes there in the spring wheat because the climatic changes are so much different?—A. The changes in grading are most noticeable in corn, of course. I do not think that the changes in wheat are so

marked as the changes in corn. It has been chiefly the corn against which these complaints have been made on the ground of grading.

You spoke of the official certification. Now that is another matter that I am glad you have suggested, for it has caused a great deal of misapprehension abroad. The certificates issued by our boards of trade and chambers of commerce usually bear the inscription, "Official inspection certificate." The importers abroad quite generally understand that to mean official as applying to the Government. I find abroad a general impression that our certificates are Government certificates.

Q. And yet, practically, they are just as good as Government certificates, are they not?—A. Well, that is a question.

Q. Well, did you ever find a board of trade that did not select the very best men that could be found there as inspectors? Merit and not favoritism rules in every case of that kind, considering the millions of money that are involved in the exchanges and boards of trade.—A. That is a very general question. I am not criticising our inspection system as a whole, because I think it is a remarkably good one under the circumstances, considering the vast extent of the country, the different conditions that prevail in the different sections, and the wide distances between the various ports. I think that on the whole the system is an admirable one.

Q. (By Mr. A. L. HARRIS.) Well, owing to the immense quantities of grain and the immense interests that are involved, would it not be better to have the Government fix the grades and have some means to protect against frauds in mixing, etc., and in bills of lading, owing to the fact that it is discredited? That is, would it not be more satisfactory both to the shipper and to the commission man to know that the inspector was under the control of the Government?—A. I believe that it would be a great advantage to the trade if some steps were taken to secure uniformity.

Q. (By Mr. FARQUHAR.) Why would it not do for the Government to license these inspectors? That would be the way to regulate it.—A. That would be one way, of course. I do not mean to say that the Government should take the matter entirely into its own hands. I am not prepared to say that that is at present necessary, but I think it might be well to place the inspection under the general supervision of the Government so that uniform rules could be enforced. To establish an official inspection service for grain at all our ports would be quite an undertaking, and I question the immediate necessity of going so far as that.

Q. Why should it not be done, in the case of cereals and everything of that kind, just as we have in the Bureau of Animal Industry now in the case of animals, meats, and live cattle? Why is there not just as much necessity to inspect the one as the other, and why is there not just as much necessity for official inspection?—A. I am not prepared to say that it would not be a good thing. I have not reached a conclusion in my own mind as to whether it would be advisable at present for the Government to take over entirely to its own control the inspection of export grain. It is, of course, a very comprehensive system. It might be well for the Government to begin by establishing an official inspection that would be optional with the exporter. Argentina has recently done that very thing. The Argentine Government has established an inspection service for grain at its several ports, so that exporters, by paying a small fee, can have their grain officially inspected and obtain an official certificate as to its grade. The Argentine inspection is entirely optional, and it seems to me that in introducing an official inspection of export grain in the United States it would be best at the outset to make it optional rather than compulsory. I believe the advantages of the Government certificate would soon lead to its being demanded by foreign buyers.

Q. (By Mr. A. L. HARRIS.) Would the shipper or commission man object?—A. There would undoubtedly be considerable opposition to a compulsory official inspection. It is very natural to expect some opposition to such a step by the Government. There would probably be opposition on the part of those very organizations that are now controlling the inspection.

Q. Is it not almost as important as the inspection of meat?—A. I hardly think it would do to say that it is almost as important. No; I do not think that there is such a crying need for Government inspection as there was in the case of meat. There are not the same sanitary reasons for it.

Q. In other words, complaint has not become so common?—A. It has not, because the present grain-inspection system is already a fairly good one, although far from perfect.

Q. Well, would it not be an assurance to the foreign importer when he buys a cargo to know that the grade is the same without regard to the port from which it was shipped?—A. Undoubtedly.

Q. In other words, is not this the tendency now: If they find that the port at Galveston has a lower grade for low grades that go to that port for shipment, would it not generally have a tendency to discredit the grades of the whole country when they pay little attention to what section of the country the grade is shipped from?—A. It would very naturally do so.

Q. (By Mr. FARQUHAR.) Would not the establishment of Government inspection make a uniform grade all over the country—naturally tend to?—A. It should do so.

Q. And would it not give a better price for our cereals in Europe if they had the Government certificate back of them, and not that of an individual nor a corporation nor a board of trade?—A. I think that it would.

Q. (By Mr. A. L. HARRIS.) Even if it did not give a better price it would give satisfaction to the people who are buying it now?—A. I should hesitate slightly on the ground of feasibility just now. To my mind it is a question whether it would not be better to extend the system of compulsory Government inspection more gradually. Take, for instance, the dairy products, and first put that branch of the export trade on a satisfactory basis. In other words, introduce these reforms by degrees.

I want to say that of course the representatives in this country of foreign importers of grain are supposed to notify the importers whom they represent of any changes in the grading, and to give them exact information on that point, but it often happens that this is not properly done. The boards of trade themselves do not inform foreign importers of the changes. That is left to the representatives in this country of the importers, and there is often laxity about sending the proper information—at least so I have been informed on the other side.

In speaking of the damaged condition of the grain that arrived in Europe I did not mean to imply that it was exported in such condition. My own belief is that a very large part of the damage occurs on the voyage. In other words, I think that in many cases where cargoes are complained of in foreign ports the grain, when shipped from the United States, was in proper condition.

Q. (By Mr. KENNEDY.) We frequently hear of commission merchants informing shippers of produce that their stuff was received in a damaged condition, and that it is done for the purpose of cheating the farmer, the fact being that the produce more often is in excellent condition when received, but reported in a damaged condition. Is it probable that anything of that practice prevails on the other side in regard to our grains?—A. I have no doubt that there are unscrupulous people abroad, as there are all over the world, who will in some cases make unfair complaints of that kind, but I think as a rule that such cases are rare.

Q. Is it more difficult to ship shelled corn than it is to ship wheat in bulk?—A. It is more difficult. The corn gets out of condition more readily than the other grains, because its moisture content is greater. It is in the case of corn that most of the complaints have been made. Sometimes, when corn in otherwise perfect condition is loaded here in hot weather, the heat it has absorbed causes the grain to sweat and become moldy before it reaches the other side, and then the purchaser there naturally wonders whether that corn was in good condition when it was shipped. I believe, as I said before, that it is on the voyage that most of the damage is done. Much of the damage undoubtedly occurs in the case of bulk cargoes carried by tramp steamers. There are comparatively few complaints against corn carried by the regular liners, for as a rule the regular liners give greater attention to ventilation, and in fact to the care of the cargo generally. Ventilation is a very important factor in the shipment of corn. When shippers load corn into a steamer at a Southern port in hot weather, then batten down the hatches, and without any ventilation at all attempt to carry that cargo across the ocean, the chances are very strong that under such conditions some sweating will occur.

Corn is sometimes loaded into iron steamers without any protection against the heated iron sides. There should be some kind of a protection—either a board sheathing or a protection of bagging—against the iron sides of the steamer, for as she lies in port her sides above the water line naturally become very much heated by the sun, and when the corn is poured in and lies right up against these hot sides it is not strange that the contact with such heat causes it to sweat.

Then, too, corn is sometimes loaded into bunkers that are intended primarily for coal. Quite frequently on tramp steamers where they take a full cargo they load corn into one of the coal bunkers, which are, of course, amidships, and adjacent to the boilers. It is in these bunkers that I think much of the damage is done. The heat from the furnaces and boilers during the passage gradually works its way through the bulkhead, and it is not uncommon, where corn has been loaded in a bunker, to find it badly sweated, especially along the side of the bulkhead that separates the bunker from the boiler space. There the corn is often greatly

damaged. It is a question whether corn should be loaded in bunkers at all, owing to the great risk that is taken, or at any rate, whether there should not be some conditions attached as regards sheathing and ventilation. Even in the ordinary holds, remote from the boilers, unless ventilation is had, corn is apt to become heated at the top of the holds, more particularly during hot weather, because of the heat of the sun on the deck. That could undoubtedly be prevented by proper ventilation. The trouble with the tramp steamers is that they frequently go short-handed and do not have a sufficient force of men to attend to the ventilation properly. It is possible in fair weather to lift the hatches and let air into the holds where the corn is stowed, but that is often neglected. From my investigations I believe that if proper ventilation were provided a great deal of the damage that now results could be avoided. I understand that the steamers plying from Argentine ports carrying Argentine corn to Europe are now very generally equipped with ventilation facilities. That is a long voyage, and they have discovered the importance of ventilation; but it is unquestionably a fact that a great deal of the corn shipped from the United States is not properly attended to en route.

There has also been quite a general complaint against our corn abroad on the ground that it is too dirty. The foreigners say that in this regard it does not compare favorably with the corn shipped from other countries. They seem to think we are more careless, and that we take less pains to clean our corn than is the case in some other countries. It can not be denied that the corn frequently has a good deal of dirt in it, such as broken grains, pieces of cob, etc. When this occurs the danger of sweating is very much increased. The dirt fills in the interstices between the grains, thus excluding the air, and under such conditions heating naturally occurs much more readily. If the corn were cleaned more carefully before being exported there is no doubt that a great deal of loss would be prevented.

A few weeks ago I received a sample of some foreign materials that were discovered in a cargo of corn shipped from the port of Galveston, Tex., to the Free Port of Copenhagen. Mr. C. D. Hage, the director of the Copenhagen Free Port Company, forwarded to me a box containing quite a variety of metallic articles, including spikes, nails, bolts, screws, pieces of wire, foundry drippings, etc., and also other matters such as glass, pebbles, and the like, that were sent over there in a cargo of corn. [Producing photograph.] I had this material photographed, and I will hand you the photograph that you may see. The articles are shown at one-half their natural size.

Q. (By Mr. A. L. HARRIS.) Is there not danger of our grain being discredited the same as butter has been heretofore?—A. Such cases as this, of course, work very materially to the detriment of our export trade. The seriousness of this particular case will be better understood when I say that, supposing that the corn had been cleaned, the company there did not subject it to any screening, and it went out over the Kingdom of Denmark, carrying this material with it, and these nails and spikes, etc., got into the mills. If you will examine that photograph carefully, you will see that some of the spikes have been between the mill rollers and were flattened out. They did great damage to the milling machinery. The millers are holding the company liable for the damages, Mr. Hage writes me.

Q. (By Mr. KENNEDY.) That is taken from one cargo?—A. This was sent to me as a sample of material that was taken from corn sent from Galveston in one cargo. Part of that material was sent in to the company at Copenhagen by the millers.

This case shows that there is undoubtedly some carelessness. The foreign importers claim that the corn shipped as No. 2 sail grade should be much cleaner than a large part of it proves to be. The contract calls for a grain that is reasonably clean, and they naturally hold that that condition is not carried out in a case of this kind.

Q. (By Mr. FARQUHAR.) You do not know what the grade of this corn was when it was shipped?—A. I am sorry to say that in writing to me about the circumstances of this shipment Mr. Hage failed to state the grade that was certified to; but I have inferred that it was No. 2 sail grade, for several reasons: first, because that is the grade that is generally shipped to Copenhagen; and, secondly, because, if it had not been supposedly a reasonably clean corn, the company there would probably have put it through their own screening apparatus. That is, they would not have been justified in sending out an unclean grade of corn to their customers, and they would not have taken the risk of doing so. But I am sorry to say that Mr. Hage did not state that fact specifically in his letter, and I have not had time to ascertain.

It is a question where this foreign matter came from—where it got into the corn. I presume that this corn may have been simply blown without being screened; however, I do not know as to that. Some of this material was prob-

ably shoveled up with the corn when it was put into the shellers. Shellers are sometimes stationed out in the open field. The farmers bring up the corn in their wagons and dump it on the ground in piles, and then it is shoveled from the ground into the shellers. Foreign objects of a less size than the cobs readily pass through the shellers, and these objects would remain in the corn unless it were screened. It would appear, also, that the railway cars in which the grain was carried to the port furnished some of the refuse material. The cars are not always properly cleaned before the grain is loaded. The terminal warehouse or elevator may also have been at fault in this regard.

I want to say in reference to this case that affidavits were presented showing that the steamer had been carefully inspected before the cargo was received, as is the custom. The captain of the steamer made affidavit that the holds in which this corn was loaded were carefully inspected and were free from all foreign matter and in proper condition to receive the cargo. He had a certificate to that effect to show that this matter did not get into the cargo from the ship.

Q. (By Mr. A. L. HARRIS.) Are you through with what you desired to say on the subject of grain?—A. I spoke also of wheat, rye, and barley. I will just touch upon these.

Against our wheat complaint has been made abroad that it sometimes contains many unsound and burnt grains, more than would be warranted by the certificate of inspection, and also that it is sometimes deficient in weight. Recently a complaint came to the Department from abroad, alleging that some wheat had been received that did not come up to the weight called for in the contract by several pounds per bushel. I also have in mind a complaint made some months ago regarding a parcel of wheat that contained garlic to such an extent that it was necessary to reclean the entire lot before it could go into the mills. Some of the grain did get into the mills before it was cleaned, and produced, of course, a very unpleasant kind of flour.

Similarly, one of the complaints against rye imported from the United States is that it too frequently contains oats in considerable quantities, making it necessary to reclean the rye before it can be milled and made into flour. As the rye is imported for bread purposes, it is important to have it free from oats and other grain.

Our barley has also been complained about in some cases because of its dirty condition. An instance came to our notice where it was claimed that as much as 10 per cent of impurities occurred in a cargo.

According to the testimony of the foreign importers, the complaints made against American barley are mostly of recent origin. Some years ago American barley was held in high favor abroad. It obtained a market in Europe that was formerly controlled by Russia. But the importers say that within the last few years complaints against the condition of our barley have been numerous, greatly endangering our market, and the probability is that unless some measures are taken to secure more care in cleaning export barley much trade will be lost to us.

Regarding our grain export trade as a whole, I think I am safe in saying that the greatest obstacle to the maintenance and extension of that trade lies in the fact that our exporters do not always exercise proper care in cleaning the grain before shipment. In view of the increasing competition we are beginning to meet with from other grain-exporting countries, it is highly important that this ground for complaint should be speedily remedied.

Before dropping the subject of grain exports, I want to recur again to the matter of the certificates, and to repeat that it seems to me unfortunate that the certificates issued by our boards of trade should be sent out under the title of "official" inspection. [Producing certificate.] The term "official" in this case is undoubtedly misleading, and it is a question whether it would not be a wise thing to prevent further misunderstanding on that ground by prohibiting boards of trade and chambers of commerce from using the appellation "official" on their certificates. It is unquestionably a cause of much misunderstanding abroad.

Q. Do you think it conveys the idea to the foreign importer that it is a Government official inspection?—A. The foreign importer very generally believes that these certificates are issued by the United States Government. I have talked with many importers abroad who were under that impression, and who were surprised to learn that the United States Government was in no wise responsible for the certification of our export grain.

Q. (By Mr. FARQUHAR.) Does not nearly every single purchaser or Liverpool broker have his own agent in the United States here in our markets?—A. Many of the larger importers have their agents here.

Q. Those that are of any account at all?—A. Many of the large importers have

their representatives here, but these certificates, of course, pass into the hands of other buyers. The importers, in reselling their imported grain, sometimes base their contracts on the original certificate, and in such cases the secondary buyers have not the same means of ascertaining the real status of the certificate.

Q. The Government inspection would cover all doubts and would verify to the consignee or the factor or the commission merchant or the original purchaser or anyone that there was bona fide inspection here when put on board of vessels, subject, of course, to stand the transportation and delivery?—A. Yes.

Q. (By Mr. A. L. HARRIS.) Do you desire to go any further into grain?—A. One thing occurs to me that I intended to add in connection with the loading of grain. I said that it was a question whether corn ought ever to be loaded in the bunkers, since they were so close to the boilers and therefore so liable to become heated on the voyage. The same objection applies, of course, to the loading of grain in any of the holds that are adjacent to the boiler or engine space. In the distribution of the cargo the corn ought, when possible, to be loaded in holds that are remote from amidships.

Q. Would this trouble be obviated to some extent if the bottoms were controlled by Americans? You spoke a moment ago about the excellent facilities on land.—A. I have no doubt that it would be far easier to control the methods of transportation if we owned the ships. Does that answer your question?

Q. Yes; that is what I wanted.—A. Carelessness sometimes occurs as regards the stowing of grain with other merchandise in the same hold. A case recently came to my attention where a hold was partially filled with corn, and then upon that corn were stowed bales of cotton. Such a condition of affairs, of course, ought not to be permitted. It goes without saying that corn put down in the hold and then covered over completely with bales of cotton is going to sweat and become damaged. I speak of this case to suggest that there is a great deal to be considered in regulating the methods of shipping grain across the ocean.

Q. What have you to say in regard to the export of cotton?—A. The principal ground of criticism against American cotton in foreign markets is the poor packing. A great deal of our cotton is still baled in the old way. We ship it in large bales, weighing about 500 pounds, and much of it is put up in inferior baling materials. The damage that thus results is not so apparent in the United States as it is at the end of the journey across the sea. Our exporters do not seem to realize the conditions that our cotton has to meet in foreign countries. The packing is generally sufficiently strong to carry the cotton safely to the seaboard and to get it aboard ship, but when it comes to be unloaded in the foreign port great loss is apt to result. Under the rough handling to which the bales are subjected in the process of unloading from the ship's holds to the docks, the flimsy baling material becomes badly torn, and usually a large amount of cotton is shredded off and strewn along the docks. Such cotton is practically ruined, becoming waste cotton. The coverings of the bales are generally so badly damaged that before the cotton can be reshipped much patching has to be done, and often entire rebaling. Foreign importers naturally complain of this, because it subjects them to so much additional expense.

An interesting instance came to my attention while in Russia last summer where the insecure packing of American cotton resulted in a great deal of loss by theft. We send considerable quantities of cotton to Russia. Most of it is transhipped for the Baltic at such ports as Liverpool, Bremen, and Copenhagen, although within the last year or two some important consignments have gone direct to Russia, without transshipment. The United Steamship Company, of Copenhagen, has been particularly enterprising in its efforts to establish a direct service between the United States and Baltic Russia, and the boats of that company have recently been carrying cotton right through from New York to St. Petersburg. However, the chief part of the American cotton marketed in Russia still goes in the first instance to other European ports, where it has to be transhipped in order to be forwarded up the Baltic. By the time that cotton has been discharged at the Russian ports of Reval and St. Petersburg it is apt to be in very poor condition as regards the baling. From these Baltic ports it has to be sent overland by rail to Moscow, where the Russian manufacture of cotton goods is chiefly carried on. Owing to the numerous rents and tears that occur in the bale coverings because of the poor baling materials, a great deal of the cotton is lost before it reaches Moscow. It generally goes there by slow freight, frequently with many stops, and I was informed that the peasants along the route sometimes steal great quantities of this cotton from the trains at night, pulling it from the damaged bales in large shreds, as they can readily do, owing to the insecure packing. In this manner the importers at Moscow have been losing so much of their consignments from America that they are now striving, as far as they can, to

replace our cotton with that produced in southern Russia. In the south of Russia they are beginning to grow American cotton quite extensively. Some years ago they secured American seed, and already they have had considerable success in the production of our upland cotton. They take great pains to bale it securely. They use a much smaller bale than the American, and pack it so tightly and firmly that no cotton can be lost or stolen from the bale. By such methods they are gradually establishing quite a trade at Moscow, to our loss.

I spoke of this case as a rather interesting one, illustrating how a trade can be injured by neglect in providing proper packing materials. Some of our cotton growers, in order to save a few cents on a bale, make it a practice to use the cheapest possible baling materials that will carry their product to the port. While such a short-sighted practice may result in a slight saving at the outset, it is certain in the long run to do great damage to our trade. Other cases, similar to that in Russia, as regards the poor baling of American cotton, have come to my attention abroad, and I think I may say that, generally speaking, our cotton export trade is in this respect fairly open to criticism. It is to be hoped that the more general adoption of the round or cylindrical bale will remedy this obstacle to our export trade in cotton.

I have mentioned the case of cotton especially because this product is decidedly our most important agricultural export, but it does not by any means afford the only instance of this kind. There are many other cases in our export trade where failure to give proper attention to the packing of the product is working to the detriment of the trade.

Q. Then the American producer and the American shipper, you think, suffer to some extent, owing to the imperfect manner in which the goods are sometimes sent from this country?—A. Yes.

Q. And greater care should be taken along these lines?—A. Yes; it is very important.

Q. It is a very general complaint among agricultural producers that little effort is made to secure a foreign market for their products. What do you know about that?—A. I think I may fairly say that, comparatively speaking, little effort has been made in the interests of the United States farmer as regards the exportation of his produce. The manufacturer seems able to accomplish more in this direction; he seems to have facilities for pushing his trade that the farmer has not had, or at least has not taken advantage of. I think it is true that more active measures have been taken to make a market abroad for American manufactures than for the produce of American farms.

Q. (By Mr. KENNEDY.) Is not that very largely because the American manufacturers push for these markets themselves?—A. Exactly. The manufacturer seems to be in closer touch with the foreign market than the farmer. He sends his representatives abroad, establishes his agencies there, and, speaking generally, there seem to be more facilities for the extension of trade in manufactures than there are for upbuilding the agricultural export trade.

Q. Manufacturers do for themselves the work which, if done for the farmers, must perhaps be done by the Government or some other agency?—A. There is a good deal in that.

Q. (By Mr. A. L. HARRIS.) Is it possible for the farmer, owing to his interests being in the hands of so many, to take up the subject of increasing his exports, like it is for the manufacturers, where large capital is invested under one control and they can send out their agents to look after foreign markets?—A. It is certainly not so easy, and I think the question that you have put discloses the secret of the difference.

Q. Have you any suggestions to make along the line of the extension of foreign markets for farm products?—A. I believe, first of all, that in the interest of the farmer the Agricultural Department ought to be provided with more liberal means to develop, as far as may be, by governmental assistance, the agricultural export trade. I do not think that enough attention has hitherto been given by the Government to that side of the farmers' interests. We have not done nearly so much as other agricultural countries have done. I spoke of the measures taken by the Canadian government. The appropriation that enabled the department of agriculture for the Dominion to inaugurate the measures I described amounted to \$100,000, which was certainly quite a liberal appropriation. The fund that was placed at the disposal of our own Agricultural Department to make experimental shipments of dairy and other agricultural produce was only \$25,000. The Australian colonies, like Canada, have also been liberal in appropriating funds to assist the farmer in finding a profitable foreign market for his produce. I feel that much more could be done for the farmers of the United States than has thus far been possible with the scanty means placed at the disposal of our Department for such work.

* I believe in the plan of sending abroad special agents, at Government expense, to study foreign markets. I think we should have a goodly number of agents abroad, working solely in the interest of our farm products. These agricultural countries I have mentioned all maintain such agents, not only for the purpose of studying foreign markets and the opportunities they afford for increased trade, but also for the purpose of studying the export methods of other countries. Canada sent her agents to Denmark—the Australasian colonies did the same—to gather information there as to the best methods of shipping dairy and other farm produce. Now that Canada is beginning to compete somewhat with Denmark, especially now that Canada is beginning to cut into the Danish bacon market in England, the Danes are sending agents to Canada to see if there is anything in the Canadian methods of production and exportation that would be an improvement over their own.

Q. (By Mr. FARQUHAR.) Can not the diplomatic and consular service do the whole thing properly?—A. With certain modifications of the diplomatic and consular service I think undoubtedly most of the objects could be attained, but I do not think it possible as the service is now constituted. I do not believe the consular officers can render the same kind of service that could be had from traveling agents.

Q. You mean the paid agents of the Department?—A. Paid agents of the Department, sent from the Department, if possible. We have tried the consular service, and it has not been altogether satisfactory for this purpose. In the first place, a consul is obliged to remain practically all the time at his place of business—at Hamburg, or Bremen, or some other city, as the case may be—and while he can watch in a general way the trade at a single port, he has to remain right there in order to attend to the routine duties of the consular office. Unfortunately, the course of trade can not be satisfactorily investigated by a man confined to a single place. In order to get a fair idea, for instance, of the butter export trade of Denmark, it would be necessary to travel over that country, to go from the creamery to the terminal warehouse at the port, and, in fact, it would be advisable to leave the port and accompany the butter on the steamer to its place of destination. This is the plan followed by these other agricultural countries that are sending out agents. The agents are instructed to begin at the beginning and to trace the trade to its final destination, in order to gain an accurate knowledge of all its conditions. The consular officers are necessarily engrossed a good deal of the time with the routine of the consular business. As a matter of fact, they can not always take the time necessary to make a thorough investigation of special inquiries sent to them. Furthermore, a consul is appointed to represent the United States trade interests as a whole, and when the Department of Agriculture, through the State Department, as is necessary, sends to him for certain information about a particular feature of the agricultural export trade, that consul may have on file in his office, and probably has, a number of requests from other sources that take precedence, and so the Department of Agriculture has to wait. The consul's attention is necessarily divided. He is not working in the interest of agriculture any more than he is in the interest of other industries, and that, of course, is a great objection from our point of view. It is very important for us to have men abroad whom we can direct and who can work under the Department's supervision. That is the reason why I feel that we never can expect from the consular service, no matter how much it may be improved, such results as other countries are getting from the employment of agricultural experts working in foreign countries. I believe that the employment of special agents of the Department abroad is the most feasible way of getting the information we want. By placing the right kind of men in competing countries and in countries that afford us most of our markets, we can undoubtedly gather information that will be of great value in extending our trade.

To supplement the work that can be expected from these special agents, I am in favor of appointing agricultural attachés to our embassies in certain of the most important countries. I am in favor of that plan because of our experience in one case, that of Dr. Stiles, who was stationed at Berlin as an agricultural attaché. Although nominally a diplomatic official, and having from the State Department an appointment as such, he was paid by the Department of Agriculture and was under the direction of our Department. His work was of great advantage to the Department. He traveled about over Europe, as occasion seemed to demand, following the instructions of the Department in order to investigate matters affecting our agricultural export trade, and in this capacity he rendered on the whole a most valuable service. His appointment was, of course, something of an experiment, but I think that it was eminently successful. It is my belief that a few such agricultural attachés, having a diplomatic status,

could be of great service abroad to our agricultural interests. Their diplomatic status would give them certain advantages over other agents.

Q. (By Mr. A. L. HARRIS.) They would be very valuable in studying the wants and tastes of foreign people also, so as to learn the proper preparation of our agricultural products for export, would they not?—A. That is, of course, at the base of our export trade. First of all, we must put up a product that will be acceptable in the market to which it is sent. It is of the highest importance to study the peculiar tastes and requirements of the various foreign markets in order that we may know what kind of a product to prepare for export.

I spoke of the Canadian bacon trade competing somewhat with the Danish bacon trade. The Danes have been preeminently successful in meeting the requirements of foreign markets, and especially of their great foreign market, the British market. Soon after the Danes had placed their export trade in butter on a sure footing, they began to reach out after a market for bacon in Great Britain. They studied the wants of that market and they produced a bacon that met those wants. In 1880 they exported about 18,000,000 pounds of pork, chiefly bacon. In 1890 they exported 65,000,000 pounds. In 1898, the last year for which we have their figures, they exported 135,000,000 pounds, sending most of it to Great Britain. In less than 20 years they developed a trade that now amounts in value to about \$15,000,000. They did so, as I said, by studying the requirements of the British market and meeting those requirements.

Q. Are there any other countries becoming competitors of American products along the line of studying the wants and tastes and methods of supplying those wants or tastes?—A. As the Canadian people followed the Danes in their methods of exporting butter, so they have followed them in regard to the bacon export trade—the two products naturally go hand in hand. Canada took the same measures that Denmark had taken to get at the requirements of Great Britain in that product, and the result is shown by the Canadian export figures. In 1890 Canada shipped of bacon about 7,000,000 pounds, chiefly to Great Britain. In 1899, within a decade, the Canadian exports amounted to nearly 112,000,000 pounds. Our own exports of bacon, of course, are enormous, but they do not show any such growth as I have just exhibited for Denmark and Canada. In fact, there seems to be danger of a decline in our export trade in bacon. We are beginning to feel seriously the competition of these other exporting countries. The first year for which our shipments of bacon were separately reported is 1881. In that year we exported 673,000,000 pounds of bacon, valued at about \$54,000,000. In 1890, we exported 532,000,000 pounds, valued at about \$39,000,000. In 1895, we exported only 453,000,000 pounds, valued at about \$38,000,000. Last year, 1899, we exported 563,000,000 pounds, worth about \$42,000,000. While our exports for 1899 were larger than those for 1890 and 1895, you will see that they were considerably smaller than our exports in 1881, which was about the time when the bacon shipments from these other countries were beginning to become prominent. Taking the record of 1899, we find that we sent abroad in that year over 100,000,000 pounds less than in 1881, about 20 years ago. It is a question whether in the years to come we shall not feel still more seriously the competition of such countries as Denmark and Canada, and also the Australasian colonies that are now beginning to ship bacon to England, unless we take some measures to adapt our product more closely to the requirements of the British market. The bacon preferred by the British nation is what is known as the Wiltshire bacon. It is different from our bacon in being much leaner and firmer. The objection to our bacon is that it is too fat, being a corn-fed bacon. It does not bring as high a price.

Q. They prefer a streak of lean and a streak of fat instead of all fat.—A. They like a leaner bacon than ours. The Tamworth and Yorkshire swine seem to be the preferred breeds for producing bacon for the British market.

Q. (By Mr. FARQUHAR.) Is not one of the reasons that we fatten our hogs too fast, and that makes a fatter meat?—A. Yes, they are too fat; that is the chief objection.

I was about to quote the import prices in England of the bacon received from the United States, from Canada, and from Denmark. In 1899 the average annual price of the bacon imported into the United Kingdom from the United States was about 7 cents a pound, the exact quotation being 6.96 cents. The average price of the bacon imported from Canada was 7.3 cents a pound. The average price of the bacon imported from Denmark was 10.6 cents per pound. In other words, there was a difference during 1899 of about 3½ cents per pound in favor of the Danish pork over ours, which is very significant. When you consider the fact that we exported last year 563,000,000 pounds of bacon, most of which went to Great Britain, you can readily see that even a slight enhancement in the price

would have meant an enormous gain to the American farmer. If the importance of this matter could be brought home to producers in the United States, so as to lead them to change their methods of production by selecting only the preferred bacon breeds and feeding the kind of rations that will produce the bacon most highly favored abroad, it would be a most profitable lesson, I am sure, for the farming community.

The case of bacon illustrates in a very striking manner, I think, the point that you just suggested about the importance of ascertaining and meeting the exact requirements of foreign markets.

Q. (By Mr. A. L. HARRIS.) I believe you have covered all the points that I have down here, Professor, together with suggestions as to the possibilities of the extension of our markets, and I do not know but so far as additional legislation is concerned. If you have anything further, however, to suggest in regard to any remedy for the grievances that you have mentioned, the commission will be glad to hear you.—A. I spoke quite fully of what Canada had been doing, and referred in a general way to what the Australasian colonies had attempted as regards governmental control of and aid to the agricultural export trade. I should like to mention a plan that has been adopted by New South Wales, one of the most progressive of the Australasian colonies, in the interest of the export trade. In 1895 the government of that colony appointed an export board, so-called—"Board for Exports" was the official title, I believe—to take under consideration plans for the development of a larger export trade in the products of the colony. The method pursued by the board was, at the outset, to hold conferences with leading representatives of the various agricultural interests, such as the dairying industry, the meat exporters, the grain shippers, etc. The leading producers and shippers of the various export commodities were called into consultation by the board and their opinions solicited as to the best measures to be taken to assist their particular branches of the trade. As a result of these conferences a great deal of valuable and practical information was elicited, and the board, on the strength of what it had thus learned, made certain recommendations to the government, which were afterwards carried out.

In a general way the measures adopted in Australasia correspond rather closely to what has been done in Denmark and in Canada; but, if anything, the Australasian colonies have gone even further than those countries in the direction of government aid and control. New South Wales and Victoria, I think, were the prime movers in the project to assist the export trade of Australasia by State intervention, but the other colonies have been quick to see the advantages of such a movement, and they are now adopting similar provisions.

One of the first things done by the Australasian colonies to facilitate their export trade was the securing of better transportation facilities by rail from the farming districts to the ports of shipment. Cold storage on the trains was procured, as it had been in Canada, and cold-storage warehouses were established at the ports of shipment where products could be safely kept until the time of sailing. Arrangements were also made with the steamship companies to provide regular sailings from the ports to the British market and to furnish refrigeration facilities on board. Another method taken by the Australasian colonies was the establishment of cold-storage depots and warehouses at London and other British ports. Several of the colonies have depots there for their products, under the management and control of government agents, who receive the produce as it comes from the ship, keep it in cold storage when necessary, and take measures for its proper disposal in the market. The establishment of these terminal depots has undoubtedly rendered great assistance to the Australasian export trade.

The colonies of Australasia have also adopted the policy of sending agents to study the methods of other exporting countries. Their agents have come to the United States to study our methods; they have gone to Canada to study the methods there; they have visited Denmark and other countries for the same purpose; and in each instance have reported to their own governments the results of their investigations. These colonial governments have taken pains to study the methods of other countries in order to follow them, as far as it seemed wise, in developing their own trade.

The Australasian colonies have also adopted one of the most important plans inaugurated by Denmark, namely, that of offering prizes for products put up in the best shape for export. The government furnishes the producers with careful instructions as to the kind of product, style of packing, marking, labeling, etc., desired for the export trade, and under these conditions, at stated intervals, contests are held, at which liberal prizes are offered for the products that best fill the requirements. This plan of offering prizes for superior export produce, and thus furnishing an immediate incentive to the producer, was a very important factor,

it is said, in bringing the export butter, bacon, etc., of Denmark up to a high standard, and the official reports from the Australasian colonies indicate that it has also been an important factor there.

Q. (By Mr. KENNEDY.) Do you believe that the adulteration of manufactured products in America is ruining the foreign markets for those products, and that these people that you speak about seeing abroad are thus taking advantage of it to gain those markets with pure-food products?—A. Wherever we are losing trade on the ground you mention, these other exporting countries are unquestionably taking advantage of the fact. When the inferior quality of one of our products causes it to find a less ready sale in a foreign market, our competitors are quick to grasp the opening thus afforded; there is no doubt of that.

And, generally speaking, I wish to say that the question of competition in regard to our agricultural exports has only of late been assuming such great importance. It has become a more vital question within the last few years because of these very measures that are being taken by competing countries to gain and control the foreign markets upon which we have hitherto depended. The measures that I have mentioned are all comparatively recent. Foreign countries have been doing more within the last decade than ever before in the way of pushing by governmental assistance the exports of their agricultural products. It is therefore important for us to take more active measures as regards our own exports if we do not wish to fall behind. The figures that I have quoted as to the exports of butter from Denmark, Australasia, and Canada, the exports of cheese from Canada, and of bacon from Denmark and Canada, are to my mind very significant, and should serve as a warning to our own producers who depend upon the foreign market.

Q. (By Mr. A. L. HARRIS.) You think the time is coming, if not here, that the Government may well take some steps in the way of extending and holding our markets?—A. I do most assuredly. I think it is time for the Government to give the subject more active attention.

Q. Have you anything additional that you care to suggest?—A. There is one thing further that I should like to say to the committee before closing. I do not wish to be misunderstood about my reference to the consular service. I do not want to underestimate the value of the services that the consular corps can render and does render. There is no question that the consular service as at present constituted is supplying a great deal of valuable information to our exporters. I think that the services of the consuls are, as a rule, decidedly valuable, but I have been impressed with the importance of adopting some additional measures, such as are taken by the countries with which we have to compete. I am in favor of sending out as foreign agents men specially qualified to acquire information regarding the agricultural export trade. I believe that experts along that line can add greatly to the service we are receiving at the hands of the consular officials. There are also some special advantages to be gained by having a few representatives in the diplomatic service—representatives solely of the agricultural interests. There are several cases, as you know, where agricultural attachés have been appointed by other nations. One case is that of Baron Herman, here in Washington, who was appointed by the German Government as an agricultural attaché to its embassy in the United States. His expert knowledge of agricultural matters makes him remarkably well qualified for the position, and he is undoubtedly rendering most valuable services to the German Government. Only a few days ago Baron Herman called at my office to present a similar attaché who had just been appointed by the Austro-Hungarian Government as an agricultural expert at Washington. Foreign agriculturists recognize the advantage of having, in addition to the consular service, special representatives abroad working solely for the agricultural interests, and I feel that it is important for us to adopt the same advantageous measures. We should avail ourselves of equal facilities, or better.

There is another thought that has just occurred to me. It is that a great deal can be done for our export trade through the medium of the various expositions that are held periodically all over the world. I believe that it would be profitable for the Government to take even greater measures than it has in the past to have at all such expositions an ample display of our agricultural products.

In answering the interrogatories of the committee, I have not pretended to mention all the measures that might be thought of to extend our agricultural export trade. I have simply endeavored to touch upon what appeared to be the most important features of the subject as suggested by your questions.

(Testimony closed.)

WASHINGTON, D. C., June 13, 1900.

TESTIMONY OF HON. MARTIN DODGE.*Director Public Road Inquiries, United States Department of Agriculture, Washington, D. C.*

The commission met at 10.35 a. m., Senator Kyle presiding. At 2 p. m. Hon. Martin Dodge was introduced as a witness, and, being duly sworn, testified as follows:

Q. (By Senator KYLE.) You may state your full name, address, and vocation.—A. Martin Dodge, director public road inquiries, United States Department of Agriculture. I am representing the United States Government at the present time on the matter of road inquiry.

Q. (By Mr. A. L. HARRIS.) You may state how long you have been interested in the subject of the improvement of roads.—A. Since 1891.

Q. How largely have you made the subject a study?—A. Well, I have been studying the subject continuously in connection with other matters from that time on. I published a pamphlet in 1891 that was the result of some former investigations made, but nothing so very definite until that time. Since that time I have been engaged partly on my own account and partly for the State of Ohio and partly for the United States. In 1893 I was appointed by Governor McKinley to represent the State of Ohio on the general matter of road improvement, and especially in reference to any changes that might be suggested in new methods of building, and application of new power or vehicles, and also the cost per ton per mile of moving by the usual methods prevailing in the country districts with ordinary vehicles and animal power. There never had been up to that time, I think, any statement or publication of the cost per ton per mile by animal power. We had through the railroads and through the transportation companies very accurate information with reference to the cost per ton per mile by the railroads and by the steamships, but I think there never had been a publication as to the cost by animal power. I took the matter up for the commission of Ohio at that time, partly for the purpose of comparison, to see whether there had been the same improvement in the means of transportation over the common roads that had been manifest by other means of transportation. The result of that investigation showed that the average cost per ton per mile by animal power was about 25 cents, but that the cost by steam power was only one-half of 1 cent. In other words, that you could carry fifty times as far at the same cost upon steam cars as you could upon the common roads; and further comparison also showed that a still cheaper rate prevailed upon the Great Lakes by steamship, and that a thousand miles could be reached at the same cost as 250 miles with steam cars or 5 miles with animal power; or, to put it per ton per mile, it was only 1 mill per ton per mile for moving upon the average on the Great Lakes, 5 miles upon the steam cars, and 25 cents per ton per mile upon the common roads with animal power. The investigation that I made at that time was the first official investigation ever made. Before that time I had made some investigation on my own motion, because I felt interested in the subject. I had had a very large experience in handling many of the products, and had acquired an actual knowledge of the cost, as I considered it, in my own experience, and I enlarged that to the experience of others by inquiry. I also ascertained at that time, through the Mexican minister, Mr. Romero, that the cost per ton per mile in Mexico was 26 cents, and I made use of that for comparative purposes, the result of which seemed to show that there was not very much difference in the cost of transportation by animal power in our own country and in Mexico. I perhaps have answered the question.

Q. In making this investigation what kind of road for animal power did you take into consideration?—A. I took into consideration all kinds of roads, from the poorest to the best, from the long haul to the short haul—all of the distances ordinarily covered; and that is why I took this matter of Mexico, because for a number of hundred years they had been transporting from Vera Cruz to the City of Mexico all of their imports to the City of Mexico, a distance of 273 miles, and it furnished a very good test of the cost upon the long haul. I also compared the cost of transporting over the plains before the railroads were built, and I found that it was fully as high on the long haul there. Then in the country I took the ordinary hauls, varying from 1 to 10 miles, and reduced it to tons per mile to get at the result. If you wish, I will give you the process in detail.

Q. We would like to know how you reached that conclusion?—A. Well, in northern Ohio where I live, it is a dairy country. The milk of the farmers, which is their largest product, is taken either to the railroad stations for shipment, or to

cheese factories to be made into cheese and butter. The contract is usually let to the lowest bidder to gather this milk in what they call milk routes, beginning at the most distant place and gathering it up as they approach the cheese factory. It was easy, by getting at the tonnage from the cheese factories and the prices, to reduce it to tons per mile, which I did in many instances, and the quotient was almost a constant factor, did not vary but a little; and then after the cheese was manufactured in these cheese factories it was hauled to the railroad station, and there also again was competition, and it was let under such terms that it was easy to convert it into tons per mile. Also in that country in the last decade there has been a great deal of timber sold and taken away, sometimes in the shape of lumber and sometimes as timber. In most cases it was hauled by the thousands, so much a thousand feet, but that was easy to convert into tons per mile, and having obtained these facts on the various kinds of roads and various distances, I deduced the result which I have stated. Then for the shorter haul, in the city of Cleveland entirely on paved streets, or nearly so, I confined my investigations to the heavy material, such as brick, stone, lumber, and building material, such as are furnished and delivered at so much a thousand, or so much a ton. Converting that into tons per mile I found that it was close to the same average.

Occasionally I would find that the rates were as low as 15 cents a ton per mile. That was the minimum. In many instances it would go 50 cents a ton a mile. Now, this that I speak of was not under any contract for full loads; but where there were partial loads, and very bad roads, it would go to about 50 and the average on the whole was about 25 cents per ton per mile. In 1893 I first published this result, which I believe to be the first table ever published in this country or anywhere, so far as I know, giving the rate per ton per mile of transporting on the common roads by animal power.

Q. (By Senator KYLE.) Have you made an estimate of the variations between the pioneer shipments on pioneer roads and those by modern, improved roads?—A. Well, I have not gone into that comparison so thoroughly as I did into the comparison between the average by animal power and the other forms of inanimate power. Those investigations have been made, however, and I am familiar with the difference. From 10 to 15 cents is the average cost over the best improved roads. According to the consular reports it goes as low as 8 cents in European countries.

Q. Per ton per mile?—A. Eight cents per ton per mile; but in this country I think it is somewhere between 10 and 15 cents. Of course you understand that we have a very small proportion of the entire mileage of good roads. It is estimated that only 1 per cent of the entire mileage of the country has been improved so as to make the sort of road that you now speak of.

Q. There would be that variation between the old Ohio turnpike road and the ordinary dirt road, 10 to 15 cents, very nearly, would there not?—A. Probably 15 cents a ton a mile.

Q. (By Mr. A. L. HARRIS.) You say you took into consideration good roads—that is, roads in good condition and roads in bad condition and at different seasons of the year?—A. Yes.

Q. How far have you considered the subject of propelling heavy loads upon the best improved roads by animal power? I mean to say, Which is the best system of roads?—A. Ordinarily, the best road is the stone road. That is to say, the best road that has ever been put into general use. I am not certain that it is the best road that can be produced. We are making experiments on steel-plate ways. It is very likely that an improvement can be made when steel is sufficiently low so as to permit its use for that purpose. That would result in a more durable road and a road that would require a diminished power to move the vehicle, and thereby reduce the cost of transportation a good deal lower than the figures I have given.

Q. Before you leave that point, I wish you would describe your steel-plate ways for roads and the cost, if you have an estimate.—A. Yes; I have a diagram showing the substructure and the superstructure, which I submit.

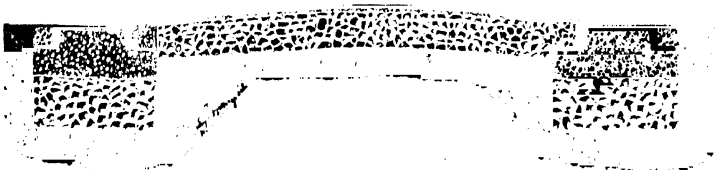


Diagram showing substructure and superstructure of steel-plate ways.

Q. I wish you would give us the substructure and the amount of metal, the kind and the width of the metal, together with the paving or whatever you use for the roadbed.—A. Well, the plate way is a very simple structure, consisting of two parallel plates a sufficient distance apart to receive the wheels of vehicles of ordinary gauge. They are 8 inches in width, with a flange upon the inside instead of the outside, so the lowest part will be on the outside instead of in the middle. Then there are projecting flanges that go below the surface and are embedded into a concrete foundation. This concrete foundation is only about a foot in width, or sufficient to receive the plate and to retain it and support it without any cross-ties or longitudinal stringers. There is no perishable matter used in connection with it, but only the steel plate itself with projecting flanges, and the concrete, which is laid in trenches about a foot wide and a foot deep. Two advantages of that plate way are: First, it is durable; it will last indefinitely; there is one case in Canada where a bridge has been equipped with plate ways of soft iron instead of steel, and it has been in use for over 30 years with very little wear. Second, the vehicle moves with much less power.

Q. What is the weight of this plate per yard, or per rod, or per foot, and its thickness?—A. It is about a quarter of an inch thick, and I do not now recall the weight per yard. It has passed out of my mind. I can, however, supply those figures exactly. The cost of it would be about \$3,500 per mile; that is, at the prices prevailing before the late increase. It would be more than that now.

Q. Is that cost just for the plate or for the entire road?—A. Well, that is for the plate. The additional cost of laying it would have to be added to that.

Q. What would that be?—A. It would cost about \$5,000 a mile, complete. The space between the rails has to be macadamized, and a space about 1 foot on each side, so as to allow vehicles to approach it and leave it without difficulty. The added cost brings it up to a higher price than ought to be put in, perhaps, for the country roads at the present time. I do not recommend the use of that at the present time, and I do not think it would be the most desirable except in level countries and where they may be destitute of other means or other materials for road use.

Q. (By Senator KYLE.) Your plan is to have this condition for cars propelled by animal power?—A. It is for the ordinary vehicle propelled by any power—animal power or other power; that is, an automobile or any vehicle used on an ordinary road would go the better on this road. The tables that I have seen published by Gilmore and other engineers say it takes only one-fifth the power to move a vehicle over steel that it does over the macadam roads.

Q. You could use animal power to haul a vehicle or you could attach a traction engine if necessary.—A. Yes.

Q. (By Mr. A. L. HARRIS.) Is this estimate upon a single track?—A. Single track; yes. The turnout is provided for the same as it is on the plank roads. You probably have seen the plank roads. We make on each side about 1 foot of solid macadamized roadway so as to take the wheels out of the plate way. You may turn off at any place the same as you can on the single-track road of any ordinary description.

Q. Does the wheel have any difficulty in going over this flange?—A. No, sir; we do not find any difficulty of that kind. We make the flange only about half an inch in height, and upon the inside instead of the outside, which makes it easier to leave the track than if it was on the outside. At the same time it is sufficient to give the vehicle, or the animal, more power in a longitudinal direction.

Q. Have you tested the difference in the power of propelling the same load, the same weight, over this steel-plate way compared with the ordinary macadam road?—A. Well, I made a test at Omaha in 1898 on the exposition grounds to show what weights could be hauled over this road. I did not make the other test, but I compared it with tests that were made by other persons, and especially in testing the strength of a wagon where they had hauled a very heavy load, weighing 11 tons, and where they required 10 teams to haul the load. That was not over a macadam road; it was over a common road. It took 20 horses or 10 teams to haul this heavy load over the common road, the way that they had. I took a load of equal weight and put it upon a train of 3 wagons. It took 3 wagons to get a sufficient space to hold a load of that weight, and we hauled it very easily with one small horse, showing a proportion of about 20 to 1 in the tractive power. Now that, I think, is about the real proportion that exists, from 20 to 25 to 1. That is according to Gilmore's tables, and other experiments, I had known about this difference. The purpose of the experiment there was to show by object lesson how small a power really is required to move a vehicle on the best road that can be produced. It is very remarkable to consider how much more power is required to move over rough roads and over soft roads and over

hilly roads than is actually required to move over a smooth, straight, and level road. There is a difference of many fold in favor of the improved road.

Q. (By Senator KYLE.) Were the 20 horses able to pull this load of 22,000 pounds up hill and down, or was it on level ground?—A. Now, I did not see that test made. That was made by the Studebaker Wagon Company. I took their results. I did not see them make it, but I have the photographs that were preserved from that work as it was done before. I do not think it would have taken so many horses to move it on a level. I think they must have put on enough to move it over grades.

Q. The question came to me whether one small horse was able to move this load over any sort of a hill whatever.—A. No, I do not think it would be able to move it except on practically a level. That is, the same power would not move it. Now, this horse, I stated, easily moved it. We were all surprised to see how easily a small horse not only moved it, but started it. It takes a good deal more power to start a load than it does to move it afterwards. I believe that an animal could move fifty times its own weight. That we did not quite demonstrate, but this was about twenty-two times his weight—what was moved there. It is likely a strong animal would move fifty times its own weight. I call your attention to the fact that ordinarily the vehicle that you see moved only carries a weight about equal to the team that moves it. A team that will weigh a ton will only move about a ton; that is what you see for a load. A heavier team will move more, of course, if everything is favorable; but a load double the weight of the animals is a very large load, and you will seldom see it if you look out here or go into the country. Bear this rule in mind. You will find that the load carried is about equal to the weight of the animals that move it.

Q. Including the weight of the wagon and load?—A. Well, I do not now include the weight of the wagon; no, I do not include that, and neither did we in these experiments. The weight of the vehicle was not included. It is the net weight I speak of.

Another thing I will call your attention to. Very commonly the vehicle itself weighs about as much as the burden it carries. In other words, there is almost as much dead weight carried as there is live weight. Now, I think that is an error that can be overcome. That is to say, an improvement of the road beds will lead to an improvement of the vehicle by which it will be lightened in proportion to the burden it carries, and thus will be diminished the power required to move it.

Q. (By Mr. A. L. HARRIS.) Have you made investigation as to lightening the vehicle?—A. Well, I have made some observations and I have made some experiments. Of course what I speak of now about a change in the vehicle is a matter of the future, and may be considered experimental, but I have a profound impression to the effect that the cost of moving materials over the highways is excessive and unnecessarily high, and I spoke first of all of the fact that it figured out at the rate of 25 cents per ton per mile. I also have noticed that there has not been much of a reduction in that price covering a long period of time. Two generations ago it cost almost as much as now, and the fact that the cost remains at such a high and constant factor without change, compared with the very much reduced cost by other means, has led me to think that we could make an improvement which would help the people in the rural districts very much along all of these lines, and that is why I suggested the plate-way as one means. And then in reference to the vehicle a change should be made. The bicycle carries a good many times its own weight. That is the only vehicle you will see anywhere that carries many times its own weight. Now, if what has been done in that respect could be applied to a 4-wheeled vehicle, that would give a very great gain. I have made some experiments with models only so far, and I can say that I have produced models that would carry 20 times their weight, and I believe it is possible to make a 4-wheeled vehicle that will easily and safely carry 10 times its weight, and with the improvement of the roadbed so as to get some part of the possible gain there, together with a change in the vehicle so as to diminish the proportion of dead weight, there would be such a gain as would take off a large proportion of the cost. I estimate four-fifths of the present cost could be saved. Estimating it now at 25 cents per ton per mile, I think it can be reduced to 5 cents per ton per mile. That would then be ten times what it costs on the average for transportation on steam cars. I think that can easily be obtained.

Q. (By Senator KYLE.) Your investigations have been based upon the estimation that the roadbed was to be level? In other words, your estimation of \$5,000 a mile for the construction of this track was to make a level roadbed practically level?—A. Well, no; the cost of making the roadbed would not increase by reason

of the grade, but the power required to move up a grade would have to be increased.

Q. The point I wanted to bring out was this, whether you would, in the road bed that costs \$5,000—whether you would make cuts and fills?—A. No; that was not included; cuts and fills. I was going to say my purpose in making this demonstration was not to show or recommend that the load should be increased for 1 horse up to 11 tons, but only to show that the ordinary load of 1 ton, or 2 tons, or 3, or even 4 tons, could be moved with greatly diminished power, and then you may add again the necessary quantity of power for the grades. Perhaps you would have to double for the grades. My idea was to increase the loads somewhat and decrease the power somewhat—bring the two together. An 11-ton load would be too much of a load. You would not want to move that much. That used to be the full load for a steam car. We do not need to reach such a heavy load as that.

Q. In the fall season of the year, when the roads are solid and the farmer delivers his grain, with a good heavy team, he is able to pull up an incline of 30 degrees, probably 2 tons. That is a pretty heavy load for 2 big horses, yet I have seen them do it up an incline of 30 degrees. Now, how many tons could 2 good horses pull on a steel track up the same incline?—A. We do not get an equal gain on the grade that we do on a level.

Q. A farmer's good team can pull up an incline 2 tons. How many tons can the same horses pull up an incline on a steel track?—A. Well, I would only have to estimate that. I did not make a test upon a grade, but I do not think it would be over 50 per cent more on that steep grade. We have no means to diminish the power required to raise vertically the weight. It takes the same power to raise the weight. The aggregate power, in connection with the time required, would be the same. We can not diminish that, but we can diminish the rolling friction and the sliding friction. That is, we can eliminate the sliding friction and diminish the rolling friction so as to greatly diminish the power required to move on an ordinary level or grade. When it comes to a steep grade, we do not gain proportionately.

Q. The question is, where the economy comes in to the farmer. He would be compelled in any event to use the services of two horses and a man to haul his load of grain to market, and in case he used the improved track you mention the 2 horses would still be required, would they not?—A. No; we do not suppose he would take a larger load at any point than what he could take over the most difficult point; but ordinarily the grades are light in most of the country; at least in two-thirds of the country the roads can be made nearly level, so that with the extra energy of the horses up a small grade he can get along without doubling.

Q. Would it not be more economical to bring the roads to a grade so long as you are entering upon a public enterprise?—A. Well, of course we do recommend that it should be brought to a 3 per cent grade, if possible, but 5 per cent could be very well gotten over. I want to call your attention to the fact that I do not recommend the use of this steel plate-way except in level countries where they would be destitute of other materials to build their roads of.

Q. (By Mr. A. L. HARRIS.) You do not recommend the plank road, but you do recommend the stone road. Will you please give the commission a little information as to the best way of building the stone roads that you have in mind?—A. I did not say that I recommend the stone road for all purposes. You asked me what was the best road produced. I say that is the best road. It may be too costly to be used in some cases, and there are many cases where there is no material whatever with which we can make it. I do not necessarily recommend that, but I say it is the best we can produce, and the best way to produce it is according to Macadam's plan. That is to dispense with any foundation, so called, of large stones; to prepare the earth in proper form, and then cover it with angular fragments of rock that have been reduced to uniform size, or nearly so, and when they are so reduced and properly spread upon the roadbed under pressure with moisture, they will consolidate and form practically one sheet of rock impervious to water. The ancient theory of road building was to prepare a heavy foundation similar to what might be used for buildings; that it was necessary to sustain the burden to have some very heavy substructure, and there was a great deal of cost and unnecessary labor put into these substructures, which engineers always recommended up until the time of Macadam. He seemed to make the discovery that the angular fragments of rocks when reduced to a uniform size would consolidate without any mixture of other substances or without any filling; that they would, by a mechanical process, work one upon another under pressure and moisture, and consolidate together in such way as to fill the interstices, so that in time the mass would become solid. That served a double purpose—one of mak-

ing the roads smooth and durable, and another of throwing the water off. The three greatest difficulties we have in making the road are the frost, the water, and the grade which you speak of. Now, by this method of building the stone road out of the angular fragments we keep the water off, and also make a hard smooth surface. There are many improved methods of handling the stone, crushing, spreading, rolling, and consolidating, which have reduced the cost of producing these roads somewhat, although the cost is high yet. The State highway commission of Massachusetts that have been building for the past 4 years or more, report a cost of upward of \$10,000 per mile for their roads in sections where material is very abundant, and they have all of the best means of producing, but they have never been able to produce them at lower than \$10,000; generally cost more than that, although that includes, as I understand it, some necessary grading and the reduction of the grades to a reasonable minimum. Two years ago I was representing the Government for a short time. There was produced down here in the State of Maryland, Baltimore County, about 2 miles or so, under our auspices, a road at a cost of \$2,500 per mile, completed, of trap rock, one of the best roads I have ever seen, and is still in perfect condition, and I have never known any road to be produced as good as that at that cost. One reason why we could do that, however, was because the material was right at hand. There were old stone fences distributed along on each side, and there was no grading to be done, to speak of, no hills to be reduced, and by using that stone with the improved methods of crushing and spreading, we produced the road for about \$2,500 a mile, which is the best I have seen anywhere.

Q. Have you anything to suggest as to the most economical way of procuring labor to construct these roads?—A. Well, yes. In answering that question I would like to elaborate upon the necessity of our securing in some way a method to cheapen the cost of roads in order that we may provide a perfect system. I have already stated that only about 1 per cent of the entire mileage of the United States has been improved to anything like a degree of perfection. Ninety-nine per cent of the entire mileage is still practically unimproved. Now, considering the high cost that I referred to as being necessary to produce a high grade of road, either of stone or of steel, we know very well that we can not improve all this great mileage up to that high standard with any amount of means, or money, or labor that is obtainable. It would take an army of men, more than enough to conquer the world, and it would take a revenue more than would be required to pay and supply the armies of the world; so we know, in order to make a system complete, that we must devise means which shall cheapen the cost in some way, and the only two ways that we know of are to diminish the necessary mileage to reach the people, and then to diminish the cost per mile of building. The necessary mileage can be reduced in two ways. In the first place, the introduction of the electric cars or other cars propelled by inanimate power can be so multiplied as to serve a great many people and do a great part of the service which heretofore has been done by animal power, and by so doing it shortens the haul. We do not have to go as far with horses as we would have to do if it was not for the improvements that are reaching out. I ought to mention in this connection that the concentration of population within the last two decades has a bearing upon the subject, and will necessarily have to be considered in the improvement of the highways. We probably can't change the system as conceived and laid out. The pioneers who laid out the roads in our Western country put them about a mile apart. In the Southern States they are not so near together, but there is a very great mileage laid out with a view of accommodating a population that would be spread equally over the face of the country. Now, the change manifested in the concentration of population makes it necessary for the people raising products to take them to these great centers of population more than ever before and not to the industrial villages that were built up in the midst of rural communities. In order to bring about that result advantageously, new methods that I speak of are being brought in and it is entirely feasible to serve a great portion of the people without animal power at all. Also the increased advantages that come from this cheaper and better service will draw a portion of the remaining people to the better means of transportation. What has happened in reference to the concentration of people in cities I think will happen to those remaining in the country. We find many people still remaining in the country. These people will all be drawn gradually to these cheaper and better means of transportation that are being introduced and that we know are entirely feasible. I estimate that there will be 75 per cent of all the people living in cities and only 25 per cent remaining in the country, and this 25 per cent remaining in the country will most likely be drawn to the easy means of transportation or near the easy means of transportation, so that we can shorten the wagon haul from what it is now to a very much

shorter distance. I think that 5 miles will be considered the maximum and 2½ miles probably an average haul, and therefore that the mileage necessary to make a system of transportation so as to reach all of the people in rural districts can be built up by existing means, and the new means that we now have in reach. Now, by that method I think we can so shorten the mileage required as to make it possible to raise a sum of money sufficient to do it, and especially if we can diminish the cost per mile.

Now, particularly in reference to that matter of diminishing the cost per mile, I believe that we can utilize the prison labor of the country on this work. I have lately been in the South, where they have succeeded very well in utilizing a good deal of the prison labor for road work. In the State of New York they are now beginning in Oneida County, perhaps in other parts of the State, to utilize the prison labor, and in California they are using that labor. What I think is that the entire army of prisoners in jails, in State prisons, and also the United States prisoners, wherever they may be, could under a proper system be utilized either in working upon the road itself or in preparing materials to be used upon the road. It would not be necessary, in all probability, for us to take all the prisoners out upon the highways, maybe not any large proportion of them, but they could be employed in stockades, proper inclosures, to prepare the material, either broken stone where stone roads were to be used, or brick where brick should be used, or steel in case the steel plate should prove to be successful, as I hope and expect. So that probably more than half of our prisoners could be used just as they now are, in shops and inclosures, manufacturing these materials; and the rest of them, especially including those who were in for short terms of service, could be utilized in the actual construction. Now, I speak of this because it would be such a use of the labor as would add to the common wealth. As I understand it now, from my own investigations and the reports which I have read from your commission, there is no real gain to the country either in the various Commonwealths or in the nation at large by the application of this labor. It is complained of by manufacturers and by laboring men as a source of competition which they think is unjust and unnecessary. If it could be directed to the preparation of materials and the improvement of the roads it would obviate their objection, because it would be doing a work that is not done and that can not be done. Unless, as I said before, we can cheapen the process we can not improve all the roads. We must cheapen it. We must put them to do what nobody else can do, and I think it would not only obviate the objection—that is, so far as it could be obviated—but it would make a very permanent and substantial addition to the common wealth. You can work the prisoners a hundred years the way you now do, and there is nothing to show—no benefit, no increase. But you work them a hundred years, or a quarter of a hundred years, under the new method by which the entire army of prisoners could be employed under capable engineers and superintendents, with the improved machinery that we have for preparing material, and this very cheap transportation for taking it on the steam cars and spreading it at half a cent a ton a mile, and we will find that in a quarter of a century, or in a generation, it would make a remarkable addition to the common wealth, which would be lasting and at the same time would be beneficial to the prisoners.

You all remember, probably, when inmates of insane asylums were guarded very closely and confined in rooms, and the more violent ones put in strait-jackets. But the superintendents of these institutions at the present time find that by giving them more liberty it improves their condition of mind and they are enabled to perform useful service. They make many things, and they produce a good deal of the food that they consume in many of our institutions in Ohio. Now, there is every reason to believe that a similar treatment of the prisoners would have a beneficial effect upon their minds and that close guarding and confinement would not be found necessary.

I saw, in my observations in the South, prisoners working without any visible indications of restraint whatever. Of course there was one guard in the distance with a rifle, and a foreman of the gang that probably had a pistol in his pocket; but aside from them these men worked without any chains or balls or attachments or anything of that kind, and they worked as well as any free labor that I have ever seen, and I even thought better.

By talking with those that have them in charge, I find that they report almost the same thing that the advanced superintendents of the insane report—that by giving them a little freedom and by treating them as men in misfortune, and especially by giving them a reasonable rebate in service for good conduct, they have little trouble in their attempting to escape, and little danger. It takes no more guards, practically, and there seems to be no very great trouble in that regard.

Q. (By Mr. KENNEDY.) Was the national road built by free labor?—A. I under-

stand that it was. I have been looking up the history of the Roman roads. The Roman roads were built by slave labor and the soldiers. The Russian railroad to-day is built largely by the Russian army. I find that those peoples who have kept up large armies and have had large numbers either of prisoners or of slaves, or of men who were in charge of the State as employees, have generally put them upon the public works. The greatest works of antiquity have been produced in that way.

Q. (By Mr. A. L. HARRIS.) Will the soldiers of to-day work?—A. Well, I am not recommending that for fighting soldiers, but I have simply taken note of the fact that was unknown to me until lately, that some modern nations have taken the same view of it that the ancients used to take. I did not suppose that it was feasible, and I am somewhat surprised to find out that it exists at all; but the point I make is this: that it does not seem to be desirable, or even possible, for a nation to keep very large numbers of men without having them devoted to some useful work; and if it should happen that any nation is obliged to keep a very large army continuously on its hands during periods of peace, it would seem to be all right that they might produce roads as the Romans did, or as the Russian soldiers are doing to-day. Of course we have no such case as that. I only suggest it as being a part of the consideration of what should be done with public works and with men whose labor is at the disposal of the public officers.

Q. In regard to the working of convicts, if this help would not be sufficient to put the roads, or even a reasonable portion of the roads, in good repair, what have you to suggest for the remainder, after utilizing the convicts?—A. Well, I have already said that the mileage is so exceedingly great we can hardly hope to get a perfect system upon the entire mileage by any means that I know of. After availing ourselves of a composite system whereby we take advantage of those means that are produced without public aid, and the diminished distance that it will be necessary to haul after that system is perfected, as it is being, and the diminished necessary cost per mile, the addition of this labor is, as far as I am able to go, without recourse to taxation. Now, I think there should be three elements in that. I think that the locality where the road is built should contribute to its construction. For the last two generations the locality has borne the total cost. I guess nearly all the counties in Ohio, where they have had any improvement at all, have borne it in the immediate locality, not extending beyond the county limits and generally not beyond the township limits, and frequently not beyond the 1-mile or 2-mile limit. It has been a purely local matter. Where land is cheap, as it is getting to be now in most places, it can not bear the burden of building—that is, the entire cost of a stone road or any expensive road—so there must be some additional contribution. I think that the road itself should contribute to the extent of one-third of the cost, the State paying a third of the cost, and the United States Government a third of the cost.

Q. (By Senator KYLE.) You mean by the locality the county, do you?—A. No; I would leave that matter of locality to be determined by the judgment of those who live in the locality. If they think the county is the proper unit, let them contribute as a county; if they think the township is the proper unit, let them take that; if they think some temporary district is the proper thing, let them take that. In many of the laws passed in late years they have allowed two methods of initiation—one by the county commissioners by resolution, in which case they do it as the county; another, upon the application of petitioners, in which case the petitioners, or those for whom they stand, initiate the proceedings. If more than a majority on a certain road petition for it, then all those abutting upon the road have to pay. If they initiate in that way, then they do it with the understanding that they are to contribute a portion; if not, it falls to the county. In some cases it is divided again, 15 per cent paid by those abutting on the highway and the rest paid by those of a larger area. In my own county we raise \$100,000 taxes upon the entire property of the county, 80 per cent of which is in the city of Cleveland. Now, another thing about this raising of money. I have already referred to the fact that one-half of the population is found in cities and only half in the rural districts, whereas when the system was laid out, 2 or 3 generations ago, practically all the people lived in the country, and they bore the burden equally. Now, not only half the people are concentrated in the cities, but a good deal more than half of the wealth is concentrated there. In the State of New York 90 per cent of the taxable property is in the cities of the State and about 10 per cent only of the taxes is paid by those who live in the rural districts. If you still adhere to the old methods of making the locality bear the entire burden, you are undertaking to raise a sum of money that can not be raised. On the other hand, if you take in the county, or especially the whole State, as a taxing

district, you then get the property of the cities to contribute to the construction of the roads.

As I have said, in our county 80 per cent of the taxes is paid by the people living in the city of Cleveland; they do not object to it; they do not complain of it. In Preble County, Ohio, they have no great city. They have built many roads, and spent a good many hundred thousand dollars, and in Shelby County I believe more than \$2,000,000, without any great cities. In Hamilton County and Cuyahoga, where they have the largest population of any two places in the State of Ohio and the greatest wealth, they have built but few roads—almost none; none whatever in Cuyahoga County when they were building the road in Preble County. The time has come, though, when in these larger counties we are building roads, but we have adopted the system of taxing the entire property, including the city. We take the entire money, however, and spend it in the rural districts. Now, to even up on the matter of taxation, I claim it is equitable to do that, and it is necessary in order to raise the amount of money. So that with the prison labor, which is now a lost labor, devoted to this subject, and the distribution of the burden of taxation so as to have it rest upon all, we might raise a fund from which we could hope, in the course of 2 or 3 decades, to make a system which would give such means of transportation as would greatly lighten the burden of life, and would do away with at least some of the very great inequalities that are appearing in society. I have no doubt at all that the great fortunes made result very largely from the advantages that are naturally and properly taken of the increased means of transportation—the cheap means of transportation. Whenever you go to a community where they lack cheap means of transportation you invariably find that community does not have any very rich people; they are not able to amass a fortune; and when you go to those parts of the country where they have no means of transportation but animal power, they are universally and almost uniformly poor, almost poverty-stricken. We estimate the value of land by the distance that it is from cheap transportation. I believe that it is the high duty of government—State, national, and local—to turn its attention to this improvement, not only for the added value, but because it tends to place the people more nearly upon an equality as to the value of their property, the profits of their industry, and the rewards of their labor.

Q. (By Mr. A. L. HARRIS.) There is one question I would like to ask you, whether or not you have investigated the possibility of applying electricity to motive power on the common roads?—A. Well, yes; I have been for a good many years impressed with the idea that we must do something to overcome this very great inequality that I have referred to. In the first place I was surprised to find that it existed—being 50 times as costly to transport with the common method as with the cheaper method; and when I discovered that there had been but little improvement in two generations in animal power, my thought was to substitute some other power. And I was the first, I think, ever to suggest or at least to publish anything calling attention to the inequality that existed in this cost and to the possibility of making the substitution. I first thought that it might be universal, but whether that can be or not I do not think now that we are near enough to that period to contend for it; but I think the proper way is to work for a composite system, keeping them all along together, animal power and electric power and other inanimate power. Of course we have the steam car and the steamship; we have them highly developed to a remarkable degree, and I do not think there is any reason to complain of the results. Of course there is some inequality in the application, but I do not care to go into that now. The application of steam has proved to be wonderful in cheapening transportation by those two means, but in the other means and methods we have not made much progress, and we are now only just beginning to apply the other means. You ask as to electric power. That was the first power introduced that seemed to be applicable to help us out. I never thought it was the only power that we could rely upon, and I do not now think it is the best. It has been developed first and to the highest degree of perfection, but the trouble with electric power for our country use is that it takes too expensive a plant, and it takes a central power, it takes a trolley system, and the whole matter has got to be run as a great machine when you may have but comparatively little traffic to be passing at certain times. The great necessity is to have a vehicle that contains its own power, that can be run by the owner or attendant at his own pleasure, the same as he drives his wagon. Now, there is every reason to believe that different machines, propelled by different power from electricity, have already been developed to a sufficient degree to permit their introduction. The first great trouble was the excessive weight of these machines. If you will notice, they made them exceedingly heavy. There are some here now that weigh—well, they weigh 20 times, I guess, what they

carry—the net weight of one or two persons besides the driver that they carry; and the gross weight, well, it is so many times the necessary weight that I never have computed it. I repudiate all such schemes of helping us out with light transportation, because we must have a vehicle that does not weigh any more than it carries. As soon as you get a heavy vehicle you have got to make a heavy substructure to carry it, and when you get a heavy substructure, to make it durable, it runs up the cost so that it forbids the use on account of the necessary expense of it to the people.

Q. (By Senator KYLE.) When that day comes that you get the necessary vehicle, then, of course, the macadamized road is a necessity?—A. I do not limit myself to the macadamized road; I do not want to be understood as bound by that. I qualified my answer to that question as to whether I recommended it. I say that it is the best developed so far, but I believe we can very much improve upon that, both as to durability, as to the necessary power required, and as to the original cost. I think on all these things we can save, and yet, of course, I may be mistaken. That is the thing we are working out, but my information leads me to believe that there is a certainty of success in diminishing the cost, in making it more durable, and in diminishing the power required to run the vehicle. On all those lines I think we shall succeed.

Q. (By Mr. KENNEDY.) What effect is the introduction of these new road machines having upon the subject of good roads?—A. Well, you mean the new vehicles?

Q. Yes; I mean the new vehicles, the electric.—A. You do not mean road-working machines?

Q. No.—A. Oh, they are having a very powerful influence. I think. You see originally two generations ago, when the steam engine was first developed as a locomotive the thought was to move the ordinary small vehicles, only about three or four or maybe six in a train. They did not expect to make large vehicles. If you will look at the models in the museums or at the pictures in the galleries, you will find that the original plan was to take a large number of small vehicles that would carry perhaps six passengers, or a ton or two of freight, and make a train of that kind and put the steam engine on to draw several of them instead of having a power for each. They succeeded in developing the steam engine so as to draw heavier burdens than they thought they could, and then they made the carriages larger, and they have kept doing that right along up to the present time. That is really the embodiment of the entire evolution of transportation by steam cars; that is to say, two things—to increase the size of the vehicle and to increase the speed of the vehicle. That is the embodiment of everything that has been done; whatever else you see is subsidiary to that. Now, in consequence of their very great success, more than they supposed could be done, they dropped this original proposition of moving small vehicles, not because they could not do it, but because it was more profitable and more necessary and more beneficial to go ahead as they did, developing the high speed of the larger vehicles. That has been carried to such a point of perfection that it is marvelous beyond expectation. But the very thing that they started in to do two generations ago they are now taking up anew, and that brings me to your question about the effect that it has. The fact that they built these large vehicles, ran them so cheaply and so fast, made it undesirable to put the power of the nation or the State to improving the highways very much. It seemed to take the mind away from the idea of moving the small vehicles. But we still find that there is the necessity to use the small vehicle; the large vehicle going at a high rate of speed does not serve the people locally. It serves on the long haul both for freight and passengers, but for the short haul it is not suitable. You take a distance of from 5 to 10 miles and there is no cheap means of transportation existing to-day. Take the steam-car transportation. If you want to move anything 10 miles or 15 miles, when you take it with your horses to the car and load it and pay the high rate for the short haul and then unload it, the cost is just about equal to what it would be to haul the entire distance with animal power. We have not overcome that trouble, varying all the way from 5 to 25, and 30, and maybe 45 miles. Now, there is an unsolved problem there which can be brought out in these little vehicles that are now being introduced, and the effect of their introduction, about which you ask, is to stimulate everybody that has any connection at all with the matter, either as owners of property, producers of products, manufacturers of vehicles, or those engaged in the building of roads. Altogether they are working along the same line, and the prospect of very great results, beneficial to all classes, is much greater than it has ever been at any time.

Q. (By Senator KYLE.) I notice by this morning's mail that the League of American Wheelmen will make a demand both upon the Republican and Demo-

cratic conventions for a plank for good roads. That is the first time, I believe, it has assumed national importance?—A. Yes; that is true. I have communicated with a good many persons, and have in my office their suggestions as to what they would recommend to go in, and I am in favor myself of the national parties making some declaration. I do not think anyone yet can exactly formulate just where the line should be drawn. Of course, I have stated here generally that I thought it ought to be the three estates—that the General Government ought to do something, and the State ought to do something, and I think there is no doubt whatever, especially considering that they have this army of laborers that are looked upon now as a menace to free labor and to manufacturing, and whose labor is no benefit to the State in any way—I think the least they could do would be to contribute that.

Q. (By Mr. A. L. HARRIS.) The interest in good roads appears to be manifesting itself in different sections of the country, as I understand it?—A. Yes.

Q. Now, how is that being met, in the way of legislation, effectively? Is it by recommending commissions to investigate the matter in the different States where different conditions exist?—A. Yes; that is one of the most feasible ways. There has been and is yet a great prejudice in the minds of many people against the State or the nation taking up a matter that has heretofore been considered local; and it was properly considered a local question as long as animal power only could be used, because you can not go more than 8 or 10 miles and return with animals and draw loads as a general thing. So that it was proper enough to consider this as a local question as long as animal power was the only power. But with the new inventions, the substitution of inanimate power, the situation has changed economically and politically. The bicycle, which any person can own and use, is capable of going 100 miles a day, some more than that, and the automobile about the same way, and the suburban street cars going out 30 or 40 miles—have given us three new vehicles going upon the highway without animal power and for a long distance; so that changes the situation and in consequence of this change in economic facts and new inventions, I think it is a natural thing that there should be a change in sentiment. The Senator speaks about noticing the demand upon the parties; I also notice that the President of the United States, for the first time in two generations, in his last annual message to Congress brought this matter up; and also there was introduced by Senator Penrose a bill in the Senate, authorizing an appropriation of a large sum of money for this purpose. This idea which has prevailed so long—for two generations—to the effect that it was a local question, is still holding its course in the minds of many people, and they are not in favor of any declaration—not in favor of anything being done now to overcome that. I have been a little reluctant myself to go about it, and really I am pretty well satisfied that the best way we can do is to proceed by States, and that each State should have a commission. The State of Ohio had a temporary commission but it was not authorized to proceed to construct. The State of Massachusetts has a permanent commission; they are constructing and have been for 4 years or more, and I will give you some of the results. The State of Maryland has within the year appointed a commission, and they have made a very elaborate report; and I mention that they reported on the cost of transportation 26 cents a ton per mile. That is the latest report. I made the first one at 25, and in Mexico I got from the Mexican minister, 26. General Stone, my predecessor in office, made an estimate based upon inquiries in 1,200 different counties, at 25 cents; and the Maryland commission has brought in its report at 26 cents per ton per mile; so it seems to be verified—the very high cost that has been maintained.

Now, I believe, in answer to your question, that the best way we can do is to have the States take their own course about the matter, and where they are willing to do it to make their investigations. I have received within the last two or three days a letter from a Senator from Washington, through the Secretary of Agriculture to me, asking that we send an expert to that State to study the conditions there for 2 or 3 months and report to the local authorities what would be the best course for them to pursue. He says that they are willing to take the matter up, and their intention is to do something through the next coming legislature; but in order to get the best information that has been derived from the various sources he has written and requested that an expert be sent there to stay 3 months and to give them the results of the inspection of materials, and also what we may know about the best application of law and of finances, etc. I speak of that to show that there is an inquiry not only in regard to various initial points where most has been done by the leading States and at the office here by the Government, but where they have nothing at all they are asking for information. I went to Florida within a month on a very urgent request of members of Con-

gress and leading citizens interested in the improvement down there, and it seems that there is an inquiry pretty generally both North and South and East and West with a view of ascertaining what can be done to combine the elements economically, financially, and politically, and, of course, when I say politically I mean the power of the State and the Government, generally speaking. I feel very certain that the old idea of leaving all this matter to the political authority of a small locality, like a township or a district within a township, is a thing of the past. I believe the burden is too great and the difficulty too much to be overcome by the local authorities alone. I think they have done very well, the best that could be done in the past, but for the future it seems to me that they are not able to do it. Of course, they are not able to tax anybody but themselves, and when half the wealth and people have gone into certain centers, and when it has become a matter of general concern instead of local concern; when people with automobiles, locomobiles, bicycles, and all of these various means of locomotion want to go out a hundred miles or two, it is but just and necessary that they should contribute to the improvement of the highways. And we have no complaint whatever from any of the cities when we levy taxes for this purpose. I have never known of a complaint.

The most remarkable case that I know of is in our own county where, as I said, 80 per cent is paid by the city of Cleveland, and I have known of no complaint of that tax where it is so largely paid by the city, for they know that they need to go out about as much as the people outside need to come in. I look for a solution of this question along these lines and I am greatly encouraged. I hope that the Republican convention at Philadelphia will make us a favorable declaration. I do not urge them to make any very definite one, or to commit the Government to the old national road idea, but that they should look with some favor on this, and see that it is not only useful and beneficial, but that it would be just and equitable on this account; that they have all along for generations contributed millions and millions and millions of dollars to aid transportation on water by canal, by deepening harbors and rivers and the water communication between the Great Lakes, and then on the Western railroads they gave subsidies of lands and credit to aid in cheapening the transportation there. So that on the long haul, both over land and water, the Government has been very liberal, and I think, very wise. I have no complaint to make about it, but I do say that there has been a universal inequality on the part of the United States and on the part of the various States in reference to the improvements of the highways. We have fallen behind, and we are behind other countries. I do not think so much behind as some people make out, because in estimating the real advancement, I judge by all roads. I include all roads, the steam roads and the electric roads, and all that as forming a system which gives us a particularly cheap method after all. What we need is to supplement existing means and to overcome these very high rates that have remained high so long, and as a result I may say that we shall overcome a good many of the inequalities that have made the agricultural regions hard up as I think.

Q. (By Senator KYLE.) Is it not becoming common generally for street railroad companies to extend their lines far into the country?—A. Yes.

Q. Especially in almost all thickly populated counties?—A. Yes.

Q. Would it not be possible for farmers to utilize these tracks in some way under some system of franchise?—A. Yes. In 1891, in the pamphlet I referred to, I published a system showing how that could be done; how the farmer's products could be taken in on these tracks running through the country at any time and through the city only in the nighttime. Now, all the machinery of the street railroads in all the great cities after midnight is practically idle, and the streets are practically vacant. My recommendation at that time was that these roads be extended and that they be authorized and required to carry food products—that is, those perishable products that go to market from day to day—upon these cars. Let them be brought up to or near the city limits any time during the daytime and there held until say midnight, and then when the passenger traffic was over let these cars be taken through the streets of the city and to the various markets and commission houses and depots and wherever they might be stored, and the contents offered for sale the following day; the next night the cars to be returned empty and another set come in. Now that system, I hoped, would be introduced by public enterprise and aided the same as the canal system was, but I have given up that idea and I think the only way to do it is by private enterprise and that the public part of it shall be confined to these tributary roads, as I said, where the short haul would only have to be projected for 2½ to 5 miles. That will so diminish the wagon haul that I believe it would be possible to make a system that will accommodate the people.

Q. You might cause the street car companies to haul nonperishable products and all that just as well, so that the company would furnish the cars and all the farmer would have to do would be to furnish a sidetrack at his own farm?—A. Yes; I have no objection to that. I have only stated what I recommended as a very necessary thing, because the perishable products must get to the markets. They have to go there in some way. Many people object to carrying on the street car these perishable products that are marketed and transported to different places. I have no objection to it myself; I think it is desirable and probably will be found to be necessary; and the vehicle which I spoke to you about, of which I have a model, carrying twenty times its own weight, is produced with reference to that very service. I hope to be able to offer that by the time the Buffalo exposition comes off next year; I hope to be able to have models of that to show at that exposition what can be done in that way.

Q. The question occurs to me from the fact that these franchises are being given away by the farmers of all the counties in all the States in every year, without reserving any privileges for themselves, as far as I have discovered, except the privilege of paying their fare the same as anybody else.—A. I think that is the universal case with the exception of Ohio. I foresaw this at least six years ago, and being a member of the legislature I had a law passed in the State of Ohio that authorized the use of all such tracks for such a purpose, and also requires every existing street railroad company in the State to pass these cars with their contents and all products and passengers and everything that is produced in the country, over the city road upon the best terms and conditions that they shall secure for themselves.

Q. And that is the law they operate under now, by which the farmers send their milk cans into the city, is it not?—A. Yes; there was some objection. The people who gave these rights of way originally treated the street car as a personal service to take the place of the carriage, and it was natural and proper and just enough at that time for the owners—that is, a majority of the owners of the property on a city street—to decide whether they desired that conveyance; but when we now want to go further out and substitute these new means for the old superannuated means, it is another question to some extent, and I hold that the owners of abutting property ought not to be authorized or empowered to forbid the use of the street for the general purpose intended by this use, in our cities and through the country. I think it has succeeded pretty well in the city of Cleveland; but in Cincinnati—I think they have got them by the throat down there. They are carrying passengers in the city of Cleveland farther than any other place in the world for a small sum. They are carrying about 16 or 17 miles for a single fare on a transfer, and on the straight haul about 9 miles.

Q. (By Mr. A. L. HARRIS.) What State has the best road laws?—A. That depends. I think the State of Ohio has had the best road law for the past in producing roads with reference to the local idea. I believe we have had the best there was; but with the new idea based upon the changed conditions of population and wealth and longer distances to be covered, I do not believe our laws are so suitable now as some others. I think New Jersey may have. That is a small State, and they have a law that divides the cost of the improvement between the State and the locality, and they seem to be very well pleased with it and are producing wonderful results. The State of New York has lately passed a similar law. The State of Massachusetts, however, is the only State that has a law requiring the entire State to bear the burden of improvement. I believe even in their case that a proportion of the grades is made by the locality. If they desire to reduce the grades I think the locality bears that, but the improvement is borne entirely by the State. It is the old idea of the State road that they once had in Ohio. You know we have some State roads in Ohio, but there is nothing left of them but the name. There was a time when the State had jurisdiction and the plan was to build and maintain those roads for public purposes with the State's money.

Q. (By Mr. FARQUHAR.) Has not New Jersey the best roads of any State in the United States?—A. I do not think they have. They have the best talk on the road question because they were the first State to revive road building. In the State of Ohio, before you ever heard of any roads in New Jersey, we had built up a system far superior, and a single county in the State of Ohio—that is, Shelby County—had spent more money before ever you heard of any roads in New Jersey than they have ever spent in New Jersey. Under the new system of State aid New Jersey has probably done most, and I say in reply to your question that it is possible for present conditions and the conditions we are entering upon now that their plan is the best. It has been talked up very generally and imitated by your State to quite an extent. A good many people do not know, and perhaps you did not, that we have better roads and more of them than they have in all these States—I

will put in New York and Massachusetts and New Jersey altogether. They are the only three States that have done anything. Put them all together and they have not done much about it yet. It is an old thing and we do not say much about it in Ohio.

Q. Is it not generally talked that New Jersey has the best roads? Have you not found that that is the general idea outside of that State? Now, you take from Philadelphia to New York; you can get a road there for the finest carriages and teams, a clear, level road, as smooth as a billiard table, as the expression is down there. Now, do we have any such roads in New York and Ohio?—A. We have roads being built in Ohio just as good, and we have had them right along. New Jersey being a small State, they are able to put them through the whole State; but our State being a large State, we have done it by counties, and we have done more in one county than they have in the entire State. We have put our roads a mile apart, thinking that the population would be equally distributed, and one part was entitled to have as much as any other, but with concentration of population and wealth it has become necessary to make the through roads. I will say that on the whole the system as they have it in New Jersey is the best. Nature has done a good deal to make New Jersey level.

Q. Do you think the law providing for roadmaking is a better law than the State of Ohio has?—A. I believe I have stated that for the future I am willing to concede that.

Q. (By Mr. A. L. HARRIS.) In the event that we recommend something, we want the best State law that we can recommend to the legislatures of the different States?—A. Well, the New Jersey State aid law is the first of the State aid laws since the revival of road building, and it is considered to be the leading law and has been pretty generally imitated; but it is claimed that the law of New York State is a little bit of an improvement on that—substantially the same thing; but it is claimed that they have amended it in a small way so as to make it a little more applicable. It is virtually the same thing with some slight amendments, what they call the Higbee-Armstrong law, drawn, I believe, by Mr. John A. C. Wright, of Rochester, proposed two or three times before it was finally passed, and is claimed to be the best. But let me say in that State also they have passed a constitutional amendment that forbids the use of prison labor in the ordinary way for manufacturing commercial articles, and they are in such shape that I believe they have got to back up their law on prison labor, and they may become the first State in road building as they are in population and wealth.

Q. Was the Ohio law, in the days when they were building pikes so generally, applicable to all portions of the State alike?—A. Oh, no; in northern Ohio we have never built any under it at all.

Q. Did they in the southeastern part of the State?—A. No. It was suitable for a fertile, homogeneous territory.

Q. (By Mr. KENNEDY.) What do you think of the oyster-shell roads around Baltimore?—A. They are nice, but not very durable.

Q. (By Mr. FARQUHAR.) Have you noticed lately a report from one of the trade papers of London that there is a great trucking company in London that is using automobiles, and that they use 50 of these automobiles, and they reported that they have saved in 12 months in the difference of horses, feed, men, etc., 21 per cent?—A. I did not notice that, but I can well believe that it is probable and attainable. We are going to make rapid changes. I just feel it.

Q. (By Mr. KENNEDY.) I thought perhaps the oyster-shell roads were finer than anything you had in Ohio or in New York.—A. They are very nice, indeed, but they are not sufficiently hard to be durable under heavy traffic. They have to be replaced. They are very nice.

Q. (By Mr. A. L. HARRIS.) Have you any general statement, Mr. Dodge, that you desire to make that you have neglected that would be in the interest of the cause of good roads?—A. I think I have covered mainly the general thought that I had in mind. Of course the question touches almost every industry, and I would like to make this statement: that population, like everything else, moves along the line of least resistance, and the better roads form lines of less resistances than poor roads, and on that account where you find the better roads and better methods there you will find the greater numbers of population, and where these greater numbers are there the greater wealth will be, and the power of labor itself is increased by better modes of transportation. There is a general increase not only in the power of production, but in the value of land, and it has a more powerful influence on the location of the people than almost anything else.

Mr. KENNEDY. I should like to suggest that Mr. Dodge be invited to select what he considers the best State law in regard to roads, and make such additions and amendments to it as he thinks proper, and submit it to the commission for their consideration.

The WITNESS. I would be very glad to do that.

(Subsequently, viz, July 24, 1900, Mr. Dodge, in a letter to the secretary of the commission, said: "I send you copy of the Higbie-Armstrong act as passed by the legislature of New York March 24, 1898, which I recommend as the most suitable State aid law yet passed by any State." A copy of the law referred to follows:)

AN ACT to provide for the improvement of the public highways.

Became a law March 24, 1898, with the approval of the governor. Passed, three-fifths being present.

The people of the State of New York, represented in senate and assembly, do enact as follows:

SECTION 1. The board of supervisors in any county of the State may, and, upon presentation of a petition as provided in section two hereof, must pass a resolution that public interest demands the improvement of any public highway or section thereof situate within such county, and described in such resolution, but such description shall not include any portion of a highway within the boundaries of any city or incorporated village, and within ten days after the passage of such a resolution shall transmit a certified copy thereof to the State engineer and surveyor.

SEC. 2. The owners of a majority of the lineal feet fronting on any such public highway or section thereof in any county of the State may present to the board of supervisors of such county a petition setting forth that the petitioners are such owners and that they desire that such highway or section thereof be improved under the provisions of this act.

SEC. 3. Such State engineer, upon receipt of such a resolution, shall investigate and determine whether the highway or section thereof sought to be improved is of sufficient public importance to come within the purposes of this act, taking into account the use, location, and value of such highway or section thereof for the purposes of common traffic and travel, and after such investigation shall certify his approval or disapproval of such resolution. If he shall disapprove such resolution, he shall certify his reasons therefor to such board of supervisors.

SEC. 4. If he shall approve such resolution, such State engineer shall cause the highway or section thereof therein described to be mapped, both in outline and profile. He shall indicate how much of such highway or section thereof may be improved by deviation from the existing lines whenever it shall be deemed of advantage to obtain a shorter or more direct road without lessening its usefulness, or wherever such deviation is of advantage by reason of lessened gradients. He shall also cause plans and specifications of such highway or section thereof to be thus improved to be made for telford, macadam, or gravel roadway or other suitable construction, taking into consideration climate, soil, and material to be had in the vicinity thereof and the extent and nature of the traffic likely to be upon such highway, specifying in his judgment the kind of road a wise economy demands. The improved or permanent roadway of all highways so improved shall not be less than eight feet nor more than sixteen feet in width unless for special reasons, to be stated by such State engineer, it is required that it shall be of greater width. He shall, if requested by the resolution, include provision for steel plate or other flat-rail construction in double track.

SEC. 5. Upon the completion of such maps, plans, and specifications such State engineer shall cause an estimate to be made of the cost of construction of the same and transmit the same to the board of supervisors from which such resolution proceeded, together with a certified copy of such maps, plans, and specifications, and of his certificate of the approval of the highway or section thereof so designated as aforesaid.

SEC. 6. After the receipt thereof, upon a majority vote of such board of supervisors, it may adopt a resolution that such highway or section thereof so approved shall be constructed under the provisions of this act, or of any existing act, and thereupon shall transmit a certified copy of such resolution to such State engineer.

SEC. 7. In case the boundaries of such proposed highway shall deviate from the existing highway, the board of supervisors must make provision for securing the requisite right of way prior to the actual commencement of the work of improvement.

SEC. 8. Upon receipt of the certified copy of the resolution provided in section six, such State engineer shall advertise for bids for two successive weeks in a newspaper published at the county seat of such county, and in such other newspaper as shall be deemed of advantage for the construction of such highway or

section thereof, according to such plans and specifications, and award such contract to the lowest responsible bidder, except that he may in his discretion award the contract to the board of supervisors of the county or the town board or boards of the town or towns in which such highway lies, and except that no contract shall be awarded at a greater sum than the estimate provided in section five. But if no bid otherwise acceptable be made within such estimate, such State engineer may amend his estimate, certify the same to the board of supervisors, and upon the adoption by it of a resolution as provided in section six based on such amended estimate, proceed anew to obtain bids and award the contract as herein provided. Such engineer may reject any or all bids, and before entering into any contract for such construction he shall require a bond with sufficient sureties, conditioned that if the proposal shall be accepted the party thereto will perform the work upon the terms proposed and within the time prescribed and in accordance with the plans and specifications; and as a bond of indemnity against any direct or indirect damages that shall be suffered or claimed during the construction of such road and until the same is accepted. The people of the State of New York shall in no case be liable for any damages suffered. Partial payments may be provided for in the contract, and paid in the manner herein provided when certified to by such State engineer to an amount not to exceed seventy-five per centum of the value of the work done; twenty-five per centum of the contract price shall be retained until the entire work has been accepted. Whenever a county engineer has been appointed in the county in which such highway or section thereof is to be constructed, he shall have general charge and supervision of the work under the direction of such State engineer and shall report to him from time to time the progress of the work and such facts in relation thereto as may be required. If there is no county engineer, such State engineer shall have some competent person to superintend and have engineering supervision of the work.

SEC. 9. One-half of the expense of the construction thereof shall be paid by the State treasurer upon the warrant of the comptroller, issued upon the requisition of such engineer, out of any specific appropriations made to carry out the provisions of this act. And one-half of the expense thereof shall be a county charge in the first instance, and the same shall be paid by the county treasurer of the county in which such highway or section thereof is, upon the requisition of such engineer; but the amount so paid shall be apportioned by the board of supervisors, so that if the same has been built upon a resolution of said board without petition thirty-five per centum of the cost of construction shall be a general county charge and fifteen per centum shall be a charge upon the town in which the improved highway or section thereof is located, and if the same has been built upon a resolution of said board after petition as provided in section two thirty-five per centum shall be a general county charge and fifteen per centum shall be assessed upon and paid by the owners of the lands benefited in the proportion of the benefits accruing to said owners as determined by the town assessors in the next section hereof.

SEC. 10. The town assessors of any town in which any highway or section thereof has been improved or constructed pursuant to petition as provided in section two of this act shall have power and it shall be their duty, upon receiving notice from the board of supervisors of the county in which said town is located of the cost of construction or improvement of such highway or section thereof in such town, to assess an amount equal to fifteen per centum of said total cost upon the lands fronting or abutting on such highway or section thereof. Such assessment shall be apportioned according to the benefits accruing to the owners of the lands so located, according to the best judgment of said assessors, and the assessments so made when duly attested by the oaths of such assessors shall be collected in the same manner as the general taxes of such town are collected.

SEC. 11. The construction and improvement of highways and sections thereof under the provisions of this act shall be taken up and carried forward in the order in which they are finally designated, as determined by the date of the receipt in each case of the certified copy of the resolution provided in section six by such engineer as hereinbefore provided.

SEC. 12. Upon the completion of such highways or sections thereof so constructed by such engineer, and his acceptance of the same, and after payment has been made as herein provided, such engineer shall inform the board of supervisors of such county that the highways or sections thereof designated have been constructed as herein provided and his duties in regard to the same are finished; and he may serve notice on said board to accept such highway thus constructed, which notice shall be filed in the office of the clerk of said county; and twenty days after the service and filing of said notice such highway or section thereof

shall be deemed accepted by said board of supervisors of such county, and thereafter they shall maintain the same as a county road and apportion the expense as they may be empowered by law.

SEC. 13. All persons owning property abutting on such road so improved, or residing thereon, shall thereafter pay all highway taxes assessed against them in money, in the manner now provided by law.

SEC. 14. Whenever any county has had aid in building any such highway and it seems advantageous to such State engineer that a section or sections of highway, not exceeding one mile in length, should be constructed under this act to connect these roads together, and would be of great public utility and general convenience, he may serve notice on the board of supervisors of such county, and shall file one in the county clerk's office, designating the highways already constructed and the existing termini and the section or sections, in his opinion, necessary to be constructed, and his reasons therefor. And it shall be the duty of the board of supervisors to provide for the construction of such connecting highway or section thereof within one year after the service and filing of such notice under this act.

SEC. 15. In addition to his other powers and duties, the State engineer and surveyor shall compile statistics relative to the public highways throughout the State, and shall collect all information in regard thereto deemed expedient. He shall investigate and determine upon various methods of road construction adapted to different sections of the State and as to the best methods of construction and maintenance of roads and bridges, and such other information relating thereto as he shall deem appropriate. He may be consulted at all reasonable times by county, city, town, or village officers having care and authority over highways and bridges, and shall advise such officers relative to the construction, repair, alteration, or maintenance of the same, and shall furnish such other information and advice as may be requested by persons interested in the construction and maintenance of public highways and shall at all times lend his aid in promoting highway improvement throughout the State. He shall hold in each year at least one public meeting in each county and shall cause due notice of such meeting to be given. He shall cooperate with all highway officers and shall assist county and town authorities and when requested by them furnish them with plans and directions for the improvement of the public highways and bridges.

SEC. 16. He shall report annually to the legislature concerning all the work performed by him, together with such recommendations upon the subject of highway construction and maintenance as to him shall seem appropriate.

SEC. 17. The commissioners of highways and town board of any town, and the board of supervisors of any county, and all other officers who now have or may hereafter have by law the care and supervision of the public highways and bridges, shall from time to time, upon his written request, furnish him with all available information in connection with the building and maintenance of the public highways and bridges in their respective localities.

SEC. 18. The operation of this act shall not be affected by any special act, but the highways may be improved under this act or such special act wherever the same may now exist.

SEC. 19. This act shall take effect immediately.

(Testimony closed.)

WASHINGTON, D. C., January 15, 1901.

TESTIMONY OF MR. MICHAEL P. MORAN,

President National Grain Growers' Cooperative Association.

The Commission met at 10.55 a. m., Senator Kyle presiding. At that time Mr. Michael P. Moran appeared as a witness, and, being first duly sworn, testified as follows:

Q. (By Senator KYLE.) Please give your name, post-office address, and vocation.—A. My name is Michael P. Moran, of Graceville, Minn. My occupation is and has been that of a farmer for 40 years.

Q. You are summoned for the purpose of giving testimony upon agricultural topics in general, and more particularly, perhaps, on the question of grain production and farming in the Northwest. You may proceed in your own way and state to the Commission your views upon the subject.—A. I have prepared for you a few papers upon the topics of agriculture which will be interesting at least to the

farmer. One of these papers is as to the cost of raising wheat for a given period of years; another is as to the price of wheat for a number of years; another on transportation and elevators and combines and the result to the farmers; also a paper on text-books that our people believe ought to be introduced into the school for the education of the youth; also one upon the Nicaragua Canal and its effect on farmers and the sale of wheat. Knowing how valuable your time is, I will either read all these or submit them without reading them, and then answer each and all questions that are put to me to the best of my knowledge and belief.

Q. You would probably better proceed in your own way, taking the subjects seriatim as you suggest them, and either state them orally to the Commission or read them as you have them prepared. We can ask questions from time to time to make matters more clear, if necessary.—A. (Reading):

Cost of wheat raising.

Average cost for 11 years of raising an acre of wheat per year in Bigstone County, Minn.

Plowing stubbles	per acre ..	\$1.00
Dragging	do .....	.15
Drilling or seeding	do .....	.30
Cutting or binding, including twine	do .....	.75
Shocking	do .....	.15
Stacking	do	1.00
Threshing	do .....	.60
Hauling to market from 3 to 7 miles, per bushel .....		.03
Interest on land, worth \$20, at 7 per cent per annum		1.40
Tax, including road tax .....		.30
Seed, 1½ bushels, at 60 cents .....		.75
Total		6.43

Average yield per acre for 11 years	bushels ..	10
Average price for No. 1 Northern for 11 years	per bushel ..	.60½

There is usually 2 cents per bushel difference between No. 1 and No. 2, and the same difference between No. 2 and No. 3. This would make an average per bushel of \$0.58½. There are still lower grades and correspondingly lower prices, such as "rejected" and "no grade."

No. 1 Northern wheat averaged the following prices for the month of October for each of the past 11 years at the local markets of Graceville:

	Per bushel.		Per bushel
October, 1890	\$0.76	October, 1896	\$0.55
October, 1891 .....	.84	October, 1897 .....	.72
October, 1892 .....	.56	October, 1898 .....	.53
October, 1893 .....	.52	October, 1899 .....	.55
October, 1894 .....	.49	October, 1900 .....	.65
October, 1895 .....	.44		

Q. (By Mr. FARQUHAR.) How do you account for the small price per bushel from 1892 to 1896?—A. The climate has a good deal to do with it.

Q. The successive seasons for 3 years?—A. Yes. For instance, last year was extraordinarily dry and had the effect of producing a very small crop. In 1895 we had the largest crop we have ever had there, for the season seemed to be very favorable, and hence the large crop that we secured. (Continuing reading):

Average number of bushels of wheat raised per acre each year in Bigstone County, Minn., for the past 11 years.

	Bushels.		Bushels.
1890	11	1897	10
1891	12	1898	8
1892	7	1899	8
1893	6	1900	6
1894	10		
1895	24	Total	110
1896	8	Average	10

Q. (By Mr. A. L. HARRIS.) Is yours an average county?—A. Yes; I would judge our county is about an average of several counties around there.

Q. These figures are the average for your county?—A. I give them for Bigstone County, though I think the figures would apply to the adjoining counties also.

Q. (By Senator KYLE.) State the geographical location of your county.—A. The city of Ortonville is about 190 miles almost directly west and a little north of St. Paul.

Q. You adjoin Dakota at Bigstone Lake?—A. Yes.

Q. (By Mr. FARQUHAR.) Is that yield of an average of from 8 to 12 bushels the result of continual cropping of the same land?—A. Yes; continual cropping of the same land.

Q. You use no artificial fertilizer, compost, or anything of that kind?—A. Not so far; we have not used any. We consider our land fertile enough so far.

Q. What is the character of your soil?—A. Dark loam.

Q. (By Senator KYLE.) How do those figures compare with those of the previous 10 years?—A. They were pretty near the same; there is very little difference. I think these figures would compare very well with those of the previous 10 years.

Q. I wish to bring out whether there is any falling off in the average for 10 years from the breaking of the virgin soil.—A. After the breaking of the virgin soil in our country the crops appear to be very low the first year, as compared with the second, and the second, as compared with the third, but from the third crop they are fair. They have been a pretty fair average with the exception of particularly good years, such as 1895, which gave us a larger yield.

Q. (By Mr. FARQUHAR.) Is it profitable farming at 10 bushels an acre at your average price for the last 10 years?—A. No; the more wheat we grow the poorer we get. We call ourselves getting richer by the increase in the value of our lands as other people settle in around us. That increases the value of our land, and as their children grow up their parents begin to buy up adjoining land and settle their children thereon; so the land increases in value.

Q. (By Mr. LITCHMAN.) Has there been any attempt to diversify crops?—A. Yes; we are beginning to diversify crops there lately. We are compelled to do so for the reason that the wheat does not pay. In former years wheat averaged a better price, and thus we got a better living from it; but as years pass by wheat seems to depreciate in value, and hence we are beginning to diversify our farming, seeding down with timothy and clover, raising more stock, and putting out the manure on the land, and raising a little more corn than we used to raise. In former years we were under the impression that in that part of the country corn could not be produced, but we found we were in error and that we can raise a very fair crop of corn there.

Q. With wheat 59½ cents a bushel on the farm, what would be the probable quotation at Minneapolis?—A. There is usually a difference of 10 cents a bushel between the price paid in Graceville and the price paid in Minneapolis; that is for freight rates, elevator charges, commissions, etc. Now may I read another paper? (Reading:)

The free text-book.

As one of the most practical means of distributing the most practical and universal knowledge of farming, I would advocate the compulsory use of a text-book on practical farming.

I would advocate that the General Government should ask specialists to prepare a brief article on every subject connected with farming, commencing by showing the pupil the importance and extent of the industry of agriculture as the greatest thing in the world, etc.; how honorable it is; how near it is to God and nature; how important it is to understand the mysteries of nature and apply them with intelligence; to learn the character of the plant he sows, its roots, its composition, its seasons, climatic conditions, etc. I would have each chapter deal with some element of intelligence in farming, such as manure, fertility, diversity of crops, vegetable and animal industry, statistics of crops raised, prices, markets, exports, and features of this kind, which would be so arranged with illustrations that the pupil would be able to fix these thoughts well in his mind and use them in after life with intelligence and advantage to himself and the industry of agriculture.

I would ask that this text-book should be furnished through the General Government, under the direction of the Department of Agriculture, to be used in the country and village district schools and in as many town and city schools and colleges and universities as possible.

I would also advocate a more generous government aid to State agricultural colleges and experimental stations, that their usefulness might be extended and those institutions improved.

My views are that the tendency is, when the boy arrives at the age of maturity, to depart from the farm and seek employment in the city. There is nothing in our school text books that would show to the farmer's boy the nobility of his calling and the greatness of the enterprise that his father is engaged in; that the agricultural industry is the greatest of all industries in our country, and that there are fully one-half of the people of the United States engaged either directly or indirectly in agriculture, producing the enormous amount of \$4,000,000,000 of wealth per annum. Yet, alas! the farmer's boy, instead of being proud of his occupation seeks to throw off the yoke, as he calls it, and take himself to the city to enjoy, as he calls it, city life, and get away from the drudgery of the farm. I must confess it is a great inducement for them to get away from the farm, for the hours are long and tedious, working from early dawn to dark at night, and often into the late hours of the night for a very small remuneration. He is deprived on the farm of good clothing, of reasonable hours for leisure or pleasure, and has to be deprived of school to work on the farm during the busy times of seeding and harvest.

Q. (By Mr. A. L. HARRIS.) Do you belong to any organization that advocates a change in the school system in your State?—A. Yes: I have the honor to belong to the Grain Growers' Association, composed entirely of wheat growers, and I have also the honor to be their president. We have them scattered in the wheat belt very extensively. We also encourage through this organization the erection of farmers' cooperative grain warehouses. We have a number of these already in existence. We held a convention in Fargo a year ago last winter, and we had a great gathering there. The opera house was filled from cellar to garret. We had very prominent men there to lecture to the farmers, among them was Mr. James J. Hill, president of the Great Northern Railroad, and he delivered a very instructive lecture to the farmers. I must state here that in former years the farmer looked upon Mr. Hill as one of his worst enemies; now, from his meeting with them at these public meetings and talking to them, the farmers seem to have changed their views to a great extent, and they look upon Mr. Hill to-day as the friend of the farmer.

Q. (By Senator KYLE.) For the record, state what is his official capacity.—A. He is president of the Great Northern Railroad.

Q. And of the Northern Pacific also?—A. I do not know about that.

Q. (By Mr. A. L. HARRIS.) Has the course of study that you suggest been introduced into your schools?—A. It has not been introduced so far. Strange to say, in our country schools farming is scarcely mentioned. There is nothing in the schoolbooks to encourage a boy and to show him that he is a member of the great agricultural class, and hence there is nothing to stimulate him or train his mind to look on the occupation of his father as being honorable, just, and above suspicion.

Q. (By Senator KYLE.) You speak of the tendency of young men to leave the farm when they come to their majority; is that tendency increasing, do you think?—A. It is increasing; I am sorry to have to publicly announce that it is increasing.

Q. In your opinion, do they better their condition by leaving the farm?—A. In my opinion they do not. In my opinion they make matters worse. They seem to forget their training when they go to the cities, and fail to make for themselves a home, as they would have made if they had stopped on the farm. No matter how humble and degraded we are as farmers, we look with pride upon our home (though unfortunately very often we have a mortgage on it; I am sorry to have to confess that, but still we are in hopes of wiping that mortgage off) and we are ready to defend it with our lives.

Q. Now, you say if they had remained at home they would have acquired a home?—A. Yes.

Q. Whereas by going to the city they have failed to acquire a home?—A. Yes.

Q. Do you think it is possible for the farmer's son to acquire a home by remaining on the farm?—A. Yes; for the reason that when the father dies he can not carry the soil away with him and naturally it must belong to somebody, and he will leave it to his son if he has but one, or divide it up among them if he has more than one.

Q. I wished to bring out whether the opportunities of the young man to acquire his home are as great as they were 25 or 30 years ago?—A. I do not know that the opportunities are as good. For my humble self, I thank my country for having a home. I never owned a foot of land until my Government gave me a homestead; and I own that yet and will leave that to my family; so there is a chance for the young man if he remains on the farm.

Q. I am not speaking particularly of the homestead. Suppose he has to buy his

is mostly logs, lumber; and minerals. Some common cattle are driven from these divisions and find a market in the blue-grass section.

Q. Have you any mining interests in your State?—A. Considerable; yes, both in the western section and in the eastern.

Q. Coal?—A. Coal mining, and some iron mining—principally coal, though.

Q. (By Mr. PHILLIPS.) Any petroleum?—A. Yes; there is some very profitable development in petroleum in those mountain regions.

Q. In what section is that—the western part or the eastern part of the State?—A. I might say in the southern part. And there is one field—about the best field we have—in Wayne, Cumberland, and Barren counties, along the Cumberland River. There is also a large field developed in the eastern part of the State, next to West Virginia.

Q. (By Mr. A. L. HARRIS.) Do you diversify your agricultural industry in Kentucky?—A. We do, to a very great extent. We grow corn, wheat, tobacco, hemp, barley, rye, oats, blue grass, orchard grass, timothy, and corn, and around our cities we have quite a section given over to potato growing. We revolutionized the seed-potato business there. About 20 years ago, when I was agricultural editor—a young agricultural editor—I heard of a system in vogue near our city that was new to me, and no one else had ever heard of it, and it never had been written up. I got into a buggy and went out to investigate it, and I found a couple of Germans there growing potatoes. They could beat everybody. Their potatoes were superior in appearance; they were 10 days or 2 weeks earlier; there was a different growth of vine, and yet they were the same variety that was well known then, one of those early varieties, the "Early Rose." I investigated their method and found that they were planting the immature seed instead of the mature seed. They would dig up part of their potatoes—the Early Rose would ripen with us in July—and expose them to the sun for a while and then put them in a shady place, and then take them and cut them up and plant them again right in midsummer, say the 1st of August. By the time the frost would come the tubers would be about one-third grown, and the frost would kill the vines. They would then take them up, and the next spring they would cut them up and plant them again. No one else did that. These Germans would always be in the market and ship north 10 days earlier than any other growers. I could not account for their success in any other way except that the potato is not a seed. The seeds of a potato are grown in the ball on top of the plant. The potato itself is not the seed; it is a tuber, an enlarged root only. The only theory by which I could go (then there had been no scientific investigation) was that when the seed formed the root itself was ready to go into decay, and therefore if you kept that from July on to the next spring there was so much decadence that it was not as vigorous as the root would be if taken up and planted again and perpetuated without making the seed. That was the only theory there seemed to be about it, and I advanced that theory and had a great deal of discussion about it; but I predicted then that whilst thousands of barrels of potatoes were shipped in from western New York and Michigan to our section the discovery would revolutionize the business, and that seed potatoes would go the other way. This prediction I lived to see verified. For a great many years they have grown seed potatoes and shipped them to the North, and they never let them get over one-third of their growth. Now, if you plant a whole potato of this second growth there will only one shoot come from it. If you plant a matured potato where the vine has been allowed to mature, a bunch of plants will come up. The vines of second growth will come up as thick as your finger in rich land, and will produce from 5 to 8 tubers instead of 8 to a dozen, and of the 5 or 8 nearly every one will be merchantable. They are smoother, rounder, and some 10 days earlier. The discovery revolutionized our potato growing there, and made Jefferson County a very large potato-growing county. The seed goes North thence instead of coming South. All around our cities they grow a good many potatoes. They all used this second-crop seed. The only change they have made in the method is that now they take the potatoes up in July and hold them in cold storage until the next year to plant for second crop instead of planting the tubers of the same year.

Q. To what extent is your State interested in raising blooded stock?—A. Kentucky has always been celebrated for its stock. For many years we held the record for the fastest horses, the best whisky, and the most tobacco.

Q. Do you include cattle?—A. Cattle. We had the largest herds of cattle, but in later years we have been outdistanced by the West. We are, however, keeping up our interests and still have some of the finest Shorthorns, Jerseys, Herefords, Polled-Angus, and Holsteins. Kentucky is the headquarters for a breed of horses that we are establishing—an American breed. General Castleman and many Kentucky, Missouri, and Illinois breeders have been interested in it for the

last 10 years—the American saddle horse. We have got it to the front, and we are largely sustained by Missouri and Illinois, and nearly all the States have taken them and have herds of them. It is a resurrection of the old blue-grass saddle horse that was famous in the 40's and 50's. You could get on his back and go with perfect ease anywhere. During the trotting fever this horse almost disappeared from sight. We picked up the remnants of the breed and brought them together. We have now nearly 4,000 of them registered and are breeding now along certain lines to perpetuate that old Denmark strain in others.

Q. Is that interest confined to any particular section of your State?—A. No; it is all over it, except in the mountainous region.

Q. (By Mr. CLARKE.) Please describe that horse.—A. I wish I had some photographs of him. One passed through here yesterday that it would have done you good to see. He came on the same train I did, by express. General Castleman shipped him to New York to be sold there; and there were several others; a carload of them went through. They are very stylish; they range up to 15½ or 16 "hands" in height; they have long slender necks; are usually of bay or brown or other deep rich color; the tail sets high; their limbs are clean; they have sloping shoulders and short backs, and are well ribbed. They are active, but not what you would call fast horses. They can rack along at a 3-minute gait—a good one; but they have a slower pace, the running walk, which we think is the best gait.

Q. Are they light steppers?—A. Light steppers; yes. They are nimble footed; do not move you in the saddle. I see a man go through town often on one of those horses at what we call the running walk, similar to the fox trot. He will go at a gait of 6 miles an hour, which can be increased to 7 or 8, and the man sitting in the saddle will go upon a perfect line. The horse's back does not bring him up and down at all; he moves horizontally.

Q. (By Mr. A. L. HARRIS.) Is that what is called racking?—A. No; the gait is not a rack. A rack is pretty much the same easy gait to the rider, but it is a little harder on the horse. We call a horse of that kind a single-footer. It is not such a good gait for a long distance, but it is nice to see. They do not like a rack in the East, because they want a jolter there; they want a horse that trots. Our horse also has a good square trot.

Q. (By Mr. CLARKE.) Are these horses trained for galloping?—A. Oh, yes; there are 5 gaits—the rack, the running walk or fox trot, the slow pace, the canter, and the square trot. The slow pace is not much used; it is somewhat of a gait on a good level road, but it is not much encouraged. We want the running walk, and the square trot, and the canter.

Q. Are they so well trained there that by signal they will change from one gait to another?—A. Yes; the American saddle horse is quite intelligent, and they soon pick up those signs; and you can snap your finger or, according to the way you train them, press on the neck, and they will change the gait.

Q. Is there a Morgan or a Hambletonian strain in them?—A. There is a Morgan strain introduced from 2 or 3 sources; one through Blood's Blackhawk—that is from the old Green Mountain Blackhawk. We got that strain through Cabell's Lexington, which is a pure Morgan horse, with Blackhawk strain. But the real foundation of the American saddle horse is the thoroughbred by selection.

Q. That is English?—A. That is the English race horse; yes. The foundation in that line is the old horse Denmark, which was a 4-mile race horse. He had size, substance, and quality; all those things necessary. His progeny seems largely to have come through one of the sons, Gaine's Denmark—that is, the saddle qualities—and it is worth thousands and thousands of dollars to our State. Now, this strain of horses is being taken in the Eastern States more than they ever were. Ten years ago there was scarcely one used there at all, but we made an exhibition of them at the World's Fair, and from that time they have been in demand all over the country. Some of them have been exported. Missouri has taken a leading part in the development of this horse, and Illinois stands scarcely second. Probably the greatest show horse in existence for style and beauty is one of these American saddle horses, known as Chester Dare. He seems to put his head right up in the clouds. Among them are also many other great show horses.

Q. Have you found that the admixture with the Morgan and Blackhawk strain has been a great improvement over the original thoroughbred?—A. Yes. I think its tendency is to give more substance and lasting quality. The mixture has proved very wise and profitable.

Q. (By Mr. KENNEDY.) Do you get fancy prices for these horses?—A. Yes. They sell for—I am speaking of good specimens—from \$500 to \$3,000. It requires so much less to develop and train one than it does a trotting horse. Of course, I do not want to discourage the trotting horse. Our State is largely devoted to pro-

ducing trotters, and for those who want them they are a good horse; but for a pleasure horse I think the saddle horse is far superior, because it is a good harness horse, too, and goes fast enough for any road we have when in harness.

Q. (By Mr. CLARKE.) Are these horses trained on the farms where they are raised, or are they taken to villages and put under professional trainers?—A. The best specimens are usually bought by professional trainers and given their schooling at the edge of some town where he has a stable and good roads. They are shown first at the county fairs.

Q. Do not the young farmers get on to these methods somewhat and give some preliminary training to their colts?—A. A great many of them do; yes. I got a couple of them myself several years ago, and I got on to them and trained them to the gaits and sold them at very good prices.

Q. (By Mr. CONGER.) You say these make good driving horses?—A. They make excellent family horses, and also are excellent for pleasure driving. Perhaps they would not stretch out on the drive in New York and keep up with the horses the rich men drive there now in their races with one another.

Q. Does the use of them in harness deteriorate their value as saddle horses at all?—A. To some extent; yes. They are not quite so smooth after they are used much in harness.

Q. (By Mr. A. L. HARRIS.) Do you raise coach horses?—A. We raise more trotting horses. There have been some few coach stallions introduced of late.

Q. (By Mr. LITCHMAN.) How does the strain of horses produced in Kentucky compare with the horses of the Belmeade farm at Nashville?—A. Belmeade is a thoroughbred breeding establishment. Our horses, I think, compare with any in the world. We have always kept up with the very best in that line, and we have now Mr. Whitney's celebrated horse, Hamburger, there on one of the Kentucky farms. The blue grass tends to the best development, I think, of the race horse. The water, the soil, and the grass all seem adapted to the race horse.

Q. (By Mr. A. L. HARRIS.) Have you many stock farms devoted to the raising of horses?—A. Yes; a good many. I could not tell you how many; I could not even guess the number, but it is in the hundreds, and the industry is more or less carried on on nearly all of the farms through the better part of the country.

Q. By the small farmers?—A. Yes; they have the mares and they breed to good horses and they develop the colt; and one occasionally will strike it, like a miner, and make his mark on 1 or 2 horses; but most of them, I think, lose money by it where they do not go into the business regularly. They lose their heads. They pay too much and the returns are not what they expect.

Q. (By Mr. A. L. HARRIS.) What have you to say about earnings of capital employed in agriculture compared—say, with 50 years ago?—A. Of course, you understand that in the aggregate we produce products of more value than we did because we have a larger aggregate capital employed; but, acre for acre, I do not know whether we produce more wealth to the owner now than we did. I doubt it.

Q. Is capital employed in agriculture as profitable as employed in other lines of business?—A. Our people think not. I am inclined to their way of thinking.

Q. Can you give a reason why it should not be?—A. I hardly know how to account for it. I think I might raise a controversy by stating it, but my opinion is that agriculture has not had some of the advantages of legislation that manufacturing and some other lines of business have had.

Q. In what particular?—A. Well, in tariff legislation, for instance. I am inclined to believe—I am not an extremist on that point—but I am inclined to believe that the tendency of protection has been not toward the agricultural classes.

Q. Does that result from the fact that agricultural products are exports and that therefore the price is fixed abroad, or does it result from any internal conditions?—A. I am not by any means an extremist. While I have been an agriculturist I have always been in favor of reasonable encouragement being given to other lines of business, believing to some extent in the principle that the establishment of factories help the farmers around them and within reach of them. I am inclined to think with my people that Congress has gone a little too far in most instances, but I do not know whether I am right or not. I do not pretend to say. But this legislation has had a depressing effect on agriculture, according to my way of thinking.

Q. In what way?—A. The whole line of tariff duties.

Q. Does or does not the tariff duty help to increase the home market?—A. I have just stated that I believe it does to some extent. Now, whether that compensates for the other effects or not I do not pretend to say. I have not worked out that problem. I am very liberal on that point and if you can show it does, why, then, I am heartily with you.

Q. (By Mr. CONGER.) Can you point out or suggest any article in which additional benefits or in which benefits might come to agriculture by the inauguration of additional tariff duties? I understood you a few moments ago to say that in your opinion other lines of industry had received more encouragement than had agriculture in the way of these duties, and hence my question, Can you point out or suggest anything in which additional benefits or in which benefits might come to agriculture by the inauguration of additional duties?—A. From my own State I will take a single example. We are largely producers of tobacco. My State produces more than half of the tobacco produced in America for export and for domestic consumption. Now, in the internal revenue the tax is placed heavily on tobacco. It is a luxury and that is considered all right, but it bears heavily upon our people because, to the extent that tobacco is taxed before being manufactured, the tax bears down upon the raw leaf. Now, we believe it is right to raise a good portion of the revenue from the tax on tobacco, but we have always asked that it be put down as low as possible, knowing that the lower you put it the better price the farmer will get for his tobacco. That is one way. Another is that the export tobaccos are very largely "regie" tobaccos. You understand that the foreign Governments—the Italian, Spanish, and I believe the French—appoint an agent or sell the privilege to one syndicate (or one party, trust, or something) to supply all their tobaccos that are gotten from America. Well, they agree to furnish it at a certain price. They know what our range of tobacco is. They buy no other grades. Our people are absolutely at the mercy of these people as to the selling of that class of tobacco. They may put it in the export warehouses ready and the buyer may want it, but he is absolutely out of the market and there is nobody else to sell it to. You can not ship it to those countries—you can not ship it and put it in a bonded warehouse there and sell to a manufacturer. It has got to go through this one hand. We endeavored to get relief through a bill introduced by Hon. J. D. Clardy, of our State, who was in Congress three years ago, but he only got it through the lower House. Our object was to see if something could not be done to get those countries to relieve us so that we would have the sales of that product in the open market. The question now is just simply, "What will you give us for it?" not "We want this for it," at all. They absolutely control the price, and there is no other bidder for that tobacco. They do not allow us free access to the markets of the Old World, or, I should say, all those countries, and we think that legislation along that line of investigation might result in something that would be a benefit to our section of the country; that would benefit Kentucky, Tennessee, Indiana, and the southern part of Illinois, and Missouri as well. They all grow that class of tobacco largely.

Our farmers also complain of the competition with foreign-grown hemp. My information is that manila, sisal, and jute are admitted free of duty. We grow hemp in the blue-grass country. We used to grow 21,000,000 pounds of hemp a year. Our product now is about 4,000,000 pounds. I do not think that all that falling off is due to the fact that we have to compete with foreign hemp, because Burley tobacco took up a good deal of the hemp land, as it grows on the same soil. But our farmers complain that they can not compete with the Sisal hemp and the Manila hemp or jute and jute butts, that are introduced free of duty. They can produce as much, but they can not sell as much at a profitable figure. Hence they supply what is absolutely needed, about 4,000,000 or 5,000,000 pounds. The reduction from 21,000,000 pounds has not increased the price, but it has probably kept the price from falling flat.

Q. (By Mr. CLARKE.) What was the Kentucky-grown hemp used for mostly?—A. There was not as much of it used at home as there should have been, perhaps, but it went to New York, Boston, etc., and was used for cordage there and for domestic twine. I think the demand was diminished by the invention of iron ties for cotton. The tow of a great deal of hemp was once used for making cheap twine and rope for binding wheat, for baling cotton, and also for the outside baling of the cotton, but it is not used for these purposes now.

Q. Has there been some substitution of other materials for these uses?—A. There has been a substitution of the Sisal and Manila hemp, especially for the twine binders, that has affected it undoubtedly, and jute is used for twine, jute butts for bagging—all admitted free. The Kentucky hemp was used at first for making the twine for binding wheat, but it has been superseded by the Sisal, out of which a cheaper twine is made, and to this I think is partly due the diminishing hemp acreage in Kentucky, affecting injuriously not only the farmer who owns the land, but the colored man who is the main stay in its production and handling. If the price is satisfactory the labor is well rewarded.

Q. Are you aware that the wire grass of Wisconsin and Minnesota, which until within a very few years was a waste product entirely, is now used for bind-

ing twine to a considerable extent, making a cheaper twine than can be produced here in imported material, however cheap?—A. I have heard so, but I have never had any information on that subject. I say all these things affect the product of hemp to some extent, but I still think the chief cause of the decline in this industry is due to unjust discrimination against it in the tariff schedule.

Q. (By Mr. A. L. HARRIS.) What have you to say in regard to your State tax laws for raising the revenue for your State and for local purposes? Have you any suggestions to make in regard to amendments or changes for the farmers?—A. I think the law is sufficient, but the administration of it fails, or has heretofore, to bear equally upon farming lands and other property. The farmer's land lies before the assessor. He knows how many acres, and he knows what neighborhood it is in, and what it is worth, and his land is very apt to "catch it" for about all there is in it; that is, it will be assessed, all of it, up to its full value for taxation. There has been a great deal of other property, corporate property and bank capital, things of that kind, invisible property, that has escaped; but investigations are largely bringing that out now, and the evil may be corrected. It may be that in time the law will work equally, and there will be no complaint about it. The answers I get on that point are that agricultural lands are bearing more than their just proportion of taxation.

Q. How is your property valued for taxation?—A. Our rule is to value it for what it would bring at a fair voluntary sale.

Q. Who does that?—A. The assessor, and he is looked after by the board of supervisors for each county, and then there is an equalization board of the State that looks after each county. Until recently our railroads have largely escaped taxation, but we are now getting them in the hands of our railroad commission, and there is not so much complaint on that score.

Q. Is there any disposition on the part of the farmers of your State to move into other States to better their conditions?—A. Yes; for 10 or 15 years that tendency has existed to a considerable extent, they mostly moving West to cheaper lands.

Q. Is there any decline in the money value of your farm land per acre?—A. My information is that there is, that agricultural lands are not as valuable—that is to say, not as salable—as they were some years ago.

Q. Why is that?—A. I take it that it is largely due to the improved purchasing power of the money. If you go back 25 years I think you will find that under the gold standard the number of dollars that the land would bring is less. Of course, the dollars will buy as much of any other product.

Q. (By Mr. PHILLIPS.) About what is the price of good farm lands in your section, the average price per acre?—A. Our State varies so in the character of its soils that it would be very difficult to answer that question without confining myself to some locality. In the blue-grass section (where the value of the farm is considered rather than the value given to it by its beauty or location), I would say from \$30 to \$60 an acre; approaching the towns, where you get the advantage of better schools and near markets, from \$40 to \$80 an acre. Fancy places will sell from those prices up to \$150, according to improvements. In the western part of our State there are a few sections where the values will nearly equal those of the blue-grass section, but in the majority of the counties agricultural lands can be had at from \$10 to \$20 an acre with moderate improvements. In the mountain section the amount of timber and the prospects of minerals on the land will contribute largely to the selling value of the land; and no one could estimate, until he should know by the geological formation and character, what it would bring.

Q. (By Mr. A. L. HARRIS.) Is there any decline in the productive condition of your soil?—A. I do not think there is any very great decline, taking the whole State.

Q. Do you maintain a rotation of crops?—A. I mean by rotation that we can keep up and have kept up the fertility to about what it was 30 years back. We increased our wheat yield by the use of some stimulants, phosphate, etc., and that, of course, gives a chance then to improve it by some leguminous crop. We are using stock pease for clover, and lately the Department of Agriculture has introduced a legume known as the Soy bean or Soja bean that our people are beginning to like very much as a forage plant and as a renovator of the soil. It grows vigorously on poor land, and our experiments with it have been very satisfactory. It was introduced from Asia by the Department here.

Q. Have you any organization among your agriculturists?—A. We have numbers of organizations among the live-stock breeders, and recently I have endeavored to get farmers to organize county clubs. In fact, I have indicated to them that it would be of great assistance to the department over which I preside if they will do this, and I find that I do better if I go to a county where there is an organi-

zation. I have almost determined not to go among them until they are organized to hold institutes, because if I am backed by an organization of that kind, I get an audience all the time. Heretofore we have endeavored to hold institutes by appointment of dates. Before my term they would appoint a series of meetings, giving about 2 days to a place, and when they went to the designated place they would find no one there, or may be 2 or 3 people, or 3 or 4, or a dozen; but since then at all the institutes I have held I have had a fine attendance, because I have had the local backing of a club to work up interest. My plan, if I go to hold an institution, is to let the local club make the local arrangements, appoint a time that suits them, and make a local programme. We have an agricultural college in the State, and an experiment station contributed to by the Government here—and the professors go with me, my department paying expenses. At the institutes I sit at the table with the presiding officer. I am pretty good at condensing, and I take down what they say, catching all of the arguments pro and con on any of the subjects they bring up; then I write them all up and publish them in a supplement to an agricultural paper that I used to be connected with—I have no interest in it now—and thus let the information out to the public generally. The Public Printer does the printing of the supplement. I send it out under an arrangement with this paper, and it goes to the paper's Kentucky circulation. Then I buy about 2,000 extra copies of that paper, and we have lists of names of persons, who are not subscribers, and in the poorer sections where they do not take so many papers, and send to all these people a free copy with this supplement in it. I find the plan works well, and I am stirring up a good deal of interest. I usually let the local managers make the local programme, because they know what they want to talk about. I have these professors to answer them, and also I assign them subjects of their own; then I get all that is said published, and I have it back to the farmers in 10 days or 2 weeks. I believe that is the most successful way of arousing a feeling and getting the farmers to read and study these subjects.

Q. Is the interest in your institute work growing?—A. It is growing; yes.

Q. You spoke of your experiment station. Please state, if you will, the advantage the farmer derives from the experiment station.—A. The experiment station is under the direction of Professor Scovell, a very competent man, and he, by going out to these institutes and mixing with the farmers, finds out where the leaks are and where they want to improve, and also keeps in touch with the Agricultural Department here, getting the newer varieties of seeds and plants that are introduced and things of value (like these beans, for instance). He tests these things and tests all kinds of fertilizers also, has his alternate rows without fertilizer and with it, and he gives his opinions and the results of his experiments in bulletin form. These are sent free to the farmers, and then they find out what is the matter sometimes. We have also a professor of entomology and agrostology and geology there, and they go along and find out what the people want, and I get the information back to them in the way above described. By experimenting Professor Scovell shows them what is lacking in the soil. Sometimes he shows where there has been a failure in the use of fertilizers. He finds some man who has been following the wrong course and another who has secured no results. He tells them what the trouble is and how to remedy it.

Q. (By Mr. PHILLIPS.) You spoke of the Soy bean; is it used as a food, and is it nourishing?—A. It is not used as human food. Some people have eaten it, but it has a ranker taste than most people like; but it is very fine for stock. We sow it after the last plowing of corn and we turn the hogs in after the plant grows up, and they eat it all up; they like it very much. We cut it for hay and it makes a good hay for cattle. We think the right variety is fine hay for cattle and horses.

Q. You do not plow it down to enrich the soil?—A. We do that also—turn it under. It is a great nitrogen gatherer. It opens up the soil, loosens it up, and they say it is equal to clover. Of course, we know that red clover has no superior, but it will not grow in our country any more. An insect or something has gotten in that kills it. You get a good stand in the spring, and in the fall you have no clover. Someone claims it is a little maggot that gets into the root and kills the plant. They expect the clover to be good the next year, and when next year comes they will have none there. There is no enemy to the Soy bean, and it is a rank grower. In fact, some of the varieties grow so rank that nothing can be done with them. They can not cut them, and they can not turn them under—there is too much of them.

Q. (By Mr. A. L. HARRIS.) Is your agricultural college well supported by the farmers?—A. It is getting to be very well indeed; yes. The number of students now is about 860, of which 7 take the agricultural course alone.

Q. Do the graduates of your agricultural college return to the farms?—A. A good many of them. I have heard of quite a number of them going to other pursuits after they got back, but I know quite a number of young students there who

are on the farms now and have made very intelligent farmers. They are the entering wedge for better farming, I think, in our State. I am a great advocate of training farmers in the direction of farming.

Q. Has there been any reduction in the cost of transportation in your State by railroad or otherwise in the last few years?—A. Since 1895 there has been an increase of freight rates of from 10 to 30 per cent. Perhaps a general average increase of 12½ per cent would be a correct statement. In passenger rates there has been no change. Complaints of discrimination are numerous, and very few points are without complaint of high rates. The railroads justify the increase by a claim that commodities are worth more money in the markets and should for this reason bear a greater carrying charge. This statement is based upon information given me by our State railroad commission.

Q. What is the condition of the public roads in your State?—A. In our Blue-grass section we have excellent roads made of broken limestone rock. They are very fine. That is an up and down country, hilly, or nicely rolling, but the roads are good.

Q. Are they toll roads?—A. They were toll roads, but nearly all are free now. In the lower part of the State, where they have not the material to make pikes, the roads are bad. They are just ordinary dirt roads. There is some little improvement that has begun there, and we look for better roads and better bridges. I give attention to the roads in all my institute work. The discussion on the subject is a reminder—not that I expect to do much good myself. Locally it wakes them up and makes them think about the question, and they are changing the system of keeping up the roads.

Q. Have you any legislation to suggest on the subject of good roads?—A. My opinion is that roads kept up by taxation and road supervisors are better than those maintained by the "call out the hands" system, as they call it.

Q. Have you a road commission?—A. Some counties have commissioners, but there is not a State commission.

Q. In those counties where they have a commission is there improvement?—A. Yes; they are making better roads, for the reason that the commissioner studies the subject and he does not just go and scratch around to comply with the law, and, as a consequence, he works to improve one bad place permanently for 1 year and the next year he will go to another one; but under the old system the residents would be called out at a time when the bad holes were passable. Then they would scratch around a little and they would never come back again. The whole system, I think, was bad.

Q. You may state how this commission raises its funds to improve the roads.—A. The funds are raised by a county tax, but I believe in most of the counties the magisterial district in which the tax is paid controls the fund. It can be expended only in that district. They have different laws in different counties. I am not familiar with them.

Q. Is your road improvement macadam?—A. Only in the limestone section.

Q. Have you gravel in other portions of the State?—A. Not much. In some localities it exists. There are deposits of the finest gravel in the vicinity of Paducah.

Q. You may state, if you please, what the school age of children in your State is?—A. That is a subject I did not expect to be asked upon. Our school trustees are required to ascertain the number of children in each family from 6 to 20 years of age.

Q. What is the percentage enrolled in schools?—A. The total number in the State is about 80 per cent of the children.

Q. Is your common-school system sufficient for the educational needs of the farmer?—A. I would suggest for rural sections that the system should embrace something that bears upon agriculture, give the children a love for the occupation, make children believe that they are growing up to be farmers, keep them from leaving the farms, and make them realize that they ought to understand more about that subject than their fathers do or grandfathers did.

Q. Is your school system discussed in your farmers' institutes?—A. No; we have never discussed that in our farmers' institutes. We have educational institutes. The superintendent of public instruction holds institutes in the counties upon educational subjects, but I do not know whether or not he takes up the question of agricultural education.

Q. What is the condition of your schoolhouses?—A. Fairly good; they are improving.

Q. Is the qualification of your teachers good?—A. As good, I think, as they are in other States. We endeavor to have them good.

Q. Have you a high-school system in the country?—A. I think not; only in the cities and towns and larger villages.

Q. Your children in the country have no opportunity to secure the benefits of a high-school course?—A. Not unless they move into the cities or towns near to them. If they do not reside in the cities or towns, they pay tuition if they attend high schools there. A good many of our farmers have moved into Louisville and other cities and towns in the State to get the benefit of the high schools for their children. I might say right there that there is a tendency of the landowners in my State to leave the land in the hands of tenants and drift to cities. They go to Lexington or Louisville and other cities, leaving the farm, which they rent out. Some of them rent a house, but most of them buy houses in the cities. I do not like that tendency; but, of course, it is pursued because of the advantages of the schools and churches, and also because of the lack of household help in the country.

Q. Have you good local high schools?—A. I think so; yes. Nearly every county has one or more graded schools, including the high-school course.

Q. Have you free schoolbooks?—A. No.

Q. You have a free-school system?—A. Yes; we have a free-school system.

Q. Supported by taxation?—A. Yes. I think our State provides that if the scholar is not able to buy the books, they will be supplied. Each county, through the county judge, may expend \$200 annually for books for indigent children.

Q. Who teaches the colored schools?—A. Colored teachers. They are very efficient.

Q. You consider the colored school as efficient as the white school?—A. I think it is equally as good up to the point where they get to the high school.

Q. How is your school fund raised, and how is it distributed?—A. It is raised by taxation. All taxes for school purposes go into a common fund and the money is drawn out per capita. The colored pupils get the same as the white pupils.

Q. Have you a pure-food law in your State?—A. We have; yes.

Q. Is it satisfactory?—A. Yes; it is under the direction of the director of the experiment station. He is the official that sees that the law is enforced, and I think he was complaining the other day that the auditor had declined to or had been lax in furnishing him the means of going ahead with it, but he thought it would all be fixed up.

Q. Have you any suggestions to make in regard to a national pure-food law?—A. I am rather inclined to believe that the law should be national rather than State, because State lines are so uncertain nowadays, and interstate laws are such that the rights of a citizen of one State to do business in another State are so mixed up that we sometimes fail to find protection from a State law, because everybody outside has a right to do certain things under the national laws.

Q. Where would you lodge the authority to execute the law?—A. It would have to be lodged in the Federal courts.

Q. I mean the initiatory. Would you place it in the Agricultural Department?—A. For agricultural products, perhaps; but I see no reason for this in regard to drugs or food products generally.

Q. Have you any law to prevent the spread of disease among animals?—A. Yes.

Q. Is it sufficient?—A. That question is under the State board of health. He has a veterinary assistant. I think another trouble comes in there, that we can not enforce the law properly for the reason that the shipper from another State has certain rights under the Federal law that we can not properly regulate by a State law. That subject ought to go to the Federal authorities perhaps.

Q. Do you think there should be a Federal law?—A. Yes.

Q. For local safeguards, would it not be proper to have it under your department instead of the board of health?—A. In case of diseases of live stock, the live-stock people would know better what to do than the regular physicians. Stockmen apply to me in my department for remedies for diseases, and I have to turn them over to the medical or veterinary department. Possibly it would be better to let it go under the agricultural departments in the States.

Q. Is there anything that has not been touched upon that you wish to state?—

A. I wanted to say in reference to the last question that the appropriation for my department would have to be increased or else it would detract from other work. The appropriation for our agricultural bureau is \$13,000 a year, and out of that the salaries of the commissioner and his assistants are paid. All his printing expenses are charged up to this fund. There is not enough left in the department at present to undertake to regulate diseases among live stock. Of course it is quite an expensive thing to go and destroy a herd of cattle, for instance. We tried that once in our State, and the value increases very largely when you go to take them for public purposes and destroy them.

Q. Has the board of health authority to destroy diseased stock and compensate the owner?—A. It has. That is where the trouble comes in; they get to be too valuable when you destroy them. A runty calf that is killed on the railroad

sometimes becomes a very fine high-blooded animal, pedigree. We have to watch these points. I do not think there is anything else I could suggest. The people might be encouraged to improve the villages of the laboring men and make them more attractive. I believe I have been over that point. In our State we have the difficulty of having colored labor. We can not go ahead with the conditions that exist, and do what we would if they were all white, because the colored laborer when he gets his money and accumulates property feels just like one of us, and is entitled to a good deal of consideration as far as he goes; but it is impossible for people who have known and owned them as slaves to recognize that there is an equal social position for them. In some sparsely settled parts of the country, where there are not enough of them to make a village of their own, we can not take them in and make them a part of the community like we could if they were white people, even if they were lower in education than the majority. It is a very difficult question. I have great sympathy for the negro, and I am willing to do everything I can to elevate him; and if I find a community of them trying to farm and be independent, I am going to hold institutes among them and for them, and do what I can to improve their condition in that way.

Q. Did your reference to the average wage apply to the colored labor as well as the white labor?—A. Yes; it applies to all labor employed. The colored laborer gets as much as the white if he does as much.

Q. Is the colored laborer as efficient as the white laborer?—A. He is not quite as reliable. You will find sometimes that one colored man is worth a dozen whites of the kind that you find; but these German laborers are worth more, and get a little more wages than the average colored man, there being exceptions to the rule, of course.

Mr. CLARKE. I wish to call the witness's attention again to the duties on hemp. I understood him to inquire if there is a duty, without expressing any information or knowledge himself. (Here Mr. Clarke read the hemp schedule of the tariffs of 1894 and 1897:)

DUTIES ON HEMP, ETC.

"Hemp-seed oil, 10 cents a gallon; same in 1890, 1894, and 1897. Hemp and tow of hemp, \$20 a ton; hemp hackled, known as line of hemp, \$40 a ton; same under tariff of 1894, \$40 a ton; tow, \$10 a ton. Cables and cordage made of hemp, 2 cents a pound; tariff of 1897. Threads, twines, or cords, made from hemp yarns not finer than 5 lea, or number, 13 cents a pound; finer than 5, three-fourths of a cent for each additional number. Single hemp yarns, not finer than 5 lea, 1 cent a pound and 10 per cent ad valorem, tariff of 1897; same in tariff of 1894, 35 per cent ad valorem. Single yarns in gray, not finer than 8 lea, 7 cents a pound; finer than 8 and not finer than 80, 40 per cent ad valorem; above 80, 15 per cent ad valorem."

The WITNESS. Yes; I forgot what the duties were. I used to grow hemp, but I do not remember what the duties were then. It is, as I said before, the importation of manila, sisal, and jute free of duty that kills hemp-growing in Kentucky.

Q. (By Mr. CLARKE.) You think the culture of hemp in Kentucky would be likely to be increased if the tariff were more protective?—A. Yes; I think it would; it would become more profitable.

Q. Is the crop sufficiently profitable to supplant other crops in case the farmers had a domestic market?—A. I think that would naturally be the consequence. I do not mean to say by that that I would advocate a very high duty, because it might be putting a burden upon some one else for the benefit of our people, which we do not ask. I am only for a tariff for revenue, with incidental protection.

Q. (By Mr. FARQUHAR.) If the Constitution follows the flag and the United States statutes at large follow the Constitution, and you have free hemp from the Philippines, what is the condition of Kentucky hemp raisers?—A. I do not want to be led into a political discussion. I am an agriculturist.

Q. You have raised hemp; what is your idea practically if the whole product of these insular dependencies, the raw material, comes in free?—A. Hemp now, with a poor crop, in our State is selling at 5 cents a pound, or rather \$5 a hundred. That means 112 pounds from the brake. The kinds you spoke of come in competition with our hemp. The removal of that duty and the introduction of the manila hems free has certainly tended to lower the price. Our farmers can not grow hemp at \$4 a hundred. We grow only 4,000,000 or 5,000,000 pounds of hemp now. I think the production would be increased at \$5. It is profitable at \$5.

Q. (By Mr. CLARKE.) From a purely agricultural standpoint, is hemp a desirable crop to raise?—A. Very, indeed. It leaves the ground clean and in fine shape for any other crop. It can succeed itself for several years. It takes very little from the soil, being cut before seed ripens.

Q. Then if tariff conditions can be arranged so as to afford it substantially equal protection with other agricultural products, it is your opinion that the farmers of Kentucky would increase their crop of hemp rather than diminish it.—A. It is; yes. If we could be guaranteed the present price even, the product will increase and the colored labor employed would be better paid.

Q. (By Mr. PHILLIPS.) Have you anything else to state?—A. Nothing.

(Testimony closed.)

WASHINGTON, D. C., February 13, 1901.

TESTIMONY OF MR. HARRY HAMMOND.

The commission met at 10.15 a. m., Mr. Phillips presiding. At that time Mr. Harry Hammond was introduced as a witness, and, being first duly sworn, testified as follows:

Q. (By Mr. HARRIS.) You may state your name, post-office address, and occupation, please.—A. My name is Harry Hammond; my post-office address is Beach Island, S. C.; my occupation is that of, you might say, a cotton grower—a superannuated one, as I have given up pretty much of my work to my boys.

Q. How long have you been so engaged?—A. All my life. I was brought up on a cotton plantation.

Q. Have you held any position in the Government or State connected with agriculture?—A. I commenced work as professor of natural sciences in the University of Georgia, and gave it up for a more profitable thing—taking charge of one of my father's plantations. I came back after Appomattox and found everything broken to pieces, and have been trying to pick up the pieces ever since. I have stuck close to home, having a large family.

I was supervisor of one-third of the State for the Tenth Census. I wrote the article on cotton culture for South Carolina, and have since written two chapters on cotton culture and the handling of cotton products for Bulletin 33 of the United States Department of Agriculture on cotton planting, also for the agricultural department of South Carolina the Hand Book of the State.

Q. You may state, if you please, what is the condition of labor and capital employed in agriculture in your State and in the South generally, if your information goes that far. As you have "a plan of inquiry" before you, you may take up the subject as there outlined and treat each subject as fully as you desire.—A. I have some notes here which I will refer to. I have followed the questions in the topical plan of inquiry.

First, as to the number employed in agriculture during the last 50 years. Of course that is a statistical question to be answered from the returns of the Census. By the Ninth Census, 29 percent of the population in South Carolina; in the Tenth Census, 30 per cent; in the Eleventh Census, 20 per cent. There has been a falling off, therefore, in the number employed. In Hammond Township, where I reside, a purely agricultural community, or almost so, we had between the Tenth and Eleventh censuses no increase in the population; in fact we had a decrease of several hundred. The population has moved to town, and the movement continues. In the last year, 1900, 5 families moved. They are selling or renting their places in the township.

Comparative condition of agricultural labor: There are very few white agricultural laborers. They have gone into other occupations. The body of the negro laborers live from hand to mouth on daily or weekly wages, and that is especially true of the women, who only work during certain seasons of the year at cotton picking and cotton hoeing.

The effect of improved machinery on labor: The reaper and mower and cotton planter have displaced a great deal of labor. The more skilled and reliable laborers get an increase of say, 25 per cent over common labor, but that advance does not make up for the wages formerly paid to cradlers, hay cutters, and cotton-seed sowers. The last named occupation called for more laborers. The cradlers were paid more than double for the same work than is paid now. The old hand laborers were paid more than double for the work that is now done by machinery.

I would like to say in regard to that, that our State has petitioned the Department of Agriculture in Washington to have a division of mechanics. It is an extraordinary thing, which I can show to the commission if they care about it, how very small the amount of new machinery that has been brought in in the last 30 years for the use of agriculturists is. I do not know of any improvement that has been introduced except the corn harvester and shredder. And, as all the other

industries in the world are making their great boom now on mechanical improvements, agriculture which is in depressed condition stands as much in need of them as another; but we have no general center from which information in regard to these things can be disseminated.

Q. (By Mr. PHILLIPS.) Is not the reason for that condition the fact that you do not raise the same agricultural products in the South as are raised in the West and middle States, and that you do not require the harvester and shredding machine?—A. We have all these, but we want a great deal more in the way of agricultural improved machinery than we have. There are a great many things that could be done. The fact of the business is, that little has been done for the whole of the United States. The want is not peculiar to the South, but extends to the country at large. I prepared a paper for our club on that subject, and there are some extraordinary statements in it.

Q. I am surprised by your statement on that point.—A. You have but to refer to the report of the Commissioner of Agriculture and you will see the whole thing.

Q. (By Mr. A. L. HARRIS.) You have a paper prepared upon that subject?—A. Yes.

Q. Would you care to submit that to the commission as a part of your testimony?—A. That paper I prepared for our local agricultural society. I happened to come across it. It was done some years ago, but it is true to-day. The preamble is as follows:

(Reading:) "Whereas agriculture is neither a science nor an art, but an industry, and the physical basis of an industry is the mechanical devices and appliances which render its prosecution practicable and profitable, the prosperity and progress of the industry being largely dependent upon the increasing effectiveness of such inventions and devices. The records of the great industrial revolution which set in during the latter half of the last century, and has continued to the present day, gaining in force year by year, bears ample testimony to the correctness of this statement. Erase from history the names and works of Hargreaves, Arkwright, Crompton, Cartwright, Dary, Watt, Stevenson, Siemens, Bessemer, Edison, and their fellows, and the foundation of the great industrial advances in manufactures, mining, and transportation, with the stupendous additions they have made to the world's wealth and population, would be removed. The mechanical inventions of Tull, Whitney, Ransome, Manning, Hussy, McCormick, and Pitts have created a new agriculture that has filled the earth with a plenty undreamed of before. The single invention of the cotton gin has made it, for the first time, possible to clothe the whole human race, and has established an extensive culture which has done more to stimulate the commercial activity of the world than any heretofore undertaken by man.

"But interest and progress in the mechanics of agriculture seem to belong to a period that is past. The gin is more than a century old. Cultivators, horse hoes, and seed drills were used in this country before the Revolution. Steel hoes were manufactured and sold cheaper in 1831 than they can be bought for to-day. It is more than a generation since the American reapers, mowers, and thrashers took the first prizes at the Paris International Exposition of 1855, and since 144 bushels of wheat per hand was cut and thrashed daily on the Huffman ranch in California, a performance which could not be excelled, even if equaled, by the implements and machinery now in use. The period of greatest prosperity and development in agriculture was during the golden decade of 1850-1860. The increase in the value of farm implements and machinery in those 10 years was 62 per cent. In the two succeeding decades, notwithstanding the growth of the population, the vast areas of fresh lands brought under cultivation, and the enormous additions to the agricultural products of the country, the increase in the value of the implements and machinery employed on farms barely equaled the increase of the single decade preceding. The value of agricultural implements manufactured in the United States increased 150 per cent between 1850 and 1860 (we were supplying the trade of the world), between 1860 and 1870 the increase was only 122 per cent, and between 1870 and 1880 it fell to 75 per cent. The manufacture of farm implements has fallen more and more into the hands of large concerns, which have bought out smaller ones, and hold a monopoly of the business. One company, a harrow trust, has in recent years bought up 21 other companies and advanced the price of their products as much as 31 per cent. These trusts possess themselves of every new patent, holding it for their exclusive use, or what is worse, suppressing it, to avoid the additional expense of new and improved models. Experts declare that it would pay many manufacturers to give away their machines for the profit to be found in selling duplicates of parts that break or wear out from faulty construction. Side by side with the growth

of combinations among the manufacturers of farm machinery, the subdivision of farms has proceeded. The rural blacksmith has disappeared and the small farmer is left to contend single-handed with the gigantic corporations from whom alone he can obtain his tools. It might be thought that the numerous agricultural departments, colleges, and experimental stations, endowed so largely by the Federal and State governments, would strengthen the hands of the farmer in this exigency. But this is far from being the case. Among the 491 officials employed in 1892 in the 61 colleges and 52 experiment stations in the United States, there were 2 machinists employed in the specialty of beet sugar, 1 civil engineer, and 1 other engineer, only 5 altogether who were concerned with the mechanics and engineering of agriculture. Of the thousand and one courses of instruction given, only about 6 per cent appertained to the wide domain of the mechanics of agriculture. Looking back of the reports of the United States Department of Agriculture since 1891, no mention of a hoe is to be found for 20 years; of a plow for 17 years; of a reaper for 16 years; of a planter for 18 years; of a road for 19 years; of implements and machinery for 15 years, unless it be a machine for testing the strength of binding twine or an apparatus for stripping cocoons or spraying poisons. That inventions and improvements in these lines are of great importance every farmer knows full well from sad experience. That such improvements are being constantly attempted is shown by the records of the Patent Office. In the list of patents and inventions for the three months ending June 30, 1893, 25 improvements in plows and 21 in planters are entered. But the Agricultural Department, an offshoot from the Patent Office, appears anxious to obliterate all traces of its origin. Since 1870 it has led in a new departure, devoting its energies to botany, entomology, ornithology, chemistry, pomology, microscopy, and other sciences, to the entire exclusion of agricultural, mechanics, and engineering."

Q. (By Mr. CLARKE.) When was that paper written?—A. In 1894 at Beach Island, S. C. The entire lack of everything in agricultural machinery is very marked, and it is owing in a large part to the big concerns that take it up and do not care about farming improvements.

Q. Can you give us the data on which these statements about agricultural machinery were made?—A. It will be found in the census reports, and in the reports of the Department of Agriculture.

Q. You have given percentages of the increase in agricultural machinery. Are these percentages based on the same basic figure—the same starting point—or are they based on the new basis of each census?—A. On the new basis of each census.

Q. Now, can you give the number of machines that were put forth in each census period?—A. Yes, the value of them. The census returns give the value.

Q. Now, is it not a fact that the number and value were each larger from 1870 to 1880 than they were from 1860 to 1870 or from 1850 to 1860?—A. No, not as large as from 1850 to 1860. In 1870 the percentage was somewhat larger, but from 1870 to 1880 it fell off.

Q. I am not talking about percentages, but numbers and values?—A. I am talking about values.

Q. And you persist in the statement that they are larger?—A. Yes, I persist in the statement. There is the census report; you may look to it. I may be mistaken, I may have miscalculated it and made an arithmetical error, but the census is there to answer the question.

Q. (By Mr. FARQUHAR.) What remedy do you propose or where are you going to put this machinery? Do you intend to bring the machinery into the experiment stations and show the advantages of labor-saving machines through the mechanics and engineers?—A. It is a very difficult thing to make out. You can find generally there is a fault, but to rectify it is difficult. I should say the Department of Agriculture or, to go back in a certain degree to its parent, the Patent Office, should help in that line. Mr. Webster and Mr. Jefferson were both inventors. They established the whole thing for the improvement of agricultural machinery as much as for the dissemination of statistics, and I think that the thing ought to be looked into. What is practicable I may not say, but certainly when you are giving several hundred millions to the cause of war and 5,000,000 to the Department of Agriculture, it would not hurt to try and have experiments in the line of agricultural machinery.

Q. (By Mr. PHILLIPS.) Is not the machinery almost perfect so far as the agricultural business is concerned now, and is not that one reason why it can not be improved on?—A. No; it is far from being perfect. I saw an invention here that upsets the whole nature of plowing. It was made out in the Northwest—a plow that is followed by a roller to compact the soil in order to increase its capillarity and produce moisture. That is a new thing, but a thing the farmer will never hear of. If there is a bulletin written about it—if the Department of Agriculture has an increased appropriation for its bulletins and will write the bulletin on the

subject and distribute it among the farmers—they will know something about it. As it is, not 1 in 10,000 ever hears of it, as the dealers in these things want to run on the same lines. In fact, dealers in machinery control the whole business. They want to keep up their old stock.

Q. You think they would buy them up and suppress them?—A. Yes; I have known of such a course being pursued. I can not cite the case exactly, but I have heard of cases where dealers have suppressed machinery, and I believe they do. I have been told by agents engaged in selling machinery that there was more money in selling the duplicate parts than in selling the machines themselves. They make the machines cheap with the certainty of making the profits in repairs.

The fourth question is as to the causes of the irregularity of labor. It is the inclination common to all men to avoid the primeval curse whenever they can. I believe this applies perhaps less to the negro agricultural laborer than to any others. His work is not heavy, and the continuation of the methods in vogue during slavery render it lighter than many other occupations, such as no work before sunrise or after sunset, with an hour at noon in the winter and 2 or 3 hours in the summer, and no work in very wet or very cold weather. The average labor day on the farm I have always found to be less than 8 hours. Nevertheless there are immense losses not to be foreseen or provided for. Such losses occur occasionally to employers of labor by reason of its irregularity. It often happens that the loss of a day results in the loss of a season's crop. It was argued before emancipation that this irregularity would render agriculture unprofitable if not impossible. While this anticipation has not been fully realized, the many farmers who were bankrupted would with truth charge their failure largely to these causes. I lost, when I first started, 40 acres of cotton by the refusal of the hands to work on the 4th of July. It was a political superstition that their rights as free-men would be taken away if they worked on the 4th of July.

Q. (By Mr. A. L. HARRIS.) Please explain how 1 day is so important?—A. I was planting 300 acres of cotton, and made all my arrangements and brought hands in to work out that 40 acres on the 4th of July. I went down and found not a man in the field. That was utterly unexpected on my part. A rain fell the next day, and the ground was covered with grass before I could get back to it.

Q. (By Mr. CLARKE.) You knew that the Fourth of July was a national holiday then from away back, I suppose?—A. Yes; but we did not have many holidays with us.

Q. Has it not been customary to observe the Fourth of July as a holiday in your section?—A. Oh, yes; but I will tell you what the negroes said—why it was unexpected with me. I went down and found them sitting in the doors and I said, Why arn't you men in the field to-day? They said they had been told that if they worked on the Fourth of July they could not prosecute a man who seduced their daughters. This is the comfort I got.

Q. (By Mr. LITCHMANN.) Is that the answer given to you or was it really a fact? Could you corroborate it from any other source?—A. That was the reply made to me.

Q. Did you verify it from any other source?—A. Of course not. It was what had got out among them; how, I do not know.

Q. That was pretty near to the close of the war?—A. That is true.

Q. And before any general methods of education had been adopted in the South for the negroes?—A. Yes; they would not believe that now.

Q. (By Mr. CLARKE.) Could you have planned your work so as to avoid that loss if you had known they were unwilling to work?—A. If I had had that information I could have planned it differently; but the refusal to work was totally unexpected. The same thing occurs now from various reasons. Expensive methods have been adopted to remedy this evil. Farmers build numerous houses on their land for day laborers, so that if one fails another may be secured. They have gardens, often rent pieces of land, allow firewood, and all that sort of thing, and the houses become pauper warrens. Women and children pick up a precarious living out of the assets of the community—fruit, fowls, game, and fish. Another method is to keep a commissary, and furnish supplies on credit. Although the profits charged are high, it is doubtful if the net gain to the employer amounts to much, as he often has to be repaid by work that he would not have paid cash for; and this notwithstanding the negro laborer very seldom shirks or repudiates his debt.

Transient labor: There is none except in the vicinity of towns. There it is esteemed a great advantage to farmers and they always have a full supply of day labor to draw on without any charges for its keep. You often see teams in the cotton-picking season driving to town daily and back to transport cotton pickers.

As to the average days employed in the year: A good negro laborer finds employment, and will work the year through except holidays for funerals and

society meetings, and a few days at Christmas. There is a deep-rooted desire to have their Saturdays, and they collect in crowds on that day at the store or in town. The average laborer works from 200 to 250 days in the year.

As to the tendency to go to town, and the remedy: My section furnishes no exception to the universal and increasing tendency of the rural population to drift toward the towns. The improvements in transportation, the daily mail, the telegraph, have mobilized country life. Country people who formerly were satisfied with their weekly paper, who went to town annually or semiannually, in some instances not more than 2 or 3 times during a long life, can now go quickly, safely, pleasantly, and cheaply several times a day. The mail once a day no longer satisfies them; they want free delivery twice a day. They want the morning telegrams from China, the Philippines, and the Transvaal. Besides, town life with better policing has become more secure. Cheap coal, cheap lights, convenient water supply offer inducements; society and amusements draw the young; the chance to speculate, to make a sudden rise in fortunes, to get in the swim attracts others. The wages of servants are fabulously high to the country laborer, and the rotation among them from one master to another gives all a chance sooner or later to try their fortunes, however little permanency there may be in them. All these things, and many more of the same sort have acted and reacted between the town and the country, and the country has become permeated with tendencies to town life and the effort to imitate.

It was predicted that the negroes would leave the cornfields and fill the towns in case of emancipation. That prediction has not been realized suddenly, as we anticipated it would be, but it seems to be approaching; it is working slowly and surely.

Q. (By Mr. FARQUHAR.) What are the inducements to go to the town, the practical inducements?—A. They are not any better off in town. The town and the country are all in the great struggle for the fittest, and in that struggle the unfittest fail. That is all. There are more chances in town than anywhere else.

Q. Are the wages in town so much higher than they are in the country?—A. The wages of agricultural labor is the same—that is to say, the agricultural labor that works in the fields immediately around town are the same that they are farther away. The wages for domestic servants and men in stores and for work of that sort are very much better.

Q. (By Mr. CLARKE.) Can you state the wages for domestic servants?—A. In the city of Augusta the wages of a housemaid will run anywhere from \$8 to \$15 per month; those of cooks, from \$8 to \$15; and those of house servants sometimes go as high as \$20.

Q. And you call those wages high?—A. Those wages are high in comparison with \$8 to \$12 on the farm.

Q. (By Mr. FARQUHAR.) Do you notice much of a return to the country of these migratory people from the city after they have experienced the dullness of work and everything else in the city?—A. They very seldom return. They shift from place to place, go from one town to another. There is a great mobility among the working population in that way. They go, for instance, to Augusta, then down to Savannah, and perhaps take a season in Charleston stevedoring. The better class of servants go to the winter resorts of the South and to the summer resorts of the North in the summer. They go backwards and forwards, and get very good wages. No; I see no return to country life.

Q. (By Mr. LITCHMAN.) Is that typical of the South any more than of the North?—A. It may not be. I do not know as to the North.

Q. Is it not a fact that the statistics show that the urban population grows very rapidly all over the country?—A. Yes.

Q. Would it not be a fact, then, that the same tendencies that produce that result in one section of the country would be likely to operate in the South?—A. Yes.

Q. (By Mr. FARQUHAR.) Do these colored people, where they have no knowledge through friends or otherwise of a job, take the risk of moving, simply, and settling down until a job comes to them?—A. Yes. It is astonishing to see how they go off all of a sudden. It has not been a month since I lost my cook. She just went off to a place she never had known or heard of before, on account of no fault with us, but to follow her husband, and she has been there now two months without any employment at all. One gets very tired of sitting down in the country and seeing nothing but the humdrum of life there. One great cause is the lack of interest in country life.

Farmers engage more in buying and selling than in providing. Gardens and orchards and the various perquisites of country life are neglected. Fertilizers and implements are purchased which used to be made at home. The same is true of work animals. We made nearly all of our agricultural implements on the plan-

subject and distribute it among the farmers—they will know something about it. As it is, not 1 in 10,000 ever hears of it, as the dealers in these things want to run on the same lines. In fact, dealers in machinery control the whole business. They want to keep up their old stock.

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Q. Are these houses located in groups, or distributed individually?—A. Distributed as much as possible. The colored laborer likes to have a few chickens, a hog, and sometimes a cow, and be by himself. The colored people grow a little among themselves in a good-natured sort of way; the women do, and every man likes to be by himself.

Q. (By Mr. CLARKE.) And still they would like to be near enough together for social purposes?—A. Yes; they have their social societies and their funeral benevolent societies to bury them. They have a grand occasion on a funeral.

Q. A former witness testified that he thought the building of laborers' cottages somewhere near together, perhaps in little villages, in farming neighborhoods, would tend to make country life more attractive to them. What is your opinion about that?—A. Well, I suppose it would if they could be properly policed. It would have to be done on such a scale that they would be policed, something like they were under the old plantation system; I think they would prefer it, too.

Q. (By Mr. LITCHMAN.) Would not such an arrangement tend to make the population more permanent?—A. Possibly it might. You know the negroes have collected all around the towns, and the negro quarter around the towns now is as marked a feature in a Southern town as a Jews' ghetto anywhere in Europe; they have spread all around the towns, and they get along tolerably well there, but they have a police to keep the peace with them.

Payment of rent in kind, formerly one-fourth the corn, one-fifth the cotton, is passing out of practice. That system was taken from the Mosaic law. Money rents are generally paid at the rate of \$2 an acre for average land, and more for the best quality, and is increasing. Crops on halves, the employer finding land, teams, implements, furnishing house, fuel, and garden, and one-half the fertilizers, is growing in favor. The perquisites of the labor are made up to the landlord in that labor is 54 per cent of the cotton crop, and the additional security that the crop will be carefully gathered so as to bring full prices as first-class staple. That is an important item; the laborer gathers the crop. The cost of ginning, steam transportation to market, charges for insurance, and selling are shared equally, and are more than covered by the sale of the seed, the balance from this last adding a dollar or two to the share of the cropper. The land deteriorates rapidly where rented, but is kept up under the share system.

Some advances and liens on growing and prospective crops are general. The largest landholders and planters are often bankers; the next largest are customers of the banks. Small proprietors and renters get advances from the cotton factors, say, of \$10 a bale, secured by lien or chattel mortgage. The cotton crop is grown on a credit of at least \$100,000,000 annually, and if the credit system were abolished it would be materially reduced and the price increased. Meanwhile the cheap cotton furnished by credit is a vast advantage to the world at large, and incidentally to manufacturers, however injurious it may be to a certain class of substantial yeomanry who provide it. Attempts are made at every session of the legislature to repeal the lien laws, but the mercantile influences are too strong to allow that to be done. Formerly the small farmer was not infrequently raided under these lien laws, but of recent years the law is seldom resorted to; the victim, if there is one, has been trained to yield to the inevitable without resistance. It is one of the cases in which experience with the law has rendered it almost inoperative.

Q. (By Mr. A. L. HARRIS.) What have you to say on the subject of immigration?—A. Immigration is said to follow the parallels of latitude. The presence of the black race in the South is an obstacle, and we have little to hope for or to fear from immigration. Even the Irish ditcher, who used to visit us frequently, seldom makes his appearance now. Some Germans and Frenchmen settle down and make a good thing of it. I have known some of them to get along very well.

Colored labor constitutes as much as 75 per cent of the rural laboring population. Some 75 per cent of colored laborers are engaged in agriculture. They are used almost exclusively in the ginneries and oil mills, to a large extent in railroading as section hands, firemen, porters, trackmen, etc. Up to this date they have not been successfully utilized in cotton manufactures, though they were so employed during slavery times. Testimony as to their effectiveness and reliability in employments outside of agriculture shows that their employers preferred them to white laborers in the majority of cases.

That testimony will be found in letters written to the Tradesmen's Journal, published in Chattanooga. Some fifty-odd letters that were written by persons from rolling mills and small manufacturing establishments are to be found in that paper's files.

Q. (By Mr. CLARKE.) How long ago?—A. About 1885.

Q. (By Mr. KENNEDY.) Are they employed in positions as engineers on the railroad, generally or exceptionally?—A. I do not know of any colored engineers.

Q. Firemen, I should say?—A. As firemen they are very common in our country.

Q. More colored firemen than white?—A. Yes.

Q. Do they ever get promoted to the position of engineer?—A. Not that I know of. I am not much acquainted with the railroad employees, except that I go up and see them paid off occasionally. They get very good wages; most of their pay is taken up in advances, however, I notice.

Q. (By Mr. A. L. HARRIS.) Are they permitted to run a stationary engine?—A. Oh, yes; my boys have an oil mill, and we have negro laborers there who do everything. Mr. Tompkins says that it requires more mechanical ability to conduct a gin properly than to run a cotton factory, to spin and weave in a cotton factory. Our ginners are all negroes. There is no reason on earth why the negroes should not be put in cotton factories except race prejudice.

Q. (By Mr. FARQUHAR.) Q. Have you any knowledge of the fact that they have been tried in factories; tried and discarded for white labor?—A. Yes; they have been a failure there ever since the war. Before the war, though, there were the Saluda mills, which were run entirely at one time by negro labor, and in part by negro labor and white labor, mixed labor at another time. In both cases the mills are reported to have been profitable.

Q. (By Mr. A. L. HARRIS.) If the negro laborers were efficient then why are they not efficient now—what is the reason?—A. I see no reason in the world why they should not be.

Q. (By Mr. CLARKE.) I have seen an explanation recently to the effect that these cotton mills in which negro labor has been tried are located in or near cities, and that the colored operatives are unwilling to work continuously as white operatives will, and that they want to take a day off frequently, and that that practice really destroys the effectiveness of a manufactory. Is that, in your opinion, a correct explanation?—A. I think not, because the negroes work very faithfully all the time. I have tried both negro and white labor on the plantation, and I say that the negro works better than the white man, more continuously; he doesn't want so many holidays. I see no reason why negro labor should not be employed in cotton factories. I refer you to the Handbook of South Carolina, where the statement is made concerning these mills run before the war by slave labor—by colored labor.

Q. I heard another explanation, a funny one, to the effect that the monotonous hum of the machinery puts a good many of them to sleep. Is there anything to that?—A. Well, the negro "possum" hunter is a nocturnal animal, but I do not think he is as sleepy as he used to be in old times; about the same as the white man. I do not think they go to sleep any more than white men. You know the fate of the first steam engine that was ever run on a South Carolina road. The first locomotive steam engine ever built in the world was built for a South Carolina railroad extending from Charleston to Augusta, and it was called "the farmers' best friend." After running one or two trips the train stopped for breakfast at a place called Summerville. The engineer stopped off and left his negro fireman with the engine. He was disturbed by the steam from the safety valve, so he sat down on the lever, and in a few minutes the whole concern was blown to pieces. That was the first railroad car that came to its end, and there was an ordinance passed that they should not use any more of those cars without putting a freight car loaded with 6 bales of cotton between the passenger cars and the engine so that the passengers would not be injured. [Laughter.] That don't happen now. That was in the early efforts at railroads.

Q. (By Mr. KENNEDY.) Is it true that South Carolina built the first railroad?—A. Yes, that is true. If you read Adams's book, *The Railroad Problem*, you will see the statement that the South Carolina railroad was the first railroad built to use locomotives in steam transportation. The other railroads were intended to be operated by traction.

Q. (By Mr. CLARKE.) Do you remember what year that was put in operation?—A. About 1832.

Q. Have you ever read that a railroad from Quincy to Neponset River was put in operation in 1828 in Massachusetts?—A. Yes; that was sort of a tramway. I only go by Adams's book. It is an authority on railroads, railroad administration, by Mr. Adams, who was on the Interstate Commerce Commission. We started the first canal, too, and we were among the first to go into the canal business; the Santee Canal was started before the Erie Canal. South Carolina has led in some twenty-odd different things.

I want to quote an extract from the book entitled "Race Problems of the South" (Montgomery Conference). Alfred Moore Waddell is the speaker and he is referring to the situation in North Carolina respecting the negroes. He says:

"Crimes of all sorts increased alarmingly, and went unpunished. Negro jurors, who sat in every case that was tried, refused, in the face of the most overwhelming and undisputed evidence, to convict negro criminals guilty of outrageous offenses. The city authorities and police of some places, including the city in which I live, became a laughing-stock to law breakers, and objects of contempt to all good citizens. Eastern North Carolina became a negro paradise, and immigration to it began from all quarters. Idle and drunken negroes infested the streets of Wilmington day and night, and grew more and more insolent and aggressive. Ladies were frequently and grossly insulted, and citizens assaulted and robbed in broad daylight. Burglaries were of almost nightly occurrence and no arrest followed. A negro newspaper was established, and crowned a series of offensive articles by an attack upon the virtue of white women in general. Another election was pending and threats of a demand for a still larger share of offices were made. That election was one of the quietest ever held in the State, and the negroes polled about 90 per cent of their strength, but a large proportion of their former white allies deserted them because of their conduct, and the party was beaten. Then, and not until then, the white people asserted their supremacy in an unmistakable way, and they intend to preserve it at all hazards forever. It was not the work of ignorant enemies of the negroes, but the long-delayed and spontaneous action of all the white people, united for the common purpose of preserving their civilization. Of course there was much misrepresentation of the facts." * * *

The large negro population on the coast of South Carolina is quite different from this here described. The mayor of Beaufort says the town is remarkable for quiet and good order. For 20 years past not a single individual has been killed or seriously injured in any disturbance within the corporate limits. (See Handbook of South Carolina, p. 663.) That is the statement of the mayor of Beaufort, and Beaufort is perhaps the blackest spot in the whole South; that is to say, the negro population predominate more there than anywhere else. There is a peculiar historical fact connected with that town that I would like to mention to the commission. That is the place where the Federal troops first set the negroes free. It was done on those islands in the neighborhood of Beaufort, and they are now there the predominant race, and this mayor refers to them as a quiet community. A most peculiar thing is this Quatrefages in his book on the human race asserts the fact that the African lived on these islands long before the discovery of America by Christopher Columbus. He is high authority, and he says that the Yamasee Indians were negroes, what were known afterwards as the fiercest of the Indian tribes of the South—the well-known Yamasee Indians were Africans.

Q. (By Mr. PHILLIPS.) Is it a fact that they were much darker than the other Indians?—A. Yes; it is a fact.

Q. And the hair was different, too?—A. So it is stated by one of the most distinguished ethnologists in the world. Another corroborative proof is that the Spaniards found that 1 negro was equal to 10 Indians for work, and they therefore imported these Indian negroes and carried them to the West Indies to experiment with.

The State guarantees \$3 per pupil enrolled in case the school taxes do not produce that much, and allows each school district to levy a maximum tax of 4 per cent on property for the maintenance of the schools.

The school law requires that instruction be given in agriculture in the public schools. Little has been done in this direction. In our school district a school has recently been opened in which botany and nature study are taught, and we are going to try and develop the school on the agricultural line.

Clemson College is an excellent technical school with professors and full equipment of laboratories and work shops, including a very complete textile school. There are some 400 students in attendance, and several hundred applicants have been refused for lack of accommodations. There is also a negro school at Orangeburg, which is partly supported by the State and partly by the Government, which is said to be doing very good work.

Q. (By Mr. A. L. HARRIS.) How is your school fund raised?—A. The school fund is raised by a State tax of 3 mills on property and by a \$1 poll tax, the poll tax being expended in the district in which it is raised. The other tax—the 3-mill tax—is divided in the county.

Q. Your poll tax goes to the support of the common schools?—A. To the support of the common schools in the locality in which it is collected.

Q. Your schools are divided into colored and white schools, are they?—A. Yes.

Q. Do the colored schools get the same amount per capita that the white schools get?—A. No; I can not give the exact proportion in money, but the plan is this: The law allows the trustees of the school district to distribute the funds

according to their best judgment, and they generally pay higher salaries for teachers and give a longer term to the white people.

Q. How long are your schools conducted during the year?—A. I would say for 4 to 5 months for colored and for 5 to 6 months for white children.

Q. Are the same studies required?—A. Substantially the same.

Q. Are the teachers colored or white in the colored schools?—A. Unfortunately the teachers of the colored schools are colored. Those in the white schools are white.

Q. What is the character of the schoolhouses?—A. The schoolhouses are very poor. We have a good school in my immediate neighborhood with 10 acres of land, a 2-story building, with as good an equipment as a city schoolhouse, that the white people have built within the last 2 or 3 years, but, as a general rule, the schools are very poor. The worst feature of the school business is that the superintendents of education are political characters generally, without any culture whatever, and are paid only \$400 or \$500 a year. It is simply absurd to suppose that such a man is fit to carry on education. He is paid \$400 a year to disburse \$30,000 a year, and, consequently, it is wasted and badly administered in every way.

Q. What is the average salary that your school-teachers get?—A. The colored people get \$30 a month and the white from \$40 to \$45, the full price. The negroes are willing to take the place for little or nothing.

Q. Are the teachers equally well qualified?—A. No; not at all.

Q. Have you any requirements for qualifications of teachers?—A. Yes; we have competitive examinations. Sometimes they come before the board of trustees, but there is an indifference on the part of the county trustees. The inefficiency of the county superintendents is the trouble with the whole thing. Mr. McMahon has done all he could to improve that thing, and there have been some very good suggestions, but the legislature would not listen to them. For instance, the members of the legislature are restrained by the idea of local self-government. They would not allow a good superintendent to be brought from one county to serve in another; they want the money, the miserable little \$400 he gets for the county.

Q. Is your territory divided into school districts?—A. Yes; into school districts. I have been anxious to be a school trustee myself, and that is the only office I ever announced myself as a candidate for—a district trustee of the school where I live. I went down and told my friends that I would like to be a trustee, but the voters elected a negro instead of myself for the place. The election occurred in Republican times.

Q. Please describe an average schoolhouse in the country?—A. A white schoolhouse would be usually 30 feet by 20, a weatherboarded building, without ceilings; with 2 chimneys, with homemade desks and seats for the children, the whole costing about \$200. That is the best style of country schoolhouse. The negro schoolhouses are about one-third that size, with ordinary benches and 3 fire-places. They are not very creditable establishments.

Q. What branches are taught in your common schools?—A. For 3 hours the State requires instruction in agriculture, but there is nothing done in that line. I saw a negro schoolmaster with a book on hygiene in his pocket, something of that sort, and in fact I think that in the rural schools the money is about as nearly wasted as can be.

Q. (By Mr. CLARKE.) Does the State furnish the schoolbooks, or does the district furnish them?—A. In the regular schools the State does not furnish them, but it determines the price and all that, and the same books are to be used for a period of 5 years. The fact of the business is simply this, that since this common-school system has come in South Carolina, it is my opinion, from as many facts as I have been able to collect, that there is less per capita spent upon education in the schools than was spent when the schools were supported voluntarily by the people. The parents think that the State has to do everything, and that they are to do nothing; that they are to send their children to school, and that they are to be instructed, the only expense put upon them being the purchase of books. Then they complain that they have the expense of purchasing the books.

Q. (By Mr. A. L. HARRIS.) Is that the way you account for the indifference?—A. The indifference comes from the lack of education in the whole country.

Q. Where you have a white school and a colored school in the same district, is each sufficiently well attended to make it an efficient school?—A. In our white school in my district we have about 35 or 40 pupils; the negro schools, I think, have 200 enrolled. Unfortunately the pay is distributed according to the enrollment, and not according to the population, and in the negro schools there is a good deal of cheating about the enrollment. The attendance is not as regular as it should be. The teacher naturally wants to get all the pupils he can, and have them enrolled.

Q. Do you draw the State fund according to the number enrolled?—A. Yes.

Q. Is it drawn equally by colored and white?—A. No, it is drawn for the whole district and distributed by trustees.

Q. Is that distribution fairly equitable?—A. I suppose it is; the money does the most good in the white schools. The wording of the law is that it shall be distributed according to the best uses that can be made of it.

Q. Is that latitude given the district trustees?—A. A district is an area of country comprising not more than 40 square miles nor less than 9 square miles. Formerly there were 106 square miles in our district and there were half a dozen little schools. Everybody wanted a schoolhouse put up, and a great many of them did put up schoolhouses to get the teachers and funds distributed. The schools amounted to nothing, the plan being to teach two or three months in one place, and then some little time in another.

Q. Have you subdistricts?—A. No, we have no subdistricts; the law says a district shall not be less than 9 square miles and not more than 40.

Q. Does that give sufficient facility for all to attend school?—A. Yes. I think it makes the longest walk in our district about 3 miles. We propose to get transportation there if we can.

Q. You say that in your district the enrollment of the colored children is about 200. How many of those attend school?—A. They all attend at times; they attend more or less; a day in a week; 2 or 3 days in a week. They pretend to keep account of the attendance, but I don't think they do.

Q. Have you a compulsory law?—A. No.

Q. Are your schoolhouses sufficiently large to accommodate that number?—A. Yes; they all seem to get inside.

Q. Have they sufficient room when they get inside?—A. I suppose not, not healthy room, not breathing space.

Q. You spoke of the school furnishings being homemade. Could you briefly describe the desks and seats? How they are constructed, and out of what material?—A. They are constructed out of pine and on the model of the improved school bench, though of course not at all equal to it. There is a seat and a desk in front of it, just as near an imitation as an ordinary country carpenter with coarse material and tools can make of a good school seat.

Q. Each pupil has a seat to himself or herself?—A. Yes; that is, in the white schools. I think in the negro schools they only have a series of benches set around.

Q. Do they have a desk to write on in the colored school?—A. I could not answer that question. I have not been inside a colored schoolhouse.

Q. The benches are merely long benches setting side by side?—A. Yes; I think so; that is an inheritance of the old school days before the war. That is all we had then, and then a table to write on. It is a question with us what is to be done. Education for the people is one of the things that has not been worked out yet at all. The school that I am trustee of has an independent endowment of some \$12,000, and we have a very good, model schoolhouse. I have not been paying any attention to the other schools. I have been trying to get enough funds to keep ours going 8 or 9 months. I did write to Orangeburg to see if we could not get a better teacher for the negro schools, but I did not succeed.

Q. Are your teachers male or female?—A. They are largely female for the white schools.

Q. And for the colored schools?—A. The colored schools have been getting a little better pay for the last year or two, and the teacher brings in his daughter.

Q. Does the colored pupil take readily to learning?—A. I think they would; they learn very little though.

Q. With equal opportunities?—A. Oh, yes; with equal opportunities they learn as well as the white people. We try that sometimes with domestic servants. My children teach them, and they find them very apt to learn. They learn to read and write, and acquire the elementary studies as quickly as anybody. You may say on the whole that the white intellect is superior to the negro intellect, but you pick out a dozen white men and a dozen negroes in the same condition of life, and I do not think there will be much difference between them. A teacher in the West Indies says that he has been teaching mulattoes, whites, and negroes, in Jamaica, all in one school, and that he sees no intellectual difference between the races, but what he does see is, that where the parents take an interest in the education of the children, those children, whether white, or mulatto, or black, get ahead of the others. The whole thing depends upon the interest of the parents.

Q. Does it spoil the colored child to get an education?—A. I don't see how it does.

Q. Is he equally as faithful after getting an education as before?—A. Yes.

Q. Is he better qualified to do service?—A. Now and then they will do a little forgery, but white people will do the same thing, in my opinion. I do not see any difference.

Q. (By Mr. CLARKE.) I would like to inquire if there is any tendency of public opinion in your State to dispense with the negro schools or to refrain from educating the negro?—A. There are some good negro schools in Carolina where Northern people have come into the towns and taught. The higher education I think is very well attended to in Carolina. Mr. Miller, the president of the negro school at Orangeburg, wrote a most forcible reply to Senator Hoar about his speech in Charleston. He is a negro.

Q. Is it your belief that the white people of South Carolina generally favor the education of negroes and are content to improve the facilities for that education?—A. I think so; I believe they would like to aid them in that respect.

Q. (By Mr. A. L. HARRIS.) Now, you may proceed to the next subject.—A. About the cost of cotton culture. Mr. Solon Robinson, whose opinions were unfavorable to slave labor, made a statement of an examination he made in detail of the books of a farmer in the Pedee region of South Carolina in De Bow's Review. His valuation of the capital employed is full, amounting to \$161,000. In this he charges among the running expenses interest at 7 per cent, making the total of the current expenses over \$13,000. The 351,000 pounds of cotton produced cost 4.7 per pound. In the hundreds of recent estimates of the cost of the production of cotton I do not remember to have seen a detailed reliable one as low as this. The cotton sold at 7 cents and the net earnings were 11.6 per cent on the investment, not counting improvements. The price of cotton rose after this, and during the fifties averaged 9½ cents. The running expenses, as far as I can determine, remained the same. Of one thing there can be no doubt—the efficiency of negro labor increased greatly during this period. In 1886 I collected from 12 of the best cotton growers of this region itemized statements of the cost of cotton production. They ranged from 6.1 to 15.22; the average was 8.28. Cotton may grow everywhere between the parallels of 40 north and south latitude. Great efforts were made during the years of our war to develop it in all countries. They were not very successful. Down to 1895 the East Indian crop declined after the price reached 11½ cents, the Brazilian and West Indian after the price fell to 14 cents. Only in Russia, owing to unusual development of agriculture, and in Egypt, owing to the peculiarity of the staple, has production kept up an increase since cotton fell below 11 cents. There can be little doubt that 9 to 11 cents a pound is somewhere close to the margin of safe cost in cotton growing. If it is asked how such large crops have been grown at so much lower prices, the answer is that they have been grown on credit. The credit has been maintained by the sacrifice of other property to maintain the cotton growers. They have reduced their style of living and have abandoned many of their schools, many rural pursuits, and home comforts, to do so. I am told by visitors from other sections that our neighborhood seems exceptionally prosperous in comparison with others; and yet from my piazza I have counted in a radius of 3 or 4 miles 11 houses, once inhabited by substantial and prosperous families, which are now empty or are occupied by negro tenants, the land divided up into small cotton patches cultivated by negroes on the edge of want. Our orchards, our vegetable and flower gardens, our sheep, cattle, and horses, our servants, the repairers of our dwellings, and whatever surplus there was of other securities have all been swept up and consumed in maintaining our credit as cotton growers.

The facts above stated seem to show that the earnings of agriculture compared 40 years ago favorably with investments in other lines. That they may not do so now is owing to the methods by which agriculture is now conducted. My own experience with factory and railroad stocks admonishes me that they also sustain serious and sometimes fatal losses. Of one thing there can be no doubt; the earnings in manufactures are grossly exaggerated in the Census returns. My sons are running a little mill, and I prepared an article from the Census on the comparative profits of agriculture and manufacturing that I will submit, if you care about having it.

Mr. A. L. HARRIS. I think the commission would be very glad to have it. (See Exhibit A.)

The WITNESS. As to taxation of agricultural property, it is much higher than formerly. The revenues of the State, derived largely from such property, are 3 or 4 times as large as they were formerly. As for myself personally, I own one-fourth of the landed estate that belonged to my father, with a very much smaller fraction of personal property than he owned, yet my State and county taxes are 30 per cent higher than his were, and this does not cover the road and poll tax, charged chiefly to laborers. Such a weight of taxation is greater than that which produced the Revolution and greater than the tariff charges to which secession

was attributed. It is endured now because it is distributed among small taxpayers, who do not realize the burden. A charge of \$1 poll tax and of \$1 road tax is collected from a negro who has not a change of clothes, upon the penalty of putting him on the chain gang if it is not paid. The assessment valuation of property is preposterous, unequal, and unjust. When made by local boards of assessors, all sorts of favoritism is shown. Self-government is a very different thing from local self-government. The first kind is promoted by a general government, resting equally on all; the second is administered by narrow-minded, small local authorities. I suggest as a remedy classification of lands and valuation on such classes, no taxation of rural improvements, and taxation of licenses and franchises. A license tax on cotton planting, said to be unconstitutional, collected on the acreage throughout the cotton belt, could be easily and certainly collected, and it would furnish full revenue for State, county, and school needs. It would inhibit excess of expenditure of all our energies in this direction and direct them profitably to other pursuits.

Q. (By Mr. CLARKE.) You say that such a law is said to be unconstitutional. By whom is it so said?—A. By the press. I published an argument in regard to that matter, and the papers came out and said it would be paternal government. I think perhaps the best thing in any government is something prohibitory—like the Ten Commandments—to tell us what not to do. If they should tell us not to plant so much cotton, it would be more in accordance with the Decalogue.

Answer to question No. 29. There is no migration with us except a slow and persistent one to the towns.

Answer to question No. 30. Since the recovery from an inflated war currency, no decline in price of agricultural products has been persistent, except in the case of cotton, due to overproduction. The prices of other products fluctuate, but they average about as they did in the first quarter of the nineteenth century.

Answer to question No. 31. The usual price of average land before the war was about \$10 an acre. Near towns it has risen recently much above that, say to \$30 or \$40 an acre. Remote from towns it has fallen to an equal degree, say to from \$2 to \$3 per acre.

Answer to question No. 32. The decline in the productive condition is due solely to the management. The first settlers generally chose the most fertile lands. Out of 4,000 acres of my estate, about the best 100 acres were of land settled in 1734. There was a large immigration from the Peedee section early in the last century. The lands were thought to be worn-out. They are now, under different management, among the best, if not as a whole the best, in the State. The early settlers abandoned old clearings and made fresh ones in Carolina, not because the lands were worn-out, but because after a few years cultivation was rendered difficult by what was then called "crap," since "crab," grass, which made its appearance in force. The invention of the sweep plow has overcome this invader, and the grass is found to make excellent hay, coming up after small grain and in the corn fields when they are laid by in July.

Answer to question No. 33. The increase of acreage in cultivation in South Carolina is due to the law requiring the fencing in of stock and the punishing of owners who allow their stock to trespass on the unfenced lands of others. The law has removed the expensive burden of fences, but the amount of stock has diminished under its operation, and the destruction of wood lands increased. The fences also act as barriers to the washing of the hills to a certain extent, and their removal has increased the damage from freshets. That is a case in which we all fought very hard for 20 years to get something done, and now the most of us are sorry for it.

Answer to question No. 34. Increased acreage has resulted in increased production, and naturally in lower prices and profits; but by giving employment to more hands it has a tendency to keep wages up.

Answer to question No. 36. We have had a number of agricultural organizations which have sprung up quickly and subsided as rapidly, having no permanent results.

Q. (By Mr. A. L. HARRIS.) Have you any farmers' institutes?—A. Yes; Clemson College gives us farmers' institutes.

Q. You may describe the working of your farmers' institutes, if you will.—A. The neighborhood makes application to the president of the agricultural college for lecturers, stating the subject that the people wish to hear discussed. He sends some of the professors down, and the neighbors all meet and have lectures. I believe that is the usual form of carrying on those institutes. I do not think they are conducted for over 1 or 2 days. Then there are institutes given for a long period of time at the institution itself to which farmers are invited, but the cost of transportation is so great that a great many of them do not go except in the

immediate neighborhood of it. We have had a farmers' institute in our neighborhood, and it was very well attended, a great deal of interest being taken in it.

Q. Does your local talent take part?—A. Yes; the people of the town in which it is held participate.

Q. The college furnishes how many of the lecturers?—A. The college furnishes 1 lecturer only on an occasion. We had 2 or 3 other lecturers, 1 from the agricultural school near by. There were probably 200 persons who attended it.

Q. Is there a growing interest in the farmers' institute work?—A. If they were persistent in it, it would have that result; but they have not been persisted in.

Q. What, in your opinion, would be the effect if persisted in?—A. I think it would be excellent. I do not think anything is more necessary in the rural districts than the lecturers. I do not think anything would arouse more interest in anyway and in every department than the lecturers. They would listen to them when they would not listen to their neighbors.

Q. Would the result be beneficial?—A. Undoubtedly, undoubtedly. Our neighbors are too poor to hire the lyceum lecturers, and if the State would or could secure them it would be a great advantage.

Q. Giving your local talent place in the exercises, does that have a tendency to increase the interest in the locality?—A. It may after a while. We have an agricultural society or farmers' club in my neighborhood, one of the oldest in the United States, founded in 1843. We hold monthly meetings and have held them except for a month or two during the war, and there are only 2 or 3 men that speak. There are 2 or 3 men that speak every time, and we usually have outsiders. The first Saturday in every month we meet. We have a discussion for an hour or two on some topic we had taken up before. We lack the women in the movement. If we had them there might be more interest manifested.

Q. Are these organizations general throughout the State?—A. There are a good many of them in different places; yes. I say this is one of the oldest in the State in continuous existence.

Q. The getting together and the social relations make interesting features, do they not?—A. Yes; that makes it very interesting, and it has kept our neighborhood a very peaceable neighborhood. People have seen that there is no reason why they should be hurt by their neighbors. That is one of the best features of the whole thing.

Q. Do not these meetings have a tendency to remove the irksomeness of farm life?—A. Yes; they are a great relief. We meet at 11 o'clock and discuss until 2 o'clock. We have a steward appointed for each occasion, and he gives us a barbecue of a sheep and a shoat, and sometimes other things. We often have a very pleasant day. It is the fete day of the neighborhood.

Q. (By Mr. CLARKE.) Why do not the women take an interest in it?—A. In 1843 they brought the ladies in, but somehow or other there was some trouble about bonnets and parasols or something of that sort, and it did not work very well.

Q. Mr. Stubbs, of Louisiana, testified that in the highland of the northern portion of that State the farmers and their wives and daughters gathered annually, sometimes oftener, and held somewhat prolonged sessions, discussing all the various phases of their farm life indoors and outdoors, and that the occasions are very profitable as well as enjoyable. Do you see any reason why such meetings could not be held in South Carolina?—A. They have the Richmond County Club across the river in Georgia, which is holding such meetings now. We hope that we are doing something in that line in the school we started recently—in the last 2 years. I collected all the agricultural bulletins for it, and we have at the library there about 1,000 volumes. I have not only collected the agricultural bulletins, but I put them in cases and catalogued them, and I tell the ladies they contain information about bread making and houses, and getting rid of bedbugs and fleas, with natural history; that, indeed, almost anything they want to know can be learned there. They are taking an interest in the library, and I think it is going to have a good influence upon our neighborhood.

Q. Have you any granges in your State?—A. We had them, but they passed away.

Q. Any Farmers' Alliance?—A. We had the Farmers' Alliance, too, and also the granges. There was a whole parcel of gods and goddesses, and I know one lady who objected to joining because the goddesses had all been given out.

Q. A moment ago we were speaking about experiment stations. Is your experiment station well supported?—A. Yes; oh, yes; admirably supported.

Q. Is it doing good work?—A. I think so.

Q. Are there efficient members of the experiment station who lecture at the institutes?—A. Yes; they are the ones that are sent out. I was one of the visitors at the South Carolina experiment station last spring, and the only objection I found was that they did not have a good exhibition of agricultural implements.

I went there to find out about some implements, and they were not there on display.

Q. Would it not be well to have your experiment station experiment on implements there as well as other things?—A. Certainly; but, as I say, that is left out in the Agricultural Department here, and in the experiment station they imitate the Agricultural Department.

Q. Is your agricultural and mechanical college well attended?—A. There are 400 students there, and there have been several hundred refused admission because there was not room for them.

Q. Have you the color line in that institution?—A. The colored institution is at Orangeburg; a somewhat similar institution.

Q. That is supported by the same means?—A. Yes, by the same means; partly by the State, partly by some fund devoted to agriculture by the General Government here—I could not characterize it exactly.

Q. It does not get any part of the land-grant fund?—A. I think it does. I think the land-grant fund is halved between the two.

Q. Is the course prescribed in your agricultural college a good and sufficient course of agriculture for the agriculturists?—A. I think so. I was very much surprised and very much pleased by what I saw at Clemson. They have workshops there and laboratories, and they teach everything—practical chemistry and botany and entomology and electricity and other things, and they turn out, I should say, a No. 1 men from the institution. But at all those institutions they go more into other professions than they do into agriculture. They turn out good electrical engineers who got positions against experts sent here from the North to put up electrical works in connection with the navy-yard down there in Beaufort. They stood examinations and beat them before the Federal board.

Q. Do the graduates from your agricultural college go back to farming as a rule?—A. I think not.

Q. What becomes of them?—A. They go into all sorts of positions where knowledge of chemistry and things of that sort are called for, or go as teachers in schools, or go into electrical plants, or into cotton mills. They go into workshops, rolling mills, and institutions of that sort, where they can get the position of overseers. That is the usual course. There is no use of trying to give an agricultural education unless you do it in the rural school. There you can teach a boy about grafting, and the adaptation and the nature of plants. If you can not teach that in the country, where it is going to be practiced and where it is the bread of life, you can not teach it in the higher institutions. When you get a boy in a higher institution, he turns out to be a professor or something of that sort; he does not want to raise cabbages. I believe that is the usual experience in this country and in Europe.

Answer to question No. 39: Diversification of agricultural industry is beset with great practical difficulties. In the cotton belt everyone, from the banker to the most unskilled field hand, is ready to promote the industry of cotton growing. Anybody starting for the first time at cotton planting will find everything fitted to help him in his undertaking, and, though a wayfarer and a fool, he need not err therein. This is not true if he should undertake in the same locality the culture of any other of the 247 species of the domesticated plants. He would have to search for instructions and try experiments to a greater or less extent, and experiments in agriculture are immensely costly. It cost my father \$15,000 to introduce the imphee sorghum from Natal, South Africa. Much has been expended and lost in efforts to establish the culture of the vine, though there is no doubt that it can be successfully introduced. The diversification most needed is stock raising, for which the meal and hulls of the cotton-seed oil mills, the heavy crops of ensilage that are made from the Southern varieties of tall corn, cow peas, Bermuda and Johnson grass offer special facilities. We have lately, in getting up cotton-seed meal, got one of the best foods for cattle in the world, and I would call attention also to the Bermuda grass and to these new inventions of ensilage and things of that sort. The day before I left home one of my neighbors gave me a statement in regard to Bermuda grass. On 35 acres of swamp land he had maintained 50 head of cattle from May until the last of October last year.

Answer to question No. 40: The introduction of the mower has increased the supply of hay produced, and it is one of the instances where the supply has increased the demand, for forage brings higher prices than formerly. Improved plows and seeders have reduced the cost of production, and improved ginneries have brought the price of ginning and baling cotton from \$5 a bale to 75 cents a bale.

Answer to question No. 41: The extension of foreign markets would increase the demand for corn meal, and if the inhabitants of the world were clad in the

same number of pounds of cotton per person as the population of the United States (who use none too much for health and cleanliness), it would take a world's crop of the staple amounting to 64,000,000 bales annually instead of 16,000,000 bales.

Answer to question No. 43: Cotton was conveyed to market by water transportation more cheaply 50 years ago than it is now transported by steam, and the same is true of corn.

Answer to question No. 44: Much interest is being taken of late in road improvement.

There are 1 or 2 things in regard to cotton to which I would like to call your attention. The first statement that I will make will be in regard to the guesses made here by the Department of Agriculture about the cotton crop. Here is a letter that I have written to Mr. Wilson in regard to that subject, and I believe I will put that in as testimony. (See Exhibit B.)

Q. (By Mr. A. L. HARRIS.) How late is that letter dated?—A. November, 1897; but the same condition exists now as then. Ever since 1880 I have been writing to the various Departments to try and get them to make an enumeration of the cotton gins as a means of determining the amount of the crop. The cotton gin is the place where all the cotton passes. Seed cotton is not stored; it all goes to the ginhouse, and by the 31st day of December 95 per cent of the cotton is ginned, and it can be accurately known what has been done. A guess of the crop can be made all the way along, if they want to keep on making guesses, which, I think, ought not to be allowed. Mr. Hyde's guess is not worth any more than the guess of Dun or Bradstreet, or other people.

If he can state facts, let him state facts, and not guess. Such a course causes speculation in the market. All our people are waiting for the Department report and those guesses encourage speculation. It is certainly nothing more than a guess when you consider that the fluctuations in the market amount to a change frequently of \$32,000,000 of the crop in the hands of the planter. It is a matter worth taking notice of. If he can state there has been so many bales of cotton ginned up to the 1st day of November or the 1st day of October, it is a positive fact, and he can ascertain that fact; there is no doubt about it. I went to the Department yesterday and asked about it. I could not see Mr. Hyde. I have written a great many letters, and I have worked at the problem since 1880 to try to get the Department to pursue the plan suggested, and thus break up speculation to a large extent. The last application I made to the Census Department here they sent it all around and published it in the textile papers of the North and asked their opinion there; instead of sending it to any Southern papers they sent it to the North to know how manufacturers would like the plan, and the result was that they finally got up a defective scale, which I obtained yesterday, only giving a portion of the facts. I offered to write them out a schedule. There is no reason on earth why an enumeration of the cotton product should not be made as fully and as carefully as that of gristmills and flouring mills and sawmills. In those cases they put it all down. They have schedules for all those things, and have had them since 1880; but the whole subject of cotton ginning, which is just as much manufacturing under any definition of manufacturing as anything else, is left out entirely.

Q. You think that your plan would, to some extent at least, steady the prices?—A. Yes; I do not have any doubt of that.

Q. I wish you would take up that subject, if you will, as to what effect the so-called gambling—puts and calls and futures and options—have on the prices of cotton and farm products?—A. I do not know; I think that question has been pretty well argued out. They make out that it steadies prices, but I know when I go to my cotton factor and ask him what the price is he says: "There is going to be an 11,000,000-bale crop this year," or "There is going to be an 8,000,000-bale crop." They get their ideas once a week of how many million bales are going to be made, and those ideas affect prices. The matter is being discussed all the time. The whole thing depends upon the demand and the supply, and I think that this speculation does have a tendency to equalize things generally. I do not believe the difference is as great as it used to be, but the opinion is that it is demoralizing. It is demoralizing to the planter. I met a friend here sometime ago, a cotton planter. I said, "Where are you planting now; where are you renting land and planting this year?" He said, "Wherever I can find a telegraph office."

Q. Is dealing in options detrimental to the producer?—A. It is detrimental because it puts him into a business that he has no business to engage in. That is the chief way in which it is detrimental, I think.

Q. Does it have a serious effect upon prices?—A. I can not say how much it affects prices, but I can say that people are losing more in the South betting on

cotton than they are by producing it. We can not stop them unless we give them more certain information about it. There is no law that can do it.

Q. Does grain and cotton gambling affect the farmer?—A. I can not give any decided opinion on that subject. Gambling is increasing everywhere; there is no question about that. As I came along on the cars the other day I saw negroes sitting out on the side of the road playing cards and gambling, and there have been several murders in our neighborhood about gambling among negroes—a thing they were not in the habit of doing 15 years ago. The people there want anything that can stop gambling and speculation and cause people to go to steady work.

Q. (By Mr. FARQUHAR.) Under the present conditions in the South what is the lowest price that cotton can be made and sold for at a profit?—A. That is a difficult question to answer. In Bulletin No. 33, United States Department of Agriculture, 1896, on pages 258 to 270, there is as complete a summary of that whole subject as could be gotten up at that time, and it is not satisfactory. The point is this: We used to say that cotton was a crop that took the whole year around. We know, now, that that is not a fact. You can work so many days at the cotton crop, and you can not work any more. If a man works the rest of the time profitably he can make cotton much cheaper than he can if he only works his cotton and puts his mules in the stable and lets them eat their heads off, as a good many do. What can be made depends upon the management. The lowest possible cost I can make it is \$5.88 per hundredweight of lint, without any profits whatever; and it is about the same in South Carolina as it is in Texas. The difference between the two States is the use of fertilizer in South Carolina, and the high-priced labor and the high-priced lands in Texas; they about balance each other.

Q. Has the establishment of the hundreds of cotton mills in the cotton belt raised the prices of cotton to the farmers?—A. I think it has.

Q. Giving a better price?—A. I think so.

Q. Can you give an idea of the appreciable price above the old way? How much per cent do you think the advance would be?—A. I think the best plan to determine it is just to look at the prices in Augusta, which is a manufacturing center, and the prices in any other town. I think it makes a difference. Some years ago I sent some cotton to Savannah, and some to Charleston, and some to Augusta, and ordered it sold on the same day, and I came to the conclusion that I got three-quarters of a cent more for the same quality of cotton in Augusta than I did in the exporting towns.

Q. So you have two means now of disposing of your cotton in the South?—A. Yes.

Q. The raw cotton for export and the manufacturing of your cotton and the exporting to foreign markets of the manufactured goods. Then you really, in a measure, double your prices over what it was when you were dealing in nothing at all but the raw cotton?—A. Oh, yes; and all we want is all the people in the world to put on cotton clothes. Then we will have as much as we want to do; and, as I say, it will require 64,000,000 bales to make the world's supply under those circumstances.

Q. Does this disposition of your cotton give an opportunity for you to keep the money in your own district more than you used to? Is there more money in circulation now proportionately than there was 10 or 15 years ago before your cotton mills were established?—A. I do not think the cotton mills have any effect at all. In the immediate neighborhood the truck gardens and such things spring up for the support of factories, but that is comparatively a small thing. No business now in agriculture can be carried on on a large scale without you can produce by the car-load. All fruit growing and all forage growing and everything of that sort has given out except where you can sell in large quantities. It requires a wholesale business.

Q. Have you any idea how much labor enters into the production of your cotton cloth?—A. I made a calculation of 54 per cent of the total cost.

Q. Is it not a fact now that the whole of that 54 per cent is really added activity in your communities? Is not it a new production for them?—A. The 54 per cent you give to labor?

Q. Yes; all that you give to labor.—A. All that is produced is consumed.

Q. Immediately in your own neighborhood?—A. Yes.

Q. Has not that been a great advantage to agriculture in the South?—A. Now, let me qualify that. You pay the negro laborer off Saturday night and he goes to the store and buys many things manufactured outside. The money is spent in the neighborhood but it goes off to other countries in the end. I say since the war started there is more money than there was formerly. The low prices have not made up for the diminution of profit.

Q. Does the establishment of these cotton mills take out of the labor field a great deal of the white labor that used to compete with the black?—A. No; it does not.

Q. Is not the labor of your mills exclusively white?—A. It is.

Q. What occupation did the white laborers have before they went into the mills?—A. It is hard to say what occupation they had. They were managers of little places. The white people were not doing much actual labor themselves. There is perhaps as much planting and hoeing and plowing done by white people now since the mills started, but these other people were owners or overseers or planters, hiring a little piece of land and tilling it by themselves. I do not think the factories have taken away any of the owners. They have taken away the overseers and the like of them.

Q. (By Mr. A. L. HARRIS.) What progress has been made, if any, in the protection of your cotton crop from injurious insects?—A. What the Agricultural Department has done in the matter of paris green has been very effective on the sea islands and the Mississippi bottoms. We do not use it in the uplands. It is not necessary there, as we do not often have insects. There is no other insect that is of much importance in destroying cotton except the boll weevil in Texas, and I believe they have restricted that very well. They have plans for restricting it.

Q. Are you protected by law from the spread of disease among your animals?—A. No. We have very little disease among our animals. I was talking with one of my neighbors the other day, who is about 60 years of age, on that subject. He said he never had lost but 2 animals in his life, and his rule was that whenever an animal looked like it was not good to sell it and buy another one; but we have no particular epidemics among our animals. We have scarcely any animals but mules and horses. Our stock business has fallen to nothing.

Q. Why is that?—A. We had Texas fever and it killed our cattle. My son has sustained a good deal of loss in cattle that have come from unacclimated regions that have been attacked by the Texas fever and killed. The department has done a valuable work in restricting the fever.

Q. Is the law sufficient, in your opinion, if properly executed?—A. I do not know that we have any restrictive laws. There was an old law in Carolina, when we used to breed fine horses, that no man should be allowed to bring a stallion into the State; our stock was considered so much finer than that of the surrounding States. But there are no restrictive laws that I know of in regard to the health of stock or in any other direction. In fact, we are not stock raising, except to a very limited extent.

Q. You spoke of stock raising having gone to nothing. Is that partly on account of devoting your farms to cotton?—A. Yes. I do not have any doubt myself that we shall become in time a great stock-raising people right there in my own section of the country, where sometimes you now have to go 10 miles to get a pound of butter. Immense changes occur in agriculture in that way. I recollect that on a plantation my father made 37,000 bushels of corn before the war. I met a wagon going 10 miles to buy a load of corn here since the war to feed the stock with.

Q. Is that for the best interest of the farmer?—A. Not at all; not at all. You get credit on the cotton, though, and you can not get credit on the corn.

Q. (By Mr. CLARKE.) Is there any lumber interest in your State?—A. Yes; there are some large lumber interests in the southern part of the State. The shipping point is Beaufort, and there are a number of mills cutting lumber there for European shipment.

Q. Are the tracts of lumber owned by farmers or by men owning the mills?—A. Largely by men owning the mills. A man buys up a tract of land very cheaply and cuts the lumber off it. Owners usually first take the turpentine out of the pine, and the Agricultural Department here has shown that the lumber is better after they take it out than it was before, as far as the eximerents have been made. Then they cut down the timber and saw it up and sell it, and much of it is used in the local demand. There has been a considerable business done along what is known as the lower pine belt in Carolina in lumber, the region of country that extends from the Atlantic Coast to the Sabine River in Texas, which is full of lumber men all the way through.

Q. Is there some forestry all over your State?—A. No; our woods are disappearing in the upper country. The chestnut tree has been killed out by an insect, and the remainder is being burned up. We will have to use coal before long even in the country.

Q. Then it may be said that in no section of the State do the farmers as such have a lumber interest?—A. I did a very good business in the '80's selling the railroad wood, but they use coal now. They will not use pine. My father did a

very good business selling lumber, pine wood, to the steamboats on the river. There used to be two boats running daily up and down the Savannah River. There are only two now altogether, which make weekly trips. It was a profitable business to sell fire wood to them in the old days; but all that has come to naught, and the timber is being destroyed gradually.

Q. Has there been any legislation in South Carolina for the protection of forests?—A. I think there are some bills before the legislature; I do not think anything has been done though.

Q. Do you know whether the owners of the large timber tracts exercise any care for the growing of new crops?—A. No; I do not think the slightest care is given to timber anywhere in the State. Now, while we had to make fences, all were jealous of using up their timber, because they knew they would want it for fences; but now you will not find a fence if you drive 100 miles in the country. I presume there is no State in the world, no civilized country, that has as few fences in it as South Carolina. They do not care for the timber any longer.

Q. (By Mr. CLARKE.) Are you familiar with the mineral phosphate industry there?—A. I was at one time, when I was preparing a handbook of the State. I think you will find a very full compilation of the matter, a history of it. With us there has been somewhat of a decline in the industry of recent years, owing to the discovery in Tennessee and the discovery of the Florida phosphates. It is not as big a thing as it was.

Q. It has been a considerable source of wealth to South Carolina, has it not?—A. Oh, yes. The Coosaw Company stock went up at one time from the original par value of \$100 to \$900.

Q. Can you trace any improvement of plantations to the development of that phosphate industry?—A. I think that the whole fertilizer business has been an unmitigated curse to the South.

Q. In the respect that it has supplanted home-thrift methods?—A. Home thrift. Nobody pretends that the application of fertilizers is beneficial after the year in which they are applied, and the people have gone to work and expended some seven or eight million dollars every year in South Carolina for manure that ought to be made at no cost upon the plantations. You feed stock with cotton-seed meal and cotton-seed hull and you get an increase in weight and an increase in quality. You buy your stock at 2 cents and you sell it at 3 and 3½ and then you get 90 per cent of the fertilizing value of the meal, that has already been fed to fatten the stock, for manure. And the complaint is that it is too heavy to haul out.

Q. It is your opinion, then, that South Carolina agriculturally will be improved most by variegated agriculture and more stock raising?—A. Decidedly. I think that is the whole hope of the agriculture in the South, not only of South Carolina, but of the States as far as the Mississippi. When we get to the Mississippi bottoms, Louisiana and those other States are using fertilizers on the sugar-cane fields there now very heavily. Texas uses very little and Mississippi comparatively little. Alabama at one time used none, but is increasing a little. There was not any used in our State before the middle of the fifties—no commercial fertilizers.

Q. Outside of what you call truck farming is there any considerable fruit and forage growing in your State for the Northern markets?—A. Yes; the whole seacoast is engaged in that industry, and in some of the interior sections, too, they make shipments; but it has to be done on a large scale—carload lots. Then there is watermelon growing; we ship a good many watermelons. That is a speculation.

Q. Those are comparatively new sources of wealth for your State, are they not?—A. Yes.

Q. On the whole, are they doing well or ill?—A. Well, upon the whole, the watermelons have been a failure, and so have the cantaloupes that have been raised in the South. Now and then a fellow has struck it, but they complain that the commission merchants in the Northern cities are not reliable; anyhow they often come back on them for rebates for freight in carrying the crop. I think our people are inclined to give the industry up. But, of course, the regular truck gardens on the seacoast are permanent institutions; the owners have their plants well laid out and work very well from Florida to Norfolk, coming in regular rotation.

(Testimony closed.)

EXHIBIT A.—*Relative profits of agriculture and manufactures.*

"Agriculture," says Mr. Higgs in the *New Century Review*, of London, "has been of late a despised industry; intellectual activity has not been brought to bear on it; the men of force and enterprise have failed to recognize that it offers

an absolutely unrivaled sphere for the exercise of personal initiative skill and knowledge. A low type of manhood and a slow unprogressive condition of life are usually regarded as indispensable to agriculture."

Such views prevail widely among the young men of this country. They assert that agriculture is of small importance as compared with the other great factors in the industrial life of this nation. Owning nearly all the land, employing largely more than a third of all the working population, with a costly plant in buildings, fences, implements, machinery, and live stock, the aggregate value produced by the farmers is only about one-fourth of that produced by manufacturers alone, without taking count of the enormous values yielded by trade transportation and miscellaneous industries. Agriculture, they say, is making no progress. In the 20 years from 1870 to 1890 the aggregate value of farm products remained stationary. In manufactures, on the contrary, the values produced were nearly doubled in the 10 years between 1880 and 1890. This explains why active young men are drawn to the centers of manufacture. There they find plenty of work, with a chance every now and then for making a fortune. Your farmer stagnates in enforced idleness when the weather is too dry to plow, and when it is too wet to plow. His chances are a good season every 2 or 3 years. Besides, a young man wants a wife, and young women are getting mortally tired of patching old clothes, making bread, drawing water, and toting wood all in the solitude of the open country. Naturally, they wish to live in a town where there are no old clothes, where the bakers furnish bread ready made, where cheap transportation supplies daily in overflowing abundance every necessary and every luxury of life, where water is drawn from a faucet in every room, where gas and electricity do away with greasy lamps, and social intercourse is not obstructed by distance. Such are some of the inducements that are drawing the bone and sinew of our youth from the farms, and building up the towns and urban pursuits.

The statements above made are open, however, to important corrections. The growth in the value of the products of manufacturers between 1880 and 1890, as shown by the eleventh census, was far from being a real and bone fide growth. The increase was largely due to reporting as "manufactures" many industries not previously included under that head, such as carpentering, blacksmithing, painting, plumbing, coffin making, bottling, hay and straw baling, and many others. In a comparison of agriculture and manufactures, large deductions must be made from the latter on these accounts, as many of these operations and similar ones are carried on by farmers without being enumerated. Cotton ginning will serve as an example.

Other and larger deductions are to be made from the value of manufactured products on account of the duplication of returns. Many manufactured products are used as material for other manufactures and the values returned for each process are counted again and again, instead of simply taking the one value resulting from the whole series of processes, which alone is the true value. Thus the manufacturer who makes a pound of cotton yarn for shirtings returns a product value of 10½ cents. Then another manufacturer takes this pound of yarn and makes with it 3½ yards of seven-eighths shirting value 3½ cents per yard and he reports a product value of 13¼ cents. After this, another man takes this 13¼ cents worth of cloth and makes a shirt with it, selling it for 20 cents, and he reports a product value of 20 cents. Of course, this is the only value resulting from all the processes the cotton has passed through. The enumerators of the census, however, have taken the returns of each as they were separately made, and when these returns are added up at the census office it results that instead of a shirt, value 20 cents, a manufactured product valued at 44 cents is recorded and published for the information and instruction of the public; an overstatement of the value of the manufactured product of 120 per cent.

Other reductions remain to be made. In addition to the plant and the running expenses common to the farmer and the manufacturer, the latter has to pay for his raw material. This additional cost to the manufacturer is estimated in the census returns at considerably over half of the gross value of manufactured products. Now, there is at this time no data to enable us to make an accurate statement as to the values produced by manufacturing. But if we commence, as it seems we must, by halving them, and then taking a large percentage from the remainder, on account of the reduplication of returns, and after that lop off the numerous trimmings, such as painting, bottling, drug grinding, etc., we might well pause lest we should not have enough in hand to procure manufactured coffins to put away the indebtedness left over.

Such considerations enable us in some sort to realize how it happens that many costly factories and many brilliant industrial enterprises fail year after year to declare a dividend, until at last they seem to have lost all notion of legitimate profits and seek to maintain their existence by manipulating the markets with

trusts and booms for stock dividends. It ceases to surprise us that annually on an average 5 to 8 per cent of those engaged in commerce and manufactures go to the wall in utter and total bankruptcy, so that in periods of 12 to 20 years, less than the life of a generation, they are all swept away. Farmers, of course, meet with disasters, but unless they leave their proper work to take a hand at speculation they are never, as a rule, wiped out at one fell swoop. The results of the enumeration of the mortgage indebtedness on farms made at the last census was a great surprise. The unexpectedly small amount of the indebtedness, the regularity with which interest had been paid, and the rapidity of the rate at which the mortgages were being extinguished led up to a settled belief among money lenders that improved rural real estate offers the safest and most profitable security for investments.

Rural life, like life in the cities, has been hitherto too easy to develop the higher energies of man. It is true that few industries remain in a more rudimentary condition than that of tilling the soil. Nevertheless, this very state of things offers greater opportunities to intelligence, industry, and enterprise than are easily to be found in the fierce competition of other crowded pursuits.

Nowhere are there greater possibilities to be found than in agriculture. The truth becomes daily more and more apparent that success here depends more upon the man than it does upon the land. There is a wide future for rural life and its pursuits.

The railroads which have built up their terminals and the towns along their lines have nearly completed the revolution in affairs that was their mission, just as the case has been with sailing vessels and with canals. New inventions are about to usher in a new order of things. The bicycle, the electric car, and the automobile must assuredly again distribute over the open country the human energies which steam has concentrated in the cities.

EXHIBIT B.—*Letter of Mr. Hammond to Secretary Wilson.*

BEECH ISLAND, S. C., November, 1897.

HON. JAMES WILSON,
Secretary of Agriculture, Washington, D. C.

DEAR SIR: I beg leave to submit for your consideration the following suggestions regarding an estimate and count of the cotton crop.

Owing to the fall in the price of cotton of over 30 per cent while the present crop is being picked—a reduction of \$13 a bale, and for a crop of 10,000,000 bales a diminution in value of \$130,000,000—cotton growers are holding back their crops from market. They are doing this at very considerable expense to themselves, allowing the high rate of interest at which they received advances to make their crops to run on, and adding to it heavy charges for storage and insurance. Their action is obstructing business, and all interests in the cotton belt are affected by it. They believe that the crop has been overestimated, and the fluctuations of the market show that uncertainty on this point is general. The present condition is somewhat an extreme one, but similar variations in price, owing, we think, in large measure to uncertain estimates of the crop, prevail every year. The Department of Agriculture gives the average annual range of prices for the years 1891–1895 as 0.21 cent per pound, involving mutations affecting an aggregate value of \$79,500,000.

It would not be difficult or expensive to prepare a township map of the cotton belt, on which was recorded in units of 100 bales the crop grown in each, according to the most accurate enumeration available. On such a map also all the ginneries might be located. With such a chart of cotton production and preparation for market agents of the Department, under its direction and paid for the work, might visit certain townships or portions of townships, and by personal inspection obtain and report to the Department data of almost absolute accuracy.

A visit from the 10th to the 20th of May, would determine the acreage and the character of the stand. Another from the 15th to the 30th of June, would report the growth of the plant, the cultural conditions, etc. Between the middle and the end of July, and also between the middle and the close of August, the count of bolls might be made, and a forecast of the outcome made. The last visit to the fields would be made between the 10th and the 20th of September, to furnish data for a judgment on the top crop. After that data all necessary information should be obtained from the gin houses. The larger part of this could be done by correspondence, but in the beginning personal visits might be necessary. At the outside 8 tours of inspection would suffice. Such inspectors could be readily employed at moderate charges, at the charges at which letter carriers are employed.

Recent tests made by the Postmaster-General shows that a daily house to house delivery of the mail in the rural districts costs from \$22 to \$35 per square mile, averaging \$28. A very thorough personal inspection of the cotton fields should not involve so much labor and time as the rural delivery of the daily mail. But assume that it did, and that the 32,000 square miles of the cotton fields had to be visited 8 times in the year, the statement of cost would stand as follows: As 300 visits for mail delivery is to 8 visits for cotton inspection, so is 32,000 square miles, the area in cotton, multiplied by \$28 the cost of the rural delivery per square mile, to the cost of the inspection of the cotton fields. If this is the proper treatment of the problem the cost of field to field and gin house to gin house inspection of the cotton crop should be \$18,500.

It may be objected that the cotton fields to be traversed by the inspectors, scattered as they are throughout the length and breadth of the cotton belt, are at wider intervals than the houses visited for the delivery of the mail. The most casual examination, however, of an agricultural map of the cotton belt—that, for instance, prepared by Mr. John Hyde for the Eleventh United States Census—will show that the fields producing the bulk of the cotton crop lie in groups, and inspectors informed as to the geography of these groups need lose little time in going from one to another.

Without going into details, the following table, approximately correct, showing the counties growing 98 per cent of the cotton crop of 1889, will make this clear:

State.	Total number of counties.	Counties with 20,000 acres in cotton in 1889.		Counties with less than 20,000 acres in cotton in 1889.		Total number of bales.	Counties planting no cotton.
		Number of counties.	Bales produced.	Number of counties.	Bales produced.		
Texas	244	66	1,125,313	112	315,929	1,471,242	66
Georgia	137	69	972,773	65	219,043	1,191,816	3
Mississippi	74	38	1,110,000	13	44,725	1,154,725	3
Alabama	66	15	829,857	21	85,353	915,210	
South Carolina	35	20	729,604	5	17,586	747,190	
Arkansas	75	45	584,060	30	107,434	691,494	
Louisiana	59	25	553,616	19	105,434	659,180	15
North Carolina	95	21	232,902	61	103,359	336,261	13
Tennessee	96	13	136,868	56	53,711	190,579	27
Total	881	372	6,275,028	382	1,082,674	7,357,697	127

Forty-two per cent of the counties produce 84 per cent of the entire crop; 43 per cent produce only 16 per cent, and 14 per cent of the counties plant no cotton at all. If the minor civil divisions were substituted for the counties, the cotton fields would be found still more closely grouped, and finally large areas of these minor civil divisions would be excluded as not important to the result, thus again reducing the territory to be inspected.

No enumeration of ginhouses of any value has been made for the census. Mr. Edward Atkinson was asked to undertake it at a late date for the census of 1880, and was able to collect no data of importance. The count given in the census of 1890 is too imperfect to merit consideration. Why ginneries have been held of less importance than flour mills, sawmills, grist mills, and a long list of minor industrial establishments it is not possible for me to say. What is noteworthy in the present connection is that the ginhouse is the first and the last and the only place where an accurate count of the cotton crop can be made. While ginned cotton may be stored for months and often for years on plantations and in warehouses, coming to view to swell the size of the crop unexpectedly, unginned cotton is never kept back in this manner.

Ginhouse returns during the picking season would furnish the best basis for forecasts of the crop, and by the 1st of each January the count made there settles the size of the crop for all practical purposes. Ginneries, like most other manufacturing establishments, are being consolidated. The public ginnery is superseding the old plantation ginhouses. They do better work and do it more cheaply. The old cost of ginning a bale was \$5. Now the ginning is done for \$1.50, and the large improved public ginnery is doing it for \$1. The writer has ginned this season 1,145 bales so far for 75 cents. The public ginner has no interest in withholding information as to the number of bales turned out. On the contrary, it is part of his business to know what the small ginhouses in his locality, competing with him, are doing. Unbiased reports should be obtained from him.

This is not the case with the cotton growers who correspond with the Department. Their interest is too great and pressing in the outcome to allow of their forming unprejudiced judgments. Such judgments should be left to the Department of Agriculture and based upon the facts reported by the inspectors. Such facts would be the average number of plants in a given length of row, their average height, the actual count of bolls under definite regulations, etc.

One thing, at least, is certain, State averages of the acreage and condition of the crop, as heretofore published by the Department of Agriculture, furnish no instruction to the great mass of cotton growers for their guidance. State lines are in no way related to the agricultural regions of the cotton belt.

There is a large amount of data on record available for the development and organization of the plan here outlined; but without referring further to it I respectfully ask your consideration for these suggestions on account of the large and important interests involved.

I have the honor to be, very respectfully, your obedient servant,

HARRY HAMMOND.

EXHIBIT C.—*Is the negro a failure?*

BEECH ISLAND, S. C., March 6.

EDITORS AUGUSTA CHRONICLE:

A pressure of farm work has delayed my reply to your circular asking my opinion on an interview with Professor White, published in your paper under the caption "The negro a failure." This is a period of failures, of low prices, of lack of employment, and of diminished profits. If we are to believe the published accounts, this state of things is confined to no locality, or nation or race, but extends over all Christendom, and affects, with great impartiality, all workers and all pursuits. To say at such a time that the negro is a failure does not confer any distinction on him, unless it be intended to mean that the negro, and not "overproduction," or "silver coinage," or "millionaires' speculation and adulteration," or the "protective tariff," or the "war expenditures of Europe," or the "land question," may be the bottom fact responsible for this widespread depression. Perhaps an argument could be made in support of such a theory as ingenious as many of the arguments in support of the numerous and various causes assigned for our distress. It might be shown that workers form barely a third of the population, while the alarm and dissatisfaction of the 17,000,000 counted in this class, in the United States, at being subjected to competition with the 60,000 outcasts in our prisons, prove how very small the number of real producers is; that of these bona fide producers among civilized people the negro must once have formed a considerable part when, after supporting himself, improving his condition, opening fresh fields, and developing the manifold resources of one of the most resourceful sections of the earth, he turned over, almost as a surplus product, to the greatest commercial and manufacturing industries of the world, in cotton, the largest and most important contribution of material ever made to them. It could be shown how in the process of his emancipation the cotton famine came; how, when the supply was renewed, the enormous profits flowing with its current, at first feeble and uncertain, excited a speculative expansion in the vast network of occupations connected with cotton-goods trade that bred a fever in them; how the unlooked-for increase in the production of cotton by the negro fed this fever with a plethora that has been neither assimilated nor excreted until a most damaging and dangerous congestion paralyzes the entire circulation and organism of the world's industries; that even the negro himself is no longer the consumer he was, and notwithstanding its greater cost, his surplus crop has ceased altogether to be such. Through modern mediums of futures and factors, brokers and banks, his cotton crop is now mortgaged, bought, paid for, and sold again before a seed is put into the ground, at a heavy tax on both consumer and producer, yielding to the latter a meager subsistence, with no reserve for investment.

Such an argument, however, would at the outset show that the negro was not essentially and by nature a failure. Nor can anyone acquainted with the record of the negro before or during the late war count him as of no avail. Remember the armies he fed during those 4 years, how his market value had increased 300 per cent between 1845 and 1860, and how in 1848 he made cotton, paying all costs and interest on investment, for 4 $\frac{7}{8}$ cents a pound. (See Solon Robinson in *De Bow's Review*.) To-day, even, with cotton at 7 $\frac{1}{2}$ cents, he earns a living, pays interest on the capital that gives him employment, and has a small cash surplus, which he unfortunately wastes, but which would suffice to insure his life for \$1,000. It would seem to follow that there is no prospect of his extinction or of

his removal from his present field of labor. It has been noted that where the negro forms more than 56 per cent of the population he shows a tendency to decrease, and where he forms less than this percentage he shows a tendency to increase. It is not improbable that there will gradually supervene a general diffusion of the colored race according to some such law as this, and every hindrance to the forces promoting it should be removed.

But if the negro is not a failure, how is the fact to be accounted for that the territory he occupies is far less prosperous than it formerly was?

My answer is that this territory has become involved in profound social and industrial problems touching the relations of labor and capital and the distribution of wages and profits—problems which, in this generation, have become living issues and are being fought out man to man on every square mile of territory from Russia to California. Whoever solves these problems and furnishes a plan on which free labor and free capital may be organized, so as to call out the full activities of each, avoiding injustice and oppression on the one hand and waste and pillage on the other, must abolish labor, as slavery has been abolished, substituting for it work up to the full force and faculty of each man, and will have transcended all previous human achievements. No man will do it. But that faith in human progress, which can never be abandoned, inspires the hope that the people themselves will, in process of time, reach some approximate and practical solution that will put an end to the present turmoil and strife and allow the return of peace, security, and steady work.

Meanwhile we have already advanced far enough in our struggle to review some of the things which have been done and to pass a judgment on them.

The negro should never have been projected into politics, where, without subverting any good end, he enabled, at great cost to himself, the carpetbagger to plunder the community.

The law for collecting liens on crops should be done away with finally and forever in every form and shape. It has substituted an unreal and artificial credit for the proper and natural growth based on character and thrift. It has forcibly dismissed the intelligence of the community from the supervision of its industries. It has seduced workingmen into speculative undertakings resulting for them in bankruptcy, and has delivered them soul and body, by a cheap, summary process, into the hands of the crossroads grocery dealers. It is a legacy of the carpet-bagger that has drained the country of the little he spared.

If we are to have a tenant system, our tenants must have means of their own. It is believed that agricultural depression in England is due to the attempt by tenants to farm with a capital of only \$30 to the acre. Capital is only accumulated by savings, and secure savings banks—postal savings banks, perhaps—would do much to educate and elevate the negro, if he can unlearn the terrible lesson of the Freedman's Saving Bank.

Capitalists must come out from their bombproofs of mortgages, advances, and rack-rents and take their part with workingmen in the risks of the seasons and the markets. Their directing forethought and intelligence are as necessary as they were between 1850 and 1860, when they added so much to the prosperity of the South.

The vast superiority morally and intellectually of the white race must not blind us to certain considerations. This superiority has been the slow growth of untold generations. Among the thousands whose eyes may rest upon this issue of your journal, whatever worthy acts they may perform to preserve and perpetuate this superiority, it is most likely that not one will by word, or deed, or thought advance it one iota. It is not our invention; it is an heirloom of the ages, bringing with it heavy responsibilities. Part of this responsibility is not hastily or carelessly to pass judgment on the other races of God's creation. For this reason it is necessary that men of character and culture should be on duty to control race prejudice, a serious complication in our problem. Where diverse races meet on a common level there is no security, as witness the recent brutal outrages on the Chinese. In such cases it is war to the knife or, what is equally to be deprecated, miscegenation. I invoke no sentimental kindness for the negro; there has been enough of that, and it has been a curse. It is simply necessary to do him justice. So far in the world's history the better class of Southern people alone have done this.

If the present low prices for agricultural products continue, fresh troubles await us. Wages which were fixed in a depreciated currency when prices were high will have to be cut down. That wages should be high when subsistence is cheap is not an anomaly. It occurred in England about the time of the Wat Tyler rebellion, and lasted nearly 2 centuries, with results most prejudicial to agriculture.

But I trespass on your space, and I will conclude by remarking, as to a peasantry, that I know of no record in history where a race of small proprietors have been prosperous. Everywhere they seem to form the wretched residuum of labor after all other occupations are supplied.

Very respectfully,

HARRY HAMMOND.

WASHINGTON, D. C., June 1, 1901.

STATEMENT OF MR. JOHN HYDE,

Statistician of the United States Department of Agriculture.

The Division of Statistics of the Department of Agriculture issues on the 10th of each month (February excepted) a detailed statement relating to the existing agricultural conditions throughout the United States, the data upon which these statements are based being obtained largely through voluntary correspondents. The chief reliance for the ascertainment of conditions is placed upon 3 principal corps of correspondents, namely, county correspondents, township correspondents, and State statistical agents.

County correspondents.—There are in the United States approximately 2,750 counties of agricultural importance. In each of these counties the Department has a principal county correspondent, who maintains an organization of 3 assistants, each covering a specified territory. These county correspondents are selected with exclusive reference to their qualifications, and they constitute a most efficient branch of the crop-reporting service. Facilities are furnished each principal correspondent to enable him to obtain regular reports from his assistants. These reports he tabulates, supplementing the information thus obtained by his own observation and knowledge of the situation, and the consolidated report is transmitted to the Statistician. Although there is no compensation attached to the position, from 80 to 90 per cent of the correspondents report monthly.

Township correspondents.—The list of township correspondents comprises from 6 to 15 individual correspondents in each county. These are distributed geographically throughout the county, the number being dependent on the size of the county and its importance in production. These persons report directly to the Statistician, the schedules for county and township correspondents being tabulated by the clerks in his office.

State statistical agents.—This list embraces a regularly appointed salaried State statistical agent in each of 43 States and Territories, it being the duty of each to report upon agricultural conditions for his own State only. Each of these agents maintains a special list of correspondents, over which he has entire control, completely covering the State and averaging, in total numbers, from 20 to 700 correspondents each, according to the size of the State and its agricultural importance. These State statistical aids report direct to the State agent. Their schedules are carefully tabulated and weighted by him according to the relative importance of each county represented, and the summarized report is submitted to the Statistician on the 7th day of each month. From States west of the Mississippi River the reports of State agents are telegraphed in cipher.

Each of the 3 lists I have mentioned is kept entirely separate and distinct, no one individual being allowed to serve upon any two of the lists.

The reports referred to above are brought together in convenient form on the 8th of each month and the statistician is thus provided with 3 separate estimates, covering the same territory and the same crops, made by separate corps of correspondents, each reporting for a territory with which he is thoroughly familiar, and from these results the statistician compiles his own estimates. The information thus obtained, however, is supplemented by the reports of salaried special field agents, who systematically traverse the producing portions of the country procuring all possible data and carefully analyzing the situation.

Information with regard to final yield per acre is further obtained from reports received from a very large corps of individual producers, each reporting for his own farm only.

The total number of all classes of correspondents in the crop-reporting service aggregates nearly 250,000.

In all tabulations careful attention is paid to the weighting of the figures submitted, so that each county and each State may have its correct and proper influence in the determination of the total for the State or for the United States,

according to its importance. The statistics are compiled with the census figures as a basis, the acreage and production being carried on from year to year by the percentage method.

Correspondents are asked to report in percentages, as compared in the case of acreage or production with that of the preceding year, and in the case of condition with a normal condition. Yield per acre and price per unit of quantity are, of course, reported quantitatively.

With regard to cotton, the information obtained in the manner just described is supplemented by that furnished on special schedules by a list of special cotton correspondents, embracing a very large number of persons intimately concerned in the cotton industry, a complete list of cotton ginneries, and a further list of cotton planters, each reporting for his own plantation. This method of investigating cotton production is, however, employed only for the purpose of making a preliminary statement, the final figures being derived from statistics of movement and consumption obtained from transportation companies, port officials, and mills. This final report can not be completed until after the close of the commercial cotton year—August 31.

Statements relating to live stock and the principal farm crops (except cotton) are made public on the 10th of each month, the cotton statements being issued on the 3d of each month during the growing season. In order that the information contained in these reports may be made available simultaneously throughout the entire United States, and that by reason of quicker mail service the territory adjacent to Washington may not have an advantage over that at a distance, the statements are sent out by telegraph. In order that the figures may be placed within easy reach of the farmer at the earliest possible moment, cards, containing the principal features of the report, are printed and mailed to every postmaster in the United States, within from 4 to 20 hours of the time that the statements are telegraphed, with instructions that they are to be conspicuously posted for the information of the public.

While the necessity of statistics to agriculture is unquestionable, there are far greater difficulties encountered in this application of them than in any other great department of the world's business. These difficulties spring in part from the character of the business itself and in part from its minute subdivision of operations and its wide distribution. That it is far easier to ascertain the output of a group of mines or mills than of a group of farms representing the same value of investment or of product is obvious.

These difficulties are such as can not be overcome by individual effort. It is not easy—it is rarely even practicable—for private initiative to conduct a statistical inquiry in a field so extensive as the United States. The volume of our agriculture, as well as its distribution, is so vast that the most interested private parties can never wholly measure it statistically.

It was perhaps the greater facility with which a complete and fairly accurate knowledge of the operations of large branches of business other than agriculture is obtained that gained for them their far earlier and more adequate recognition in legislation, the collection of agricultural statistics being for many years the work of an obscure section of one branch of a bureau in the Department of the Interior; but a statistical bureau early became a necessity to that large portion of the industrial community represented by the Department of Agriculture. Such a branch of the Department has therefore been in continuous operation since 1863, and it is no disparagement to any other branch of the Department's operations to assert that some of the most general, the most diversified, and in the aggregate the greatest benefits which have accrued to agriculture have been the result of the knowledge obtained and disseminated through this statistical office.

If these benefits are not so direct and apparent as those derived from the investigations of the scientific men who tell the farmer how to suppress the insect enemies that infest his fields and orchards, how to eradicate the various diseases that affect his crops, what are the conditions under which the growth of particular products is most successfully promoted, what fertilizers to use and how to apply them, how the quality of his butter and cheese may be improved, and many other things of high practical value, still they are no less vital and far-reaching, and inevitably tend to increase the rewards of industry by the augmentation of production through the analysis of comparative results, by the maintenance of a reasonable equilibrium between supply and demand, and by contributing to stability of value through the reduction to a minimum of the risks involved in trading.

The American farmer is one of some five million persons who are cultivating our oil, in areas of from 8 acres to well up in the tens of thousands, for subsistence and other profit. Some products he consumes quite largely at home in the main-

tenance of his family and hired help and the keeping and fattening of farm animals. One or more products, however, he annually raises to sell. But all that is raised in one place, whether for farm consumption or for local or distant market, has some relation to all that is raised elsewhere, and it is finally the amount of the supply relative to the extent of the demand which wholly or partially fixes the price and determines the profit or loss.

The all-important problem is how to secure a market, for without a market surplus production above farm consumption is not simply valueless, but positive loss to the extent of its cost.

Statistical information, widely and carefully gathered and properly presented and disseminated, relative to the condition and prospects and in due time to the actual measure of the principal products of agriculture has the strongest influence in maintaining a reasonable equilibrium between production and demand, and the consequent assurance of profit to the producer.

In so far as statistics give timely information to producers of specific conditions affecting the marketing of products, such statistics do all that can be done, and what can not be done in any other way, to secure to agriculture a profit on its productions. It is too much to expect that this result will ever be attained with such efficiency as to leave absolutely nothing to be desired; but so far as it is complete, the benefit secured is due to the statistical method, and will always require its service. What honest producers and interested consumers desire is relations which shall be of mutual benefit, and in the promotion of these relations the Division of Statistics of the Department of Agriculture has not only directly benefited agriculture to an incalculable extent, but, in doing this, has incidentally benefited all legitimate occupations and all consumers.

The benefits conferred upon agriculture by statistics, great as they are, have no more attained their full limits than has agriculture attained its full development. It is not too much to expect that through the gradual utilization of whatever knowledge of physical conditions and of human needs, susceptible of numerical expression, may be available, and the careful setting forth of its precise relation to the great business of agriculture, the statistician of the future will be able to promote the agricultural interests of the country in directions that as yet are hardly dreamed of.

If agricultural statistics are of any value in themselves, their timely availability for the use of those to whom they are of particular interest becomes a matter of importance. They would be of no value to farmers, but might even be positively detrimental to their interests, if possessed by only a few persons or restricted to commercial circles. It is, therefore, the aim of the Division of Statistics in the Department of Agriculture to make the widest possible distribution of the information received through its various agencies, and to make such distribution as prompt and speedy as the necessity of securing reasonable accuracy will admit of. The monthly crop reports of this division are therefore mailed with as little delay as possible to the Department's State statistical agents and the 9,000 persons who report to them, to the 2,700 county correspondents and the 10,800 persons who report to them, to the 40,000 township or district correspondents, to 12,500 cotton planters, to 1,200 newspapers, mostly rural, and to 174,000 other persons, the individual recipients, both correspondents and noncorrespondents, being mainly farmers. These reports relate, according to the season of the year, to the conditions of soil, weather, planting, growth, harvesting, yield, quality, transportation, markets, and prices. They are sent regularly and gratuitously to all persons who have taken the trouble to ask for them, and however susceptible of improvement they may be in any particular respect, the great demand for them leaves little doubt that considerable value is set upon them. When the statistical information received by the Department is made still more reliable by the institution of certain changes in the crop-reporting system, there will surely be no single division of any Government department, and certainly no independent organization, that will be promoting so greatly and so generally the agricultural interests of the country.

WASHINGTON, D. C., February 14, 1901.

TESTIMONY OF MR. WILLIAM BUDGE,*Farmer and Real-Estate Dealer, Grand Forks, N. Dak.*

The commission met at 10.30 a. m., Mr. Farquhar presiding. At that time Mr. William Budge, of Grand Forks, N. Dak., a farmer and real-estate dealer, was introduced as a witness and, being duly sworn, testified as follows:

Q. (By Mr. FARQUHAR.) Will you give your name and your home address?—A. William Budge, Grand Forks, N. Dak.

Mr. FARQUHAR. Governor Harris will conduct the examination.

Q. (By Mr. A. L. HARRIS.) You may state your occupation.—A. I am postmaster at Grand Forks just now. I also run a farm and buy and sell wheat and deal in real estate. I have a farm of my own and have had for the last 24 years.

Q. You conduct that personally?—A. Yes.

Q. Are you connected with your State agricultural college?—A. No, but I am a trustee of the State University of North Dakota.

Q. Have you traveled over your State to some extent?—A. Yes.

Q. Are you conversant with conditions both as to labor and capital?—A. Yes.

Q. You may state in a general way the development of your State.

(The witness then read the following statement:)

"Twenty or 25 years ago North Dakota, then a part of Dakota Territory, was little less than a portion of what was shortly before known as the American Desert. In the western part of what is now the State at that time the Indian and the buffalo roamed at will over a great territory where now are prosperous villages, and where intelligent citizens are tilling the soil, raising stock, mining coal, and engaging in various occupations. A great region, which had been unproductive and which was considered unimportant, has during these few years developed into a great State, rich for agriculture and stock raising, and with many valuable undeveloped mineral resources.

"The great cause of this transformation from a waste and sparsely populated region to a great, productive State is to be found to a large degree in the wonderful developing power of the railroad systems which have passed through and opened up this great territory. When so much is said of arbitrary and unjust acts of railroad corporations, it is only fair to state that it is due to the strong hearts, clear heads, and energetic persons back of these corporations that we have the great development of which the Northwest is so proud. Moreover, these great transportation companies recognize the fact that the welfare of the people is their welfare. In general, I believe that the railroads within the State are doing whatever they feel that they can reasonably afford to do toward developing the country by extending railroad branches, by fostering industries, by affording reasonable shipping facilities, and by granting fair rates of shipment in general.

"To encourage and not to discourage, to enrich and not to impoverish the people is certainly the wish of these companies. Seldom is an urgent need of shipping facilities brought before these companies in a proper light but it is carefully considered. Branches are often operated at little or no profit; side tracks and yards are frequently maintained for sake of convenience and economy to the producer. Rates on the leading products have been steadily reduced until now 8½ cents per bushel will carry wheat from Grand Forks to Duluth, which twenty years ago would have cost 17 or 18 cents. No doubt greater reductions will follow when the railroad companies find that they can afford it and that the general good of the community demands it.

"Increased equipment in cars and locomotives, short lines, and fast trains make it possible to handle the enormous amount of grain on the short notice necessary under the present conditions in this region.

"In order to handle the wheat so that the farmers will not always be at the mercy of the market, some system of storage is necessary to hold the great crops harvested in the fall months. In some cases large farmers or farming corporations have their own grain warehouses. But the average farmer is not able to build warehouses and equip for economical and safe handling of the large amount of grain he produces.

"More than that, only a few are along the railroad lines, and even if they were, of course switch tracks could not be put to each few farms. It is therefore necessary that the farmer should haul in his grain and ship from and through some grain dealer near his farm. So it is evident that the elevator is an essential factor in the grain industry of the Northwest. Of course capital would be invested

in the elevator and grain-shipping business only as a source of profit. And when it is found by operating a system of elevators along a certain railroad that the operating expenses can be reduced and facilities improved, it is only reasonable to expect the consolidation and formation of systems. There is, however, no monopoly, as several companies are generally represented in each town of importance, and the different companies keep a keen watch on the doings of each other. This competition has resulted in reducing elevator charges to reasonable prices for handling and to a uniform basis, the price being 2 cents per bushel.

"No doubt large and influential elevator companies can secure better accommodations for quick shipment when the market justifies, and better prices through their representatives at terminal points, than can individual and small shippers. In this way the farmer will profit to a greater or less degree. It is also certain that the great storage facilities lately being provided by the large elevator companies and the Great Northern Railway will be of much value to the farmers in that they will permit the rapid shipment of grain from the country and will provide sufficient terminal storage, so that the grain can be held for a better market, if thought desirable. This will also be a great relief on the demands for the rolling stock of the railroad during the short period of the grain-shipping season. I firmly believe that the present elevator system is of the greatest value to the agricultural interests.

"River navigation is not developed to any great extent in North Dakota for the reason that there are only 3 rivers of sufficient size within the State to warrant the use of boats. These 3 streams are the Red River of the North and the Missouri River. The navigation is carried on by small flat-bottomed steamers and freight barges.

"For years considerable freight has been carried along these 2 rivers by boat. On the Missouri the freight is of a very diversified nature, that coming in being largely lumber and building material and provisions forwarded from railroads, and that outgoing being largely grain and coal.

"Shipping on the Missouri supplies a large region which has for years been without railroads, and is for that reason the more appreciated. The great impediment to navigation in this river is the shifting sand bars which are formed because of the shallow water and wide banks. As fast as possible the channel should be dredged and provided with a series of pile bars, similar to those already placed in the upper Mississippi, to confine and narrow the stream. With this done there is no reason why the river navigation should not be much expanded and the adjacent country much developed. It would also doubtless prevent much destruction from river flooding.

"Before the railroads reached the Red River Valley there was considerable freight of all kinds carried by boat from Fargo and other points north along the river, but since the railroads have been operating in this section the freight has been reduced to but little else than grain.

"For small miscellaneous freight rail shipments are faster and more convenient. However, boat shipping is important for those towns situated along the river. The following is a statement of the grain handled by the Red River Transportation Company for 6 years ending 1900. This company does about two-thirds of the shipping and a local company the other one-third.

Year of—	Bushels.	Year of—	Bushels.
1895	287, 180	1898	261, 892
1896	445, 167	1899	510, 375
1897	217, 354	1900	276, 977

"What has been said relative to needed improvements on the Missouri River is equally true of the Red River. This is a shallow, rather muddy, stream but one which does not change its channel much. Very little work has been done on this stream. Some bars have been thrown to deepen the channel and this has doubtless aided, in this way, navigation. But a series of bars and locks located at a few points starting near the upper sources of the Red and Red Lake rivers and running to the Canadian line would not only greatly aid navigation, but would enable a sufficient control so as to prevent disastrous floods which occasionally do much damage to crops, lands, and buildings along the lower Red. The locks and bars would serve as regulators and would also aid much in keeping back the waters for a uniform flow. This would also be very valuable as a sanitary precaution, since in the late summer and the fall months the stream is very low and sluggish and seems more charged with impurities.

"Many towns which depend upon the river for their water supply have suffered from this cause. Grand Forks was forced to put in an extensive filtering system for purification. A series of locks and dams would be comparatively inex-

pensive since the river is admirably suited to such control. The banks are generally high enough and the river channel is very narrow. The following figures will show the fluctuation in water in different years and at different times in the year. Much of this could be reduced by the proposed dams and locks.

" RED RIVER OF THE NORTH.

" 1896: Navigation opened April 18; gauge, 14.5. Water reached highest point on gauge May 30, 27. Cause of high water, rainfall. Lowest water September 13, 0.6. Navigation closed November 7.

" 1897: Navigation opened April 11; gauge, 45.2. Highest water, April 10. Cause of high water, snowfall. Lowest water, November 13; gauge, 1.9. Navigation closed November 15.

" 1898: Navigation opened April 15; gauge, 9. Highest water, July 6; gauge, 9.4. Lowest water, November 9; gauge, 0.8. Navigation closed November 8. Precipitation light during winter and summer.

" 1899: Navigation opened April 18; gauge, 15.9; highest water of season. Lowest water, October 1; gauge, 1.2. Navigation closed December 1. Precipitation light during winter and summer.

" 1900: Navigation opened April 11; gauge, 7.7. Highest water of season, October 13; gauge, 11.5. Lowest water of season, July 1; gauge, 1.6. Navigation closed November 13. Precipitation heavy during latter part of season.

" In river transportation the same rates prevail as by rail, but many points are reached by river more easily than can now be done by rail.

" Of course, the principal industry in North Dakota is grain growing. The Red River Valley is justly proud of being known as the Bread Basket of the world. Crops here seldom fail, and even during occasional years of partial drought the moisture-storing capacity and productiveness of the soil and the resisting qualities of the acclimated wheat plant are very remarkable.

" It must not be thought, however, that wheat raising is all that North Dakota is fit for. In the western portion of the State attention is largely given to cattle and sheep. Large ranching is now giving way to a greater number of small ranches. Settlers are rapidly getting stock on their own farms and thus are better fitted for variations of seasons.

" In localities subject to occasional dry seasons flax culture is being successfully started. This crop seems to do well on such lands and affords another means of diversifying. Several oil mills have been started, and this industry and flax culture bid fair to be very important resources.

" It has now been fully demonstrated that the rich, sandy soils of the central portions of the State are well adapted to growing beets rich in sugar. Movements are already on foot to develop this industry and establish sugar factories. The introduction of sugar-beet culture would be doubly helpful, since it would give the farmer another profitable crop and at the same time supply, in the pulp, a good feed for cattle, and it would start manufacturing establishments in an otherwise rural district.

" A few years ago it was not thought that corn could be raised in North Dakota, and so the pork industry has not been started. But little by little the farmers have planted corn, and saved the seed and replanted until the better varieties, having become acclimated, are now doing very well with proper care, and there is every reason to believe that North Dakota will soon multiply many times its pork production.

" A diversity of crop and industries, which have been the great need of North Dakota, is now rapidly coming. With this will also come a much more uniform value of production and a corresponding improvement in the financial condition of the farmer and the merchant. The great transportation companies will also profit by diversified industries, since this condition will insure a more uniform production and shipment, not only for different years, but during different portions of the year.

" One important industry which is just starting and which should be given all the encouragement possible is the mining of lignite coal.

" North Dakota is being very rapidly settled and developed. This growth is now taking place most rapidly in the central portion of the State. A rich farming area is being opened, and branch railroads are pushing out into a previously unoccupied territory. An increase of above 74 per cent in population during the last 10 years is a growth equalled by but very few States or Territories in the Union. The settlers are usually of an excellent character.

" They are industrious and for the most part intelligent. Many were farmers in other parts of the country or Canada. They are rapidly improving their farm

property, and many who have been in the State a few years possess respectable bank accounts.

"In the Red River Valley farm lands have increased in value from \$5 or \$10 to \$20 or \$40 per acre.

"All classes are becoming deeply interested in their individual and social improvement. Towns are putting in electric-light plants and waterworks, public buildings are being erected, and the schools are well supported. Few things point more clearly to the general growth in number, wealth, intelligence, and prosperity than the wonderful increase in the number of children attending the public schools, and especially in the number of young men and women who are attending the institutions of higher education. The university, agricultural college, and normal schools all show a remarkable growth in attendance and in the character of their work. Many of these institutions rank well with those of the older States.

"In conclusion, it may be said that North Dakota has good reason to be pleased at the development which has taken place along all lines during the past 2 years. Such a growth indicates nothing very bad in the industrial conditions found in this region.

"We have escaped many of those social and industrial evils which are met with in some of the older and more thickly populated portions of this and other countries. Our people are successful in securing a good living and in building up good homes. They are prosperous and contented in their occupations and in building up a great Commonwealth."

Q. Will you please state the condition of labor in your State?—A. We have not any labor with us the same as they have in other States; none except the people that own their homes and farms there. The labor that we have to have during the harvest is a floating labor that comes in there on the railroads and stays during the harvest, which lasts about 3 months, and then generally goes back.

Q. Have you hired labor that stays with you during the year?—A. We have, some of us, a few hired men on the big farms; but on farms like mine we keep one man through the year. And a man that has 320 acres generally has his family and takes care of his farm himself until spring comes. He hires 1 man until harvest, and during harvest and threshing he has 2 or 3.

Q. Have you any difficulty in getting help?—A. We had none last year. Last year it was pretty scarce. We had a poor crop. The year before we had more labor than we could take care of. They move from one part of the country to another. Where there is a big demand for labor, where there is a big crop, the railroads move the laborers.

Q. What are the hours of labor?—A. During harvest we commence as soon as we can get out and work until sundown.

Q. During other portions of the year?—A. Oh, they do not work more than 10 hours.

Q. What are the number of days employed in your State?—A. On a farm it is about the whole year. Of course, we do not have as hard labor in the winter as we have in the summer. There is not much to do but take care of the stock.

Q. How do you pay—by the month?—A. We pay by the month.

Q. What do the wages average?—A. In the winter time about \$15, and from the spring to the fall the average is \$22 to \$25 a month.

Q. Is that payment made in cash?—A. Yes.

Q. Have you any tenants who have families and who live on the farms?—A. Yes.

Q. You may state what privileges they have in connection with the house and their wages?—A. They generally have their house and barn, and if the seed is furnished by the landowner they have half the crop. If they furnish the seed they have two-thirds of the crop, and plow the land.

Q. Have you any tenants of that kind who work by the month or by the year?—A. Very few. They all work on shares.

Q. What is the future for a tenant in your State on shares?—A. There are so few of them that they only work until they get a start and then they go out and take up land of their own.

Q. Do they generally become farmers?—A. They generally become farmers on land of their own.

Q. (By Mr. FARQUHAR.) In your State or elsewhere?—A. In our State.

Q. (By Mr. A. L. HARRIS.) What is their condition financially when they start?—A. All went there poor; they had nothing. There were a few people who came with a little money; but if a man had a yoke of cattle and a cow or 2 and a wagon and a little grub, he was considered pretty well fixed in the early days. Of course, we are getting a better class now.

- Q. Have you any immigration?—A. Yes.
- Q. From what countries do they come?—A. From Norway, Sweden, and Germany. We have a few Hollanders, some Russians, Scotch, Irish, a few English and Canadians, and the balance from the States.
- Q. Are they generally an intelligent and desirable class of people?—A. Yes; they are all mighty good people.
- Q. Have you any French Canadians?—A. Yes; we have; and we have some Poles. They are good people, too. We get French Canadians down in Walsh County, and there are a few in Cass County.
- Q. Is there any tendency on the part of your immigrants to colonize to preserve their language?—A. Not a great deal. The Scandinavians have tried to build a Scandinavian school, but the boys all go to the university. One-third the students at our university are Scandinavians now, and we calculate to put in a Scandinavian chair there so as to have no feeling. In other words so that they will feel that we are fair with them. But the Scandinavian boy very seldom studies Scandinavian; some other citizens do. Indeed we have a Scandinavian chair there now, but the Scandinavian professor is not what we would call a first-class Scandinavian teacher. We expect to put one in in the spring to fill that chair.
- Q. What language is taught in your common schools?—A. The English language.
- Q. No demand for foreign languages?—A. No; there are no teachers nor schools except English.
- Q. You say the young Scandinavian prefers to study English?—A. Yes.
- Q. And the American to get some Scandinavian?—A. Some of them do so as to learn to talk with the Scandinavians.
- Q. It is not, then, for the purpose of preserving the language—the original language?—A. No. The Scandinavian naturally feels friendly to his country, but in the little crowd they have of Scandinavians there in the university we can not tell the Scandinavian boys from everybody else.
- Q. You have some settlers from the older States, have you?—A. Yes.
- Q. What class of citizens are they usually?—A. They are good citizens; people who have left their farms; pretty much all farmers.
- Q. Do they generally come to you comparatively poor?—A. Some of them, and some of them have moved out there with some stock and cattle, and they are in better shape than the rest of them. They are moving from the Western country; more of them are coming than ever before. We have had some Dunkards coming there from Pennsylvania; they moved into a settlement by themselves, and they are doing very well.
- Q. Please state whether, in your opinion, your public-school facilities are sufficient.—A. Yes; and we are improving them as fast as we possibly can. Our public schools will compare pretty nearly with those of any State in the Union where there are good settlements. Of course, you know, in the sparsely settled country we have the little cabins, but our system of schools is very good.
- Q. You have free schools?—A. We have the free-school system. The superintendent of public instruction is elected by the people, and the governor is president of the university. We have high schools; they all grade from one to the other.
- Q. What is the condition of your schoolhouses?—A. It is good. We have fine schoolhouses where there has been settlement within the last 15 or 20 years.
- Q. Has there been any effort on the part of the farmers to have branches more in touch with agricultural needs taught in the schools?—A. Not very much; there is some. We have an agricultural college, and a good many farmers' sons go to the college during the winter.
- Q. Is your agricultural college well supported?—A. Yes; the government supports it. There are probably 300 students now.
- Q. What becomes of the graduates or students when they leave the agricultural college?—A. There are a great many young men who have farms who go to the college to study up on farming and to just get an idea of things when they have not much to do in the winter.
- Q. You have a course that permits that?—A. Yes. And then we have higher courses for boys who go through. Men of 18, 20, and 26 go there and take the course on farming, to learn how to keep the grain and so on, and to seed. Some also go to learn how to run threshing machines and so on.
- Q. Does the course touch on every subject that pertains to agriculture?—A. Yes, and stock as well, pretty thoroughly.
- Q. Is there a good technical course?—A. Yes.
- Q. Do the graduates seek other professions after leaving your college?—A. A few of them, yes. There are a few that go to the agricultural college, and from there to the university, and some of them to the University of Minnesota; they scatter all over.

Q. Do some of them become teachers in agricultural colleges in other places?—

A. They are too new for that yet; they have not run it long enough. Our university boys become teachers; they are a little older than the agricultural college boys.

Q. Have you an experiment station in North Dakota?—A. Yes.

Q. (By Mr. FARQUHAR.) Is it the propensity on the part of the graduates of your agricultural college there to seek the professions and complete their education?—A. A great many do.

Q. In colleges?—A. Yes.

Q. And leave the farms?—A. A good many of them.

Q. About what proportion do you think?—A. Well, it would be pretty hard for me to tell you that, because our boys are young. The young boys are the fellows that are trying to get out. The older ones that are there, they simply study for the improvement of their own farms; but the young boys can go there because they can get in when they can not get into a college. They have not had the chance on the prairie. The schools are small and the grade is very low in the agricultural college so as to give those boys a chance. In fact, our university is put down two grades lower than the high school to give those boys a chance. Now, those young boys come in there and they go through the agricultural college, and in a year or two then they go to the higher schools.

Q. They want to become lawyers and doctors and ministers and all that and not return to the farms?—A. A good many of them, yes.

Q. (By Mr. A. L. HARRIS.) Will you please state the efficiency of your experiment station and the work it is doing in a general way? Are they making tests and issuing bulletins for the information of the farmers?—A. Yes; they are doing it right along.

Q. You may state, if you please, the advantage, in your opinion, that the experiment station is to the farmer.—A. During the winter season it is a big advantage to him. He goes there and sees things in a scientific way by which he can benefit on his farm when he goes back.

Q. Is that the experiment station or the agricultural college?—A. They are both together.

Q. Along what lines does your experiment station make tests?—A. On seeds and on stock, I think; everything in the agricultural line.

Q. (By Mr. FARQUHAR. (Soil?—A. Yes; soil.

Q. (By Mr. A. L. HARRIS.) Does it make any tests on fruits?—A. Yes. Of course, our country is not adapted for fruit except small fruits, such as berries, plums, and raspberries, and things of that kind, and crab apples. And there is a hardy apple that they are commencing to set out there now. They are testing those things.

Q. (By Mr. LITCHMAN.) Is there any attempt to cultivate the Baldwin apple in those regions?—A. No; it is too far North. There are fine apples there; they have a good many in the ground, but fruit is pretty hard to take care of, it is so cold.

Q. Does your cold last longer than it does in New England?—A. Yes; it comes along earlier in the fall. It is not as severe as it is in New England; it is a dry cold. When the farmers set out fruit trees they have to protect them, and they shelter them. Timber grows there now, but when I went to South Dakota there were not any trees.

Q. (By Mr. A. L. HARRIS.) Does the Government encourage the growth of the forest?—A. Yes.

Q. Are its efforts bringing good results?—A. Yes. For a long while we had the privilege of taking up a tree claim by planting trees. We undertook to plant the trees in the sod, and we made a poor success of it until the wild sod was cultivated; but after you get it cultivated you can make a tree grow. We have box elders, ash, cottonwood, and elm. You can grow maple, but not very successfully; some evergreens are hard to grow.

Q. Have the experiments progressed so far as to make any improvement on moisture or temperature?—A. It is pretty hard to tell yet. Last year was the driest we have had and, I think, the finest. It seems to me that the climate is improving—that is, we grow stuff we could not grow when we went there, but I think that is on account of the land being cultivated year by year. We are now growing a little corn. We could not grow any when I went there.

Q. Have you farmers' institutes in your State?—A. Yes.

Q. Are they encouraged and well patronized?—A. Yes.

Q. What is discussed in your farmers' institutes?—A. Subjects generally along the line of farming. The president of the agricultural college generally goes out and 1 or 2 of the professors. The president of the Great Northern Railroad goes to a good many of the meetings, and we have a general discussion.

- Q. Are they bringing good results?—A. Yes.
- Q. What subjects are discussed at your institutes?—A. Stock raising and general farming; all subjects for the improvement of farming; benefits that a man derives by knowing how to handle his products and how to raise them.
- Q. Does the local talent participate?—A. Sometimes.
- Q. Do ladies take part in the discussions?—A. Occasionally, but not very often.
- Q. (By Mr. FARQUHAR.) Have you any dairying?—A. Not to amount to very much. They are establishing some dairies now gradually. In the western portion of the State the entire crop is wheat, and in the east where the farmers have been raising wheat and in the middle portion where they are raising flax and mixed crops they are getting some cattle. This later immigration, coming from the older States, is raising stock, and they make pretty fair butter. But the winters are so long that they can hardly get feed enough. That is the trouble.
- Q. What grade of cattle have you?—A. We have Short Horn, Polled Angus, Hereford, and around the towns we get some Jerseys. When we first started in, President J. J. Hill, of the Great Northern Railroad, was very anxious to have people put in stock, and he shipped in quite a number of Polled Angus bulls to the farmers.
- Q. (By Mr. A. L. HARRIS.) What have you to say in regard to the earnings of capital invested in agriculture compared to investments in other lines of business in your State?—A. When you take into consideration the price at which we bought our lands, not counting what they are worth to-day, it does very well. You know lands are going up. But if we consider only what the farmer considers his land worth to-day, it is a different proposition. He bought his land at from \$2.50 to \$5, and now he figures it is worth from \$25 to \$40 an acre; and the taxes levied on our lands are on a valuation of about \$6.50 to \$7 an acre, I think, but, of course, none of us would sell at that price.
- Q. How do you reach your valuation?—A. The assessor values the land and the county commissioners equalize the valuations.
- Q. Are your tax laws satisfactory?—A. Yes, on the whole, they are pretty fair. They have been amended a good many times, and are in pretty fair shape.
- Q. Have you any amendments to suggest?—A. No.
- Q. Is your farm property valued higher than other property?—A. I do not think it is. I would not like to say it is any lower, but the valuation is about fair I should judge.
- Q. (By Mr. LITCHMAN.) You said that the average assessment value is about \$6 an acre?—A. Yes.
- Q. And the average price at which the land is held is at \$25?—A. Yes.
- Q. That would make an assessment of 25 per cent on the market value?—A. Yes.
- Q. Well, does that same ratio of taxation hold for all other property?—A. No.
- Q. Then the farm land is taxed lower than the other property, is it not?—A. Yes; the banks are assessed at the rate of 60 per cent.
- Q. (By Mr. A. L. HARRIS.) Has there been any decline in the price of agricultural products since you have gone into the State?—A. Yes; there has. I have been in the State for 30 years. Then we raised a little oats and we got our own price for it. We had no sale except to people coming in.
- Q. Of the market generally what have you to say?—A. Why, the markets for the last 2 or 3 years have been about the same. The price of wheat has averaged about 60 cents. Some years it has been a little more and some less, but that is about the average.
- Q. It is profitable at that rate to raise it?—A. When a man cultivates his farm right it is.
- Q. Can you give the commission an estimate of the cost of raising an acre of wheat?—A. About \$5 an acre; that would put it on the cars.
- Q. (By Mr. A. L. HARRIS.) What is the average value of an acre of wheat on the cars?—A. It depends on the crop. In years when we have an average crop of 15 or 20 bushels per acre, we can figure about 60 cents a bushel on our wheat. Last year the crop did not average over 10 bushels; it did not average that.
- Q. Taking it one year with another?—A. Oh, it will average 15 bushels; the valley will run over that about 10 to 12 bushels.
- Q. Is there a margin of profit?—A. Yes; my crop has averaged about 20 bushels ever since I have handled the farm.
- Q. Is there any decline in the productive condition of your soil?—A. No; not if it is handled right. The valley is a black loam, with a solid bed of clay underneath—loam of about a foot to a foot and a half thick on top, and heavy clay on the bottom. Of course, when we get outside of the valley we strike a lighter soil.
- Q. Is it easy to maintain the productive condition?—A. Yes.

Q. When it declines, is it easy to recuperate?—A. Yes, 1 year's rest would put it back in shape. Of course, the land there has never been manured any.

Q. (By Mr. FARQUHAR.) Fertilized?—A. I put on fertilizers. I had a piece close to town that I fertilized, and I raised 36 bushels to the acre on it. I had a great crop off it.

Q. Is the improved farming growing in favor?—A. Yes.

Q. And fertilizing and saving manure?—A. A good many do that, and they rest their land. A good many farmers rest one-third of their land and cultivate the other two-thirds, and put that one-third in the next year, get a crop of grain the next year, turn it down, and thus get away with the stubble in the soil and leave it compact for a crop the next year. I can show you in my bag here a sample of wheat off my own last year. [Witness produces bag.] Here is a sample of my own that a gentleman from the agricultural college said would not fill last year. Mr. Holmes was up there, and he told me that it would not fill or be any good, and I did not think it would fill, either. There is the wheat, and I brought it along on purpose to show it to you. You see it is quite well filled.

Q. (By Mr. A. L. HARRIS.) Does rain come early in the season?—A. About the 1st of July. We had no rain on this wheat until about the middle of July. It then got 2 hours' rain on it, and it filled. Now, the land that was alongside of that that was plowed only raised 4 bushels to the acre and was allowed to rest the year before, but this land was plowed down and the stubble turned under, leaving the soil compact, and there is the difference.

Q. Careful farming then, to some extent, will help the farmer out if the elements are against him?—A. Yes.

Q. Then, the time is coming you think when careful management by the farmer will be necessary?—A. Yes.

Q. Is it growing in favor?—A. Yes.

Q. Have you any bonanza farming left in your State?—A. Yes; we have several big farms. The Lamoure farm west of us has, I believe, about 7,000 acres.

Q. What effect do the big farms have upon the general industry of agriculture?—A. They do not help any. I would like to see them all out of the way. They take up a big space and they hurt our school districts. Where there are only a few children in the district it does not make so much difference, but they do no particular benefit to the country. The owners ship in their supplies and ship their wheat out. They also ship their men in and ship them out.

Q. Are those farms divided into sections—I mean, are they divided up for economical cultivation?—A. Yes.

Q. You may describe them, if you will?—A. They run them all in sections. The roads have to be opened up on a section of land as the people demand them, and they just farm a square section. If they can farm it all in one it is a great deal better. If there is a 2 or 3 mile stretch to plow, it all has to be turned at the same time, and it takes up time, and they generally lay out the distance as long as they can.

Q. How is that plowing done?—A. It is done with gang plows and 4 horses or 4 mules to each plow.

Q. How many men does it take to manage a team?—A. One.

Q. How many acres can 1 team plow in a day?—A. About 5; a little over with good soil.

Q. (By Mr. LITCHMAN.) Do they have any gang plows operated by steam?—A. No; they have tried them but they do not work.

Q. Was it done with a long cable pulling the plows along?—A. It was done with a traction engine, but it did not work.

Q. (By Mr. A. L. HARRIS.) Is the plowing done in the fall or in the spring?—A. It is done in the fall. You have got to do it to get your crop in in time.

Q. Do you wait for the frost to get out of the ground in the spring?—A. No; the deeper the frost the better we like it; the moisture supports the crop in the spring.

Q. (By Mr. FARQUHAR.) Your objection to bonanza farming is that it leaves no family settlement on the farm?—A. Yes.

Q. And it is destructive to the schools by making a great place where there are no children for education at all?—A. Yes.

Q. In other words, it is contrary to the American farm life?—A. Yes.

Q. (By Mr. A. L. HARRIS.) Are these large farms under the control of one man?—A. Yes. One man can handle a big farm. You take a man with 4 horses, and 1 man on a farm of that kind can handle 160 acres. No trouble at all; no rocks, no stones. Everything is smooth; it is not like farming down in this country.

Q. Is this man a hired man, usually?—A. Yes.

Q. Is he a single man?—A. He generally is.

Q. A resident of the State?—A. At times he is and sometimes he is not. The big farm owners hire a crew in the spring, and when the farming is done they let

them out, except enough of them to take care of the farm, and one or two men can do this.

Q. Is the hired man married or single?—A. Some of them are married and some of them are single.

Q. Are those big farms profitable to the owners?—A. I think some of them are and some are not. It depends on how they are handled.

Q. Are they run exclusively for the purpose of making money for the owners?—A. Yes; the land has grown in value, and they make their money on land. The Grandin farm and the Dalrymple farm have made money.

Q. In the spring, what is necessary to do before putting in the wheat?—A. Nothing. You just put it in. The land is all ready in the fall.

Q. Then, is it cut with a binder or header?—A. With a binder. Headers we can not use, on account of the moisture. The wheat heats.

Q. You have to shock your wheat?—A. Yes.

Q. When do you thrash it?—A. Out of the shock. Of course, a good many farmers have stacks, but the most of the wheat is thrashed out of the shock.

Q. What are your facilities for thrashing?—A. We get nice thrashing machines. A good machine will run 2,500 to 3,000 bushels a day.

Q. The operator furnishes his own crew?—A. Yes.

Q. And thrashes for so much a bushel?—A. Yes.

Q. Boards his own hands?—A. Boards his own hands.

Q. Takes his kitchen and everything with him?—A. Everything with him.

Q. And his own cook?—A. Yes.

Q. (By Mr. CLARKE.) Where do he and his men lodge?—A. Oh, in the straw stack or the cooking shanty. It is dry there in the fall. We think nothing about that.

Q. (By Mr. A. L. HARRIS.) Have you any organization among your farmers?—A. Not very many; no.

Q. Have you the Grange or the Farmers' Alliance?—A. Both have been wiped out in our country. We did have them, but they went to pieces.

Q. Have you any farmers' clubs?—A. No; very few.

Q. Have you any grain-growers' associations?—A. We have had, but the people do not seem to take much interest in them.

Q. Why did the interest in the organization among farmers decline?—A. It is pretty hard to tell. It first started in our country as the Farmers' Alliance, and then ran into politics and Populism and broke up. That is about the size of it. Our leaders ran it to benefit themselves, and let it go.

Q. Are your farmers diversifying now?—A. They are to some extent.

Q. To what did they confine their efforts formerly?—A. To wheat.

Q. How are they diversifying now?—A. Oh, they are getting some stock, and they have some hogs, and some chickens and turkeys. Some of them are raising a little flax. But as far as vegetables are concerned, we have no market for them. Rates are so high we can not ship them out of the country.

Q. Do you raise corn?—A. We raise a little crop, yes, for stock. A great many of our people have butter to sell in town. We are buying it now ourselves. What we needed before we used to ship in.

Q. What kind of stock do you raise?—A. We are raising pretty much Short Horns. They do well.

Q. Do you have to feed during the winter?—A. Yes.

Q. Is your hay and forage cheap?—A. Yes; except in the Western portion of the State. You know there is a difference in our State. When you get west of Townner, to the mouth of the river west, the cattle take care of themselves. Our State is not like a great many States; there is a difference in climate in different parts of the State.

Q. Do you raise any sheep?—A. Yes; they do very well.

Q. How is the sheep industry, improving or decreasing?—A. It is improving now. It did decrease about 10 years ago, but it has increased lately. A great many put in a pile of sheep in the eastern portion of the State. Then wool went down and they quit, but now they are commencing to start up again.

Q. It is a profitable industry?—A. Yes.

Q. Are you raising horses?—A. Yes; we have a few horses; not quite enough for the country yet, but pretty nearly. We had to ship everything in before.

Q. (By Mr. CLARKE.) What was the cause of going out of the sheep raising?—A. Low price for wool.

Q. What depressed the price of wool?—A. Well, I guess you know about as well as I do. It is pretty hard for me to mention. I suppose the tariff did that; I do not know.

Q. What is the cause of their going into sheep raising then?—A. Wool is going up, and they are getting more for it, and it pays them to handle it.

Q. Can you give about the dates when these changes took place?—A. I suppose it was during the changes of administration.

Q. (By Mr. FARQUHAR.) Changes of administration?—A. Yes.

Q. It was a tariff matter then?—A. Yes.

Q. (By Mr. CLARK.) Is that a good sheep country?—A. Yes.

Q. And it is profitable to raise sheep if wool commands a fair price?—A. Yes.

Q. (By Mr. LITCHMAN.) Is it more profitable to raise them for the wool than for the mutton?—A. Both help.

Q. (By Mr. A. L. HARRIS.) What breed of sheep do you raise?—A. I should judge they were merino. Some of them are not pure, but we have some pretty good stock there. Growers go to different fairs and buy from breeders and put in the flocks.

Q. You speak of fairs. Then you have an agricultural society there?—A. We do not. We had a fair at Grandin last year. We used to have one in the Forks, but it is pretty hard to keep them up. We have these county fairs, and we used to have pretty good fairs. Early in the settlement of the State we had fairs at the Forks, and we had some of the best stock there I ever saw in my life. It came up from Minnesota and Iowa, and the owners wanted to introduce it.

Q. Were the fairs beneficial?—A. Yes.

Q. (By Mr. FARQUHAR.) These fairs, are they for an exhibition of your live stock and farm products?—A. Yes.

Q. Do you have in most of your fairs an exhibition of the trotting ability of the horses?—A. Oh, there is not a great deal of trotting, but you can not get up a fair there unless you have trotting horses. You can not get up a fair and get the crowd to stay without them.

Q. (By Mr. A. L. HARRIS.) What effect has improved machinery had in developing your State?—A. It has done everything. We could not get along without it at all. We could not raise wheat. In fact, we could not settle the country up without it.

Q. Has it removed the drudgery of farm life to some extent?—A. Yes.

Q. Is it unpleasant to farm when you have good improved machinery?—A. No; it is about as easy as most anything you can do now. All the drudgery about the farm is taking care of the barn.

Q. Any disposition on the part of the farmers to leave the farms?—A. No.

Q. Any disposition on the part of the people in the town to go to the farms?—A. Yes; some do.

Q. You think there are more going to the farm than coming away?—A. I think so. It looks that way in our country. Of course, ours is a farming country.

Q. Have you any suggestions to make in regard to maintaining our home markets?—A. Anything we can improve; it is a good thing for the people.

Q. Have you any manufacturing in your State?—A. Very little. We have a woolen mill and a flour mill.

Q. (By Mr. FARQUHAR.) Planing mills?—A. Yes; planing mills, and at Dickinson we have a fair pressed-brick plant, and I think up in Cavalier County we have a cement plant above Milton. The professors in our institutions sent people to take an interest in the clay and cement, and they are putting in a small plant to test it.

Q. (By Mr. A. L. HARRIS.) Have you any factories for manufacturing agricultural machinery or agricultural implements?—A. No; not in our place.

Q. Any woolen mills or flax mills?—A. We have a woolen mill and 2 flax mills.

Q. Are they doing well?—A. Yes.

Q. Do you raise flax?—A. Yes.

Q. Is that profitable?—A. Yes; I think it is the most profitable crop we have raised for years.

Q. Is it hard on your land?—A. It does not seem to be.

Q. How many bushels can you raise to the acre?—A. Ten to 15.

Q. What is that worth a bushel?—A. Last fall it was worth \$1.45 and \$1.00 at the farm.

Q. Is it more profitable than wheat?—A. Yes; it is worth \$1.25 now.

Q. What do you do with the straw?—A. I have not had any use for it except to feed it or burn it. There are no factories there of any kind.

Q. Would a factory be profitable?—A. Yes.

Q. Is it good feed?—A. Yes; in some ways for certain kinds of stock.

Q. Do you thrash it with a machine?—A. Yes; just the same as we thrash wheat.

Q. Do you raise barley?—A. Yes.

Q. Do you get a good yield?—A. The yield ranges from 50 to 70 bushels to the acre.

Q. What is that worth a bushel?—A. Oh, it runs all the way from 18 to 27 cents. The price depends on the quality. Sometimes it goes to 34, but it averages about 20 to 25 cents for good barley. But the farmers do not take care of their barley the same as they do in other countries and they let it get bleached, and, of course, that knocks 2 or 3 cents from the grade of it.

Q. With care it would be a profitable crop?—A. Oh, yes.

Q. Do you raise oats?—A. Yes.

Q. Do you get a good yield?—A. About 50 to 90 bushels to the acre.

Q. Is that hard on the land?—A. No; it is not as hard as wheat. It is the easiest crop we get.

Q. What price do you get?—A. Oats now are worth 25 cents. We had a pretty slim crop last year on account of the dry season. I want to state these are the river counties of North Dakota, not the other counties, that I am speaking of.

Q. About what territory would your statement cover?—A. An area about 60 miles wide and 150 miles long.

Q. What would you say in regard to the western portion of the State?—A. That is where they are raising flax and more diversified crops, taking in beet sugar, and cattle, and so on.

Q. Do you raise any sugar beets in your country?—A. Yes; but our section is not so productive in sugar as that farther west. There is a difference of 4 per cent in favor of those dry north lands; 4 or 5 per cent.

Q. Is it considered a profitable crop in the western portion of the State?—A. Yes.

Q. Is it profitable in your portion of the State?—A. It would be but not as much so as in the west. The beet grows bigger, and there is more starch but not so much sugar in it.

Q. Are your transportation rates satisfactory?—A. We find very much fault with them, but they are getting better all the time. The companies are advancing their roads and they run branches into different localities. People find fault with them, but they seem to be doing as well as they can.

Q. How many roads have you in your State?—A. We have the Northern Pacific, the Great Northern, the Sioux road, and a little piece of the Chicago, Milwaukee and St. Paul. Wherever two roads come together, of course, it is a little better. The rates are no better, only the shippers are more apt to get cars.

Q. What is the rate per 100 pounds from your place to Duluth?—A. Fourteen cents, I think it is, a hundred; about 8 cents, 84 a bushel.

Q. Has there been any decline in the freight rate in the last few years?—A. Yes.

Q. What was it formerly?—A. Eighteen or twenty, seventeen or eighteen. The rate runs right across the river.

Q. Has that decline benefited the farmer?—A. Yes.

Q. Has it added something to the value of his crop?—A. Yes.

Q. What is the condition of your public highways?—A. They are all right at certain seasons of the year. The roads are level and bridges cross all the streams; but it is like every country in that in a heavy rain it cuts up pretty badly. In the fall of the year they are just like paved roads, they are so hard.

Q. How much of the season are they bad?—A. Only in the spring for about 2 or 3 weeks.

Q. At the time the frost is coming out?—A. Yes.

Q. And the balance of the season they are good?—A. Yes.

Q. Have you any material for making macadam?—A. No; very little.

Q. Are your roads graded?—A. They are ditched and graded, and where they are ditched they are supposed to be graded and ditched on each side, every section.

Q. Who makes culverts and builds your bridges?—A. The county builds the bridges where there is a bridge of any size, and the townships put in the culverts.

Q. And the road district does the grading?—A. Yes; farmers do their own grading, and so pay the road tax.

Q. Is the grading done by the tax?—A. It is done by tax, but people have the privilege of doing it by piecework if they prefer.

Q. Is there an improvement in your roads from year to year?—A. Yes.

Q. You may state, if you please, how many elevator companies you have on your railroads?—A. There are not as many as there were. The Peavey Elevator Company is buying up a good many of them. First there were the Brooks Brothers, the Minneapolis and Northern, the Argyle Elevator Company, and the Kenkel, Toodd, and Bettingen, and a great many private elevator lines.

Q. Where is the home office of these companies?—A. In Minneapolis or Duluth.

Q. How many private elevators are there left?—A. There are a few independent elevators here and there through the country.

Q. Are any of these owned by the farmers?—A. Very few. The farmers have built some elevators in partnership among themselves, but they always let them go.

Q. You spoke about there being 6 or 8 elevators in your town originally. By whom were they built?—A. I was in some of them, and they were built by about 4 different companies.

Q. Were any of them built by local capital except your elevator?—A. No; I do not think they were. There are now only 2. The farmers usually ship their wheat from the platforms or sidetracks. Wherever they can get cars they load them.

Q. The farmer has the privilege of loading his own grain?—A. Yes; providing he can get cars.

Q. Does the farmer have an equal privilege with the elevator man in getting cars?—A. Yes; he does in our country. In some places they claim they do not; but they give them a fair show whenever they can.

Q. You think there is no disposition on the part of the railroads to favor the elevator companies?—A. No; not when they can help it. A farmer will probably want a car to ship his grain, and if a rain comes up he wants the car to stand until he can put in his load. I do not know whether they are granting that privilege now or not; it was a great deal of trouble, but they did that to satisfy them. Of course when the wheat all comes into the market at once it is hard to handle.

Q. Which is more profitable, for a farmer to ship his own grain or sell to the elevator?—A. There is a difference of 2 cents in favor of loading.

Q. Is that 2 cents the profit of the local elevator?—A. Yes.

Q. When you sell to the elevator who fixes the grades?—A. The elevator buyer who is hired by the elevator company; generally young men hired by the company to grade the wheat. They are all under bond of these bonding companies to stand up to the grades and weights to the elevator companies. So there is not much chance for them to get away.

Q. Does the manager of the elevator company sometimes determine the grade of the wheat by merely looking at it?—A. He does. That is the only way he can tell, by looking at it or weighing it.

Q. The scale test?—A. Yes.

Q. And if it weighs a certain number of pounds it goes at No. 1 or No. 2?—A. That depends on the color of the wheat. There is nice colored wheat and some of it gets bleached. The inspectors at Duluth and Minneapolis are appointed by the State of Minnesota, and there is a grain commission to which you can appeal from the chief inspector.

Q. Are these men appointed by the governor of Minnesota or by the commission?—A. I think they are appointed by the governor.

Q. Are they under bond?—A. I think so; but the bond does not amount to very much.

Q. Are they appointed on account of their qualifications?—A. They are supposed to be.

Q. Is there any complaint?—A. There was sometime ago. I was one of the complainers myself, but there has been a new board appointed, and there will be a new one appointed this spring.

Q. Do you get the same treatment that a shipper in Minnesota would?—A. I think so. I do not think there is any difference. Up to 3 years ago, if there was a sprinkling of other seeds in the wheat, they did not give you the quality of the wheat, but established a grade by the dirt in it and then docked you for the dirt. In other words, they took from you in 3 ways. They took off for grade and for the dirt. It is wrong, but that is all done away with now.

Q. Do you know whether that same condition prevailed at Minneapolis and St. Paul?—A. There is where it did prevail.

Q. At the mills?—A. That is where it started from. I was buying wheat at the time and shipping in and I had a good deal of trouble of that kind.

Q. What is the difference in price between No. 1 and No. 2 wheat?—A. The millers determine that. There is a difference of 1½ cents and 2 cents, and when you come down to No. 3 there is probably 4 or 5 cents difference.

Q. (By Mr. LITCHMAN.) What is the wheat you have before you—that sample?—A. That will grade Northern. It is hard. It is a little shrunk in the filling; but it will grade Northern anywhere.

Q. (By Mr. FARQUHAR.) No. 1 Northern?—A. Yes. It is a little shrunken; you can see that.

Q. (By Mr. A. L. HARRIS.) If a farmer has a superior quality of wheat, does he get any premium or advance in price?—A. He gets up to No. 1 hard; that is all.

Q. Will the millers at Minneapolis give any advance for superior wheat?—A. They do not; a wheat like that will make just as good flour as the other. They use it for mixing purposes.

Q. (By Mr. FARQUHAR.) Is there any advantage to the individual shipper in shipping on his own account to Minneapolis when he has the best wheat in the market?—A. Yes.

Q. (By Mr. A. L. HARRIS.) When he ships on his own account, does he get fairer treatment at the terminal point?—A. Yes.

Q. Why is that?—A. Occasionally he finds fault with the inspection, but the commission man has nothing to do with the inspection. There are times at Minneapolis when your wheat will sell above the inspection. If you go on the board of trade, you will find there panfuls of the different grades of wheat and the inspector's tab will be on them; if the miller wants your wheat badly and thinks it is above the grade, he will offer a little above the grade price for it.

Q. There is a complaint that farmers suffer by the mixing of the higher with the lower grades to bring up the grade?—A. That is done after the wheat is sold, at St. Paul and Duluth, and not in the country.

Q. Does that practice have any effect on the price of the wheat at the initial point?—A. No; I do not know that it has, except on the wheat they ship out. It is not supposed to have, but it probably does have. You see, farmers will ship in wheat that is shrunken or a little damp, and that wheat is taken into these mixing and drying houses and they run it through the elevators and work it up a grade. That is where they make their money. Of course, the farmer does not get the benefit of that improvement. Many of them put the wheat in the cars when damp, and it will be graded down 2 cents on account of being damp. The mixing house or the elevator men will see that it is a good quality and he will dry it and put it on the market 2 grades higher. The farmer sometimes finds fault with his own carelessness.

Q. When you ship wheat to a terminal point and it has to be stored, it runs this danger of being mixed, does it?—A. No; you get your grade. They give you your grade for so many bushels of wheat and there is no question about it then.

Q. If I consign my wheat and it goes into the elevator in storage, and I sell, do I get the grade I got a certificate for?—A. Yes; or you can hold it there.

Q. Do the elevator companies charge more at some seasons than others for storage?—A. Yes; it depends on the shipments to Europe and the shipments to Duluth. The year before last we carried our wheat there until the 1st of January without any storage fees on it.

Q. What is the storage fee usually?—A. It is one-half cent a month and insurance.

Q. Does the warehouse man do the insuring?—A. Yes.

Q. And pays for it out of the one-half cent?—A. You pay for it, and the rates depend on the length of time you insure it. It is usually not quite three-fourths of a cent per month—it may be a little more. Then there is the commission on the wheat. The commission man gets one-half cent at Duluth and 1 cent in Minneapolis. All of this comes out of the farmer, you know. It does not amount to much, but it is a little, and all that adds to the expense.

Q. Do the farmers store at the local elevator?—A. Yes; a good many of them.

Q. Are the grades preserved when they store there?—A. Yes; just the same. The farmer gets his certificate of storage, and that is all, unless he hires a special bin. Some of the other elevators will give him a special bin for use in loading in and shipping out. Sometimes they have not the bin to spare, but occasionally they do that.

Q. Are the two elevators in your town owned by different companies?—A. Yes.

Q. Do they compete with each other in buying grain?—A. Yes. Of course the price is set.

Q. Who fixes the price?—A. It is generally fixed by the board of trade in Duluth. They get the markets telegraphed every morning.

Q. What has the company that own the elevator to do with fixing the price?—A. Nothing, except to pay the farmer according to the price established, less 2 cents.

Q. Do line elevator men get together and fix the price themselves at any time?—A. I hardly think they do. You can generally sit down and figure from the market report of the board of trade in Duluth by adding 2 cents for the elevator man. Occasionally it is one-half cent advance, but there is generally about 2 cents difference.

Q. Does the price abroad have anything to do with fixing the local price?—A. Exactly as I has in fixing the price of the markets in Duluth. Whatever large demand there is affects the small elevators out through the country.

Q. You feel that the local price is fairly fixed?—A. Yes; according to the freight rates. Of course, you always have to figure them.

Q. Your freight rates are stable now, so they can be easily calculated?—A. Yes.

Q. Is the price of grain at the time the bulk of it is coming in lower or higher than in other periods?—A. In the fall of the year the price is generally the best

when we first start out. In about 6 weeks the market may drop off quite a little, and it may go up. But the countryman generally will not sell when the market goes up; he waits until the market goes down. That is a fact.

Q. (By Mr. A. L. HARRIS.) You think there is no combination anywhere that either raises or lowers the price at the time the bulk of the wheat is coming in; and when they get it into their own hands, control the price?—A. That is a pretty hard thing to say. I could not make that statement. I could not answer that question.

Q. Have you ever seen any indication of that kind?—A. No, except when there is a rush. Then it generally goes down. When there are a great many cars coming into Duluth and landing at Duluth there is a difference.

Q. The irregularity then can always be accounted for?—A. Yes; you can always see it on the market.

Q. (By Mr. FARQUHAR.) Who built the first elevators in your town?—A. The Minneapolis and Northern Company, the Brooks Brothers, and the Pillsbury Elevator Company.

Q. Minneapolis or Duluth interests?—A. Minneapolis.

Q. Who put in the Fairbanks scales there?—A. The elevators.

Q. Did the railroads at any time go into elevator building or the control of the weighing or anything of that kind?—A. No.

Q. (By Mr. A. L. HARRIS.) Are the managers of your 2 elevators citizens of your place?—A. Yes.

Q. Have they always or for several years been?—A. Yes.

Q. They have not been sent there temporarily by the elevator people?—A. No; generally the men that buy the wheat are men that live in the neighborhood.

Q. Do you know whether or not there is a traveling auditor or manager that passes along the line of the road?—A. Yes.

Q. Is he sent out from the terminal point?—A. Yes.

Q. What is his business?—A. He is simply looking after their concerns, looking after the men. The present manager of the Peavey Elevator Company used to buy wheat in our country when he first started in as a boy; and now he is manager of the line. His business is to see that there is not shortage in the elevators and that the boys are doing what is right.

Q. Is there not a feeling on the part of the farmers that the local manager is unfair with them?—A. Sometimes they find fault.

Q. Is that well founded?—A. No. The boys are all under bonds, you know. They have to stand up to the grades and weights or stand the shortage themselves.

Q. They are under bond to the elevator companies?—A. Yes; they are all bonded through the bonding companies.

Q. You said a moment ago that you had 6 or 8 elevators in your town at one time. Was there any pressure brought to bear that caused them to decrease in number?—A. Nothing, except that when the other roads came in (there are 2 mills there) there was no business for the elevators. The side tracks are all around, and the farmer loads his wheat to get that 2 cents extra.

Q. Your 2 are sufficient?—A. Yes; and the 2 mills handle some.

Q. What became of the buildings?—A. They tore them down and moved them away.

Q. If you desired to go into business, could you get a site and build an elevator?—A. I think I could.

Q. And switching facilities?—A. Yes; I am pretty sure I could.

Q. Are your switching privileges at the terminal points satisfactory?—A. They do not charge anything at Duluth for switching. At Minneapolis they charge one-half cent. They charge one-half cent for transferring your wheat to any elevator or mill; in Duluth there are no switching charges.

Q. Have you ever shipped to Chicago?—A. No.

Q. Have you had any experience there?—A. No.

Q. During the time your elevators were passing into the hands of the line elevators, was there any pressure or any combination that forced them to go out of business?—A. No.

Q. They did not put the price of wheat up on the independent elevator?—A. No. The only fellow that put that up was the track buyer, like myself, when I would come in and pick out a few cars. Occasionally we did that, but not very often.

Q. I wish you would state, if you have an opinion, what effect dealing in options and futures has on the price of wheat to the producers?—A. I do not think it hurts it any; sometimes the producer gets the best of it. I know for the last two or three years the producer had the benefit of high-priced wheat, where he would not have it but for the "future" business.

Q. Did the Leiter deal of the spring of 1898 help you?—A. Yes.

Q. Did it afterwards injure you?—A. It did injure some people who had a notion the price was always going to remain high, but the fellow that had good judgment did not get caught.

Q. Did it help the farmers?—A. Some of them.

Q. Was there any complaint on the part of the farmers that wheat went up when they had none to sell?—A. They always find that fault.

Q. If I buy or sell wheat for May delivery, what effect does that have on the price of wheat in May?—A. It might have a little effect; but it takes quite a bunch of wheat either one way or the other to affect the market very much. No local man or small individual affects the market.

Q. If I am able to buy a large amount for May, would that have a tendency to keep up the price?—A. Yes.

Q. If I am able to sell a large amount, what effect would that have?—A. It would depend on whether you had the wheat to deliver and whether the other fellows could make you come up with it or not.

Q. (By Mr. FARQUHAR.) Whether you were short or long?—A. Yes.

Q. (By Mr. LITCHMAN.) Whether Leiter or Armour?—A. Yes.

Q. (By Mr. A. L. HARRIS.) Have you any remedy to suggest for this grievance, if there is one?—A. I have none.

Q. Could it be controlled by law in any way?—A. I do not believe so.

Q. What effect does the sale of millions of bushels of winter wheat in this country have on the price in Liverpool?—A. I do not think it has any, particularly providing the actual wheat is shown to be in the market. It may at a certain time, but, take the price the year round, I think the price is governed by the actual wheat in sight and not on the option wheat.

Q. You think the Liverpool buyer or seller is dealing on the actual wheat and not on the winter wheat?—A. Yes; of course there are a great many speculators just as in this country, but the actual wheat handling depends on the wheat in sight.

Q. Does Chicago or Liverpool fix the price of wheat for the world?—A. I could not say; the markets of the two places are very close together, but I think the place where the wheat is consumed fixes the price.

Q. The terminal point, you think?—A. Yes.

Q. (By Mr. CLARKE.) Do you know what relative quantities of wheat are sold in this country and what sent out of the country?—A. We use a great deal more here than we send out. The surplus is what I figure makes the price to a certain extent. If we did not have any surplus, we would get a better price for our wheat.

Q. Is not the price of the surplus influenced by the quantity retained for home consumption?—A. Yes.

Q. (By Mr. A. L. HARRIS.) What effect, if any, has the monthly crop report upon the price of grain?—A. Wherever it shows an increase or a decrease it changes the prices to a certain extent.

Q. Who is benefited by that?—A. It is pretty hard to tell.

Q. Does it have a tendency to apply the rule of supply and demand?—A. Yes.

Q. And to that extent at least counteracts the effect of gambling?—A. Yes.

Q. You think it is a good thing?—A. Yes.

Q. Have you any pure-food laws in your State?—A. I think we have, but they do not amount to very much, because it is an agricultural State, and we have nothing that comes in there much unless it is butterine, or cottoline, or whatever you call it.

Q. Have you any suggestions to make as to Federal legislation on the subject of pure food?—A. No; I never studied the thing any. I think it would be a pretty good thing if the people knew what they were getting.

Q. You favor the branding of the article to be sold for what it is?—A. Yes.

Q. What have you to say in regard to the introduction of color into oleomargarine to imitate butter, or the introduction of color into poor butter to imitate good butter?—A. It depends on the season of the year. I do not suppose it makes any difference to the butter, providing I know what it is; but there are certain seasons of the year that you can not make yellow butter unless you color it, and there are lots of people opposed to buying butter unless it is colored.

Q. Now, in regard to oleomargarine?—A. I think it should be branded for what it is, and not colored.

Q. (By Mr. CONGER.) Your idea is to make the dealer sell it for what it is, with a regulation sufficient to prevent the coloring?—A. Yes; I would not object to the coloring, provided the people knew what they were getting.

Q. (By Mr. A. L. HARRIS.) If every package was branded would that be sufficient?—A. It should be.

Q. Have you any suggestion to make as to how that should be done?—A. No; I have not paid any attention to it, except what I have seen on this bill that is

before Congress, and I have not noticed it very much. Our people have not much to say about it, because we are not in the butter business; but I think there should be some way provided by which people would know what they are getting.

Q. Have you any laws to prevent the spread of disease among your domestic animals?—A. Yes.

Q. Are they sufficient?—A. I think they are.

Q. Who are they executed by?—A. By the State veterinaries. I think there are 6 or 8 in the State.

Q. If the stock is destroyed, is there any arrangement for payment?—A. Something is paid, but I do not know how much. It is very little. They are supposed to destroy them.

Q. You think State legislation is sufficient?—A. I think so.

Q. You would not advise Federal legislation along that line?—A. I do not believe I would. Still, it would be a good thing if it could be made the same in all States.

Q. Have you any law to prevent the spread of disease among plants?—A. I think not.

Q. Have you any insects injurious to your trees?—A. We had last year; we had caterpillars. They came out of a shell and spread from tree to tree with a sort of a cobweb, and ate the leaves off all over the country. Four or 5 years ago we had a black caterpillar that attacked the elm tree; but they are all gone, and I have not seen any lately. It was a caterpillar about 2 inches long, a black fellow.

Q. Was there any effort made to destroy them?—A. We did make an effort with the black caterpillar. We burnt them in the trees and in town; and last year there were a great many of the trees, particularly the box-elder trees, that were attacked. We sprayed them with different mixtures, but the spraying did not seem to do much good. The leaves came off pretty nearly all of them, but they all budded out again in the fall.

Q. (By Mr. CLARKE.) Did not hurt the tree?—A. It set them back that year in growth, but they came out again.

Q. Have you any suggestion to make as to better legislation along that line?—

A. I would rather somebody else would do that; someone better informed than I am on these things.

(Testimony closed.)

WASHINGTON, D. C., March 12, 1901.

TESTIMONY OF MR. MILTON WHITNEY,

Chief, Division of Soils, Department of Agriculture, Washington, D. C.

The commission met at 10.37 a. m., Mr. Phillips presiding. At that time Mr. Milton Whitney was introduced as a witness, and, being first duly sworn, testified as follows:

Q. (By Mr. CLARKE.) Will you please give your name and post-office address, and also state your official position?—A. Milton Whitney, Takoma Park, D. C. I am Chief of the Division of Soils, Department of Agriculture.

Q. How long have you been in your present position?—A. About 6 years.

Q. Had you, before coming to that position, been engaged in studies like those you now pursue?—A. Yes; I have been engaged in the study of soils for the past 18 years.

Q. In how many States?—A. I began in Connecticut at the Connecticut Experiment Station, and was then in North Carolina as superintendent at the experiment farm; then as professor of agriculture in the University of South Carolina; then as professor of soil physics in the Agricultural College of Maryland.

Q. Of what State are you a native?—A. Maryland.

Q. The commission will be pleased to have you proceed in your own way to describe the character of your work in the Department of Agriculture, and especially as to how you gather the soils and how you make your experiments.—A. My understanding was that the main question which would come up would be the very important subject of the exhaustion of soils and abandonment of lands, particularly with reference to the New England States and the Southern States, and incidentally the abandonment of certain lands in the West; to see if cause or causes could be assigned, and if there were any suggestions for remedial measures.

Q. Proceed, if you please, in your own way, then, to develop that particular subject.—A. In thinking over the matter, it seemed to me that the subject of the

abandonment of lands is one of great importance in the country, one that has attracted a great deal of attention, and one that is of considerable economic importance.

It is doubtless well known to the commission that there are large areas of land in the New England States that have been abandoned; that there are large areas in the Southern States that have also been practically abandoned and given over to waste; furthermore, that there are large areas in the far West which have once been settled and which have since been abandoned or are now held in very low esteem.

The cause of the deterioration of the lands in the South has been commonly ascribed to the exhaustion of the soil; and this is the first consideration that I wish to take up. The exhaustion of the soil is due, in my opinion, to changes in the chemical and physical properties of the soil rather than to any actual extraction of plant food.

A soil, to be productive, must render annually, as the crop needs it, a sufficient amount of food material in a form available to the plants. As a matter of fact soil is a difficultly soluble substance, composed mostly of silicates and aluminates, or difficultly soluble compounds of silica, alumina, potash, soda, and lime in various forms. Through atmospheric agencies, largely, these compounds are rendered more or less soluble and more or less readily available to plants.

A fertile soil is one in which the weathering effects come in at such times and to such an extent as to render available to plants a sufficient amount of this plant food. If that weathering does not take place and the food material is not brought into a condition in which it is available to the plants, the land is as poor as though it actually contained no plant food.

I have never in my experience seen a case in which one could say with any degree of certainty or even of probability that exhaustion was due to the actual removal of plant food. It is perfectly safe to say that the condition of the so-called worn-out soils in the South is due, not to an actual extraction of plant food, but to the chemical condition in which it now is, in which it is unavailable to plants, and that the restoration of the fertility of that land must be, not necessarily in the addition of plant food to the soil, but in bringing about such changes in the physical conditions or in the chemical combinations as will encourage that natural weathering of the soil which brings the plant food into a condition in which the plant can get its support.

To emphasize this statement, which may appear at variance with the general ideas concerning the exhaustion of soils, I would call the commission's attention to the many cases in which soils have been cultivated for hundreds and thousands of years. So far as we know, within historic times they have been constantly cultivated, and cultivated in the same crops. We have the case of the soils of India, which traditions say have been cultivated for 2,000 years, under primitive methods, without artificial fertilizing, and which still give fair returns of the common crops of the country. We have the case also in Egypt of lands which have been cultivated since history began and where the soils are as fertile as ever. We have all through the southern countries of Europe, and still later in the countries in the north of Europe, in Holland, in Denmark, in France, in England, records of the continuous and profitable cultivation of soils for 500 years—away back to the time when history first opens up our knowledge of these countries.

There is one phase, however, that it would be well to dilate upon here, namely, that with our increase in density of population and with the competition that has been going on, we are no longer satisfied with the yields that are naturally obtained from many of our soils, and we have resorted to the practice of fertilization in order to force plants and produce far beyond what the natural fertility of the soil will give.

There are historic experiments that have been going on in England for the past 50 years, in which a crop of wheat has been grown continuously without fertilization, and the yield has steadily fallen from what it was at first (I forget the figure), until it now produces about 12 or 13 bushels per acre. For the past 20 years there has been little or no difference in the yield, except slight fluctuations due to seasonal conditions, and it is believed that the yield that is now obtained measures approximately the power of the soil to produce a crop under perfectly natural conditions. It will produce annually, so far as we know, for hundreds of years, 12 or 13 bushels per acre.

Q. Are you able to state whether the kernel is as full and well developed now as it was in the earlier conditions?—A. So far as we know, the grain is of the same value, pound for pound, but not being satisfied with a yield of 12 or 13 bushels per acre they have, by the use of fertilizers and manures, increased the yield on adjacent plots to an average of about 30 bushels per acre. In this forcing of the crop they have found that they could economically increase the production from that

soil. The first we would call the natural fertility, and the second the acquired fertility. One is perfectly justified in recognizing these two characteristics in the production of the soil: What it will naturally produce through a course of years under the natural weathering of the material, and what it can be made to produce by the artificial application of more food material than the plant can secure through the natural weathering. If the natural yield from a soil becomes so low as to make it unprofitable, it may often be necessary to fertilize in order to make the soil productive.

The second cause of the abandonment of soils arises from the development of new areas and new industries. There is no question that the opening up of the western country, the great corn and wheat producing States of the central West, the wheat lands of California and of the Red River Valley of Minnesota and Dakota has had a great influence upon the agriculture of New England and all our Eastern States, and has done much toward bringing about the conditions that are now prevalent. This will be taken up more in detail later.

In the line of the introduction of new industries, I would cite the case of tobacco: Before the war tobacco was grown very generally in the State of Maryland, and since the war it has been grown extensively in the southern counties only, but with the introduction of the White Burley tobacco in Ohio and Kentucky—which produces a large yield and which can be produced with profit at a comparatively low price—the tobacco industry in Maryland has been largely given up, and the effect of this change on the farmers of Maryland has been very disastrous, because tobacco has been one of the staple products of that portion of the State.

Another instance that I should cite is the development of the truck industry. Fifteen or 20 years ago the truck industry was in a very flourishing condition in Maryland. Truck was grown very extensively on certain classes of soil which were not adapted to other lines, and there were certain localities in which the people were extremely prosperous. But with the development of transportation facilities, with the opening up of truck areas in the South, in South Carolina and in Florida, and with the production of those early vegetables which could be rushed up to the Northern markets in the winter and early spring, the industry has languished in certain localities to such an extent that it has been given up. That is the cause of the abandonment of farms in certain sections of the Atlantic coast States.

Q. (By Mr. KENNEDY.) Are you going to discuss the question of irrigation; whether it will have a still further effect to cause abandonment of poorer lands?—

A. I will speak later of the West, but I will bring this in at this time, though I was going to speak of that particularly in connection with the New England States.

Q. You had better take your own order probably.—A. I will be glad to answer any particular question as we go along, though.

Another very important contributing cause to the abandonment of lands has been in the unfortunate ventures that have been made in bringing a people from a distance to settle a region with which they are unfamiliar, and to grow crops with which they are themselves acquainted in the localities from which they come, but which they have no appreciation of as adapted to the localities into which they are going. The Department of Agriculture is constantly in receipt of requests for information as to where certain settlements of people could be made—people who are to be brought in to grow alfalfa, to grow stock, to grow tobacco, or other crops. And very frequently the utmost ignorance is shown as to the localities which are to be selected and as to the conditions into which they are going.

There have been many instances of failure from these causes alone in the States of Maryland, Virginia, Pennsylvania, and in fact throughout the country.

One instance I would speak of particularly, that has come to my personal attention, is a settlement in one of the Western States. A large area of land was taken up and put under irrigation. Agents were sent from this country abroad to attract immigration. People were brought from Switzerland, from France, from Germany, and an extensive plan of development was outlined. They were to introduce the European grapes; they were to introduce and develop the sugar-beet industry; they were to take up all kinds of fruits that had been successful in their own districts; they were to grow truck crops, and they were to develop large grain and cattle interests. But the plans completely failed, as their soils and their water and their climate were not fit for the industries that they started. After a most disastrous and expensive experience they have lost their crops; they have found that fruit will not grow; that the grape is not suited to the conditions there. They have lost their money, and they have come to a realization of the fact that the country and the conditions are adapted simply to grazing; that if they grow alfalfa and stock they can do well, but they can not do well with their fruits and with their sugar beets, because the conditions there are not adapted to those crops.

Q. Would you state what the location is?—A. It is an area in New Mexico that I am referring to. It is an experience in the Pecos Valley. The principal reason for the failure in that case is due to the condition of the irrigation water. It is very alkaline, which these people did not know when they went into that region. Their failure was also due to their unfamiliarity with the conditions in that locality, and their attempt to grow something that they had grown in Switzerland or in Holland under conditions which were entirely different. In an arid region, where they have to use water to produce any crop, the only available water has been found to be unfit at times for irrigation. This is a cause of the abandonment of large areas of land not only in New Mexico but in other portions of the West.

Another contributing cause of the abandonment of lands has been in the selection of localities in which there are unfavorable climatic conditions. The commission is doubtless aware of the conditions in Kansas and in portions of Nebraska and of Colorado; how, during the boom times of 15 or 20 years ago the country was settled, towns were established, and farms were obtained with the idea that fortunes could be made on the agricultural products of the country. Cotton mills were put up out in the semiarid regions, and are still standing as monuments to the unfortunate schemes and ventures that were devised.

Q. (By Mr. CLARKE.) Could you state what the cause of failure was in that section?—A. Yes; I will come to that.

Q. (By Mr. KENNEDY.) You do not mean cotton mills in Kansas and Nebraska?—A. Yes; there are abandoned cotton mills in Kansas and Nebraska.

Mr. TOMPKINS. There is one at Kearney, I think.

The WITNESS. In explanation of the conditions just stated, it may be observed that the semiarid region of the country extends generally from the 100th meridian to the foot of the Rocky Mountains, and embraces in my definition such areas as have from 15 to 20 inches of rainfall per year, but so distributed that only occasionally are the seasonal conditions favorable for crops. When they have a favorable season, or two in succession, as they frequently do, they get fine yields and make good returns, but in 3 years out of 5, when they have their disastrous droughts and get nothing, the profits of the 2 successful years are entirely used up.

With less than 15 inches of annual rainfall lands are seldom or never successfully cultivated, so far as I know, except in certain areas in Washington and California. With 20 inches of rainfall (that is half what we have in the East), provided it is fairly well distributed, good crops can be grown in the semiarid regions; but it is the uncertainty of the seasons which renders farming unprofitable. It is the uncertain and unequal distribution of the rainfall that has caused so many disasters and has been the reason of the abandonment of so many farms.

It is perhaps one of the most serious problems, that of the semiarid regions, that we have in the agriculture of this country at the present time. In the far West such conditions can be overcome where irrigation is practicable, but so far as known there is no bright future for irrigation in much of the semiarid regions of the country. In Kansas there were in 1889 only 20,000 acres of land under irrigation. In North Dakota, South Dakota, Nebraska, Kansas, and Texas there were only 67,000 acres of land under irrigation in that year, and the possibilities of getting water are small in comparison with the vast areas that would need to be watered to be permanently and safely productive.

Another cause that has contributed to the abandonment of lands in the semiarid regions has been the deterioration of the ranges and the consequent injury to the cattle industry. I hardly feel competent myself to speak on this subject, as we have a division in the Department of Agriculture which is giving its attention to the investigation of the range problem and the possibilities of conserving and maintaining the ranges. Being a question which is at present under discussion by the Department, it would hardly be proper for me to go more at length into it. It seems to me, however, that it will be necessary and wise to adopt some legislation to protect the ranges in the West, and to prevent the terrible destruction of property which is going on through close grazing, against which there is no restriction in many of the areas of the West. It seems to me that this is a problem for legislation, as it is at present too difficult for the agriculturist to deal with and much of it occurs upon the public domain. Where range lands are rented for 5 cents an acre little expense can be put upon them for their improvement. There is little chance at present to make any improvement in the agricultural conditions where land is so cheaply rented, so cheaply purchased, and so carelessly used.

Another example of unfavorable climatic conditions may be cited in the Connecticut Valley, right here in our Eastern States. With a rainfall of about 40 or 50 inches, we have soils that have been abandoned from the same unfavorable

climatic conditions—a deficiency of rainfall—as prevail in the semiarid regions of the West. I refer particularly to the Windsor sand, which occasionally produces a very fine crop of tobacco, but the soil is so coarse and leachy that it is only about 2 years out of 5 that the conditions are favorable. In the favorable years they get good yields and the farmers are very prosperous and contented; in the other 3 years out of 5, as in the West, the soils dry out and are subject to such disastrous droughts that they are entirely unproductive. The expectation of getting a crop even 2 years out of 5 has induced many farmers to hold on until finally there have been successive seasons of failure, and they have had to give up. Under conditions of well-distributed rainfall the soil produces, as does the semiarid land in the West, but it is a desert for 3 years out of 5.

Q. (By Mr. PHILLIPS.) About how extensive is that area?—A. The area in the Connecticut Valley is not large, but along the Atlantic seaboard, in the aggregate, it covers a large area. These coarse, sandy soils are found from the New England States all the way along the Atlantic seaboard and around the Gulf, and many farms have been abandoned on these areas simply because of the unfavorable climatic conditions for these particular soils when other soils surrounding them are favored by the same conditions.

I would cite also another instance to show the effect of unfavorable climatic conditions on the abandonment of soils, namely, the orange industry in Florida, where they have grown oranges with great success for years and where the industry has flourished in the most promising way until a season of frost and freezes that has thrown back the industry for years and has ruined a large number of people. This is a contributing cause to the abandonment of lands, which can not be overlooked in the consideration of the subject.

Another cause for the abandonment of lands is found in the scarcity of water in our desert countries. The public lands of the arid States amount to 560,000,000 acres. Only 3,600,000 acres were irrigated in those States in 1889 and only 74,000,000 acres are capable of being irrigated, according to the most careful estimates of the Geological Survey. We have, then, the difference between the possibilities of 74,000,000 acres and the actual extent of 560,000,000 acres, which are used to some extent for grazing lands, and upon which living is, at the most, extremely precarious. Many areas have been abandoned which have once been settled, simply because of the extreme scarcity of water and the impossibility of producing agricultural crops or promoting agricultural interests.

Another important cause of the abandonment of lands is found in the alkali and seepage waters of the West.

I would call the attention of the commission to some work the Department is doing in Salt Lake County, Utah. This was one of the earliest settlements where irrigation was tried in our modern civilization of this country. When the Mormons first settled the place they naturally took up the richest bottom soils along the Jordan River. The soils were naturally filled with salts, but with the drainage that was started and from the character of the soils themselves the salts were quickly removed and the lands were in splendid condition for agricultural use.

In the further settlement of the country, in the increase in the density of population, as the settlers moved up on the high lands and the water was applied at higher elevations, the seepage of water from the canals accumulated in the low places and brought with it the salts, which accumulated to such an extent in the low places that the first lands, the most fertile lands of the valley, were rendered entirely unfit for cultivation. They were wet and swampy, and they were filled with alkali, and the history of this once prosperous community has been that the people are moving up onto the bench land, and are abandoning soils which were once the most productive in the State.

In the area which we surveyed in Salt Lake County, between the Jordan River and the Great Salt Lake, about 50 square miles of land has been successfully cultivated under irrigation. Of this, 10 square miles, or nearly one-fifth of the whole area, has been ruined and has been abandoned as worthless and useless, and the injury is progressing. Lands are constantly being turned out which have been swamped with seepage waters and which have been filled with alkali.

This is one of the most interesting and most important problems of the West, and one which I should like particularly to bring to the attention of the commission, because it seems to me that something will have to be done through either State or national legislation to stop the injury that is going on.

Q. Have you any theory as to how to stop it?—A. I will go on to state that. The conditions may be briefly stated thus: The canal company, whether organized by the farmers or organized with independent capital, constructs a canal and maintains a certain level or uniform grade, going through all kinds of soils which it may be necessary to go through in the construction of its canal. It happens in the Salt Lake Valley, as in many other localities that we have studied, that this

canal goes for several miles through a gravelly soil, in which there is a great deal of seepage and loss of water. The water is plentiful and of good quality, so the canal companies are not concerned with the loss. They have a bounteous supply from the Utah lake, and they are getting good water, free from alkali. But the water in seeping out through this gravelly area is slowly filtering through the soil, carrying with it a relatively large quantity of salts, which are in all arid soils, and are concentrating the salts in the lower lands and are filling up the lowlands with water, until, as a matter of fact, there is a string of lakes out in what was once an arid, desert country—artificial lakes on what were later fertile and well-cultivated soils, and which are now abandoned lands and tule swamps.

It seems to me that the farmers situated on those lower levels should have recourse, through civil suits, to damages, and the canal companies maintaining canals under such conditions should either be compelled to protect their canals from seepage or to pay damages to the farmers whose lands are ruined.

These conditions are exceedingly pernicious. If you have a soil under the most careful methods of cultivation, farmed with the most expensive varieties of fruit or other farm products, taking the utmost care, giving the greatest attention to all methods of growth so far as your experience and your skill or the knowledge of your experts will indicate, it is certainly most exasperating to have the land swamped and filled with alkali from a leaking ditch situated perhaps 3 or 4 miles away, and over which you have no possible control. It is an exceedingly pernicious thing, for which some recourse should be had in damages. But, so far as I know, there is nothing to stop it. The lands are going to waste, and one-fifth of the irrigated lands of that district alone have been abandoned from this cause—a cause which could have been provided against. These lands could have been protected and these farms could have been saved.

Another instance that I would cite in connection with this district is the extensive area that is situated just west of Salt Lake City and extending over to the Great Salt Lake. There is an area of about 90,000 acres, and it comes close up to the Jordan River and extends across to the Salt Lake. The land is filled with alkali, but it is not always apparent on the surface. Frequently the surface looks like a fertile, easily cultivated loam, and many attempts have been made to settle the country. Many farms have been laid out, canals have been constructed, water has been let on to the places, town sites have been located, railroads have been projected and built, and with the first application of water good crops have been produced; with the second, a failure. With the third application the land has become so salty that it is abandoned as a waste and desert land. Thousands of dollars have been invested in the settlement of that tract, and thousands and thousands of dollars have been lost in the fruitless effort to build up an agricultural industry in that area, and this is the cause of the abandonment of these soils—because of the occurrence of alkali not always seen from the surface, but always lying in the lower depths of the soil ready to come up at the first application of water. It will be interesting to state that the result of our soil survey convinced us that it was perfectly feasible to reclaim these lands. There is sufficient fall to put in a drainage system. The soils are naturally easily worked. The expense would be no greater than the drainage of lands in Ohio and Illinois, and the profit that would be realized from the reclamation of the 60,000 acres of land situated on that tract would amount, in our opinion, to about \$3,000,000 in property valuation. Now, a very singular thing has arisen in regard to that section, that while the people seem to realize that drainage may reclaim the lands, yet they seem to be averse to having the drainage work done, and the people who have desired to follow our advice have been unable, in certain cases at any rate, to do so from the objection of their neighbors. There are no drainage laws, as there are in Illinois and in others of our Middle States, and the enterprise is stopped right here by the inability to have any recourse to State laws, and by the unwillingness of the people to give access to the drainage canals through their places. This is a matter that I shall refer to later in my remarks upon drainage.

Q. (By Mr. KENNEDY.) Where does the water for irrigation come from—is it mountain drainage?—A. The water is from the mountain streams, fed in this case into Utah Lake, which is a fresh-water lake, and is taken out of the Jordan River.

Q. (By Mr. FARQUHAR.) What is the elevation between the Great Salt Lake and the river?—A. Twelve feet between the level of the river at Salt Lake City and the lake, but there is a ridge going through the district that gives about 2 feet per mile of fall on either side, and in addition to that there are extensive washes that extend up through the land that would form natural outlets to the drainage system. They run up for 8 or 10 miles into the country.

Q. (By Mr. KENNEDY.) Is the recession of the waters of the Great Salt Lake having any effect on the soils and climate of Utah?—A. It is having a great effect

upon the soils. The level of the Great Salt Lake has fallen 14 feet since 1865, and in our survey this year of the area around Ogden we mapped in 60,000 acres—about 10 square miles area—where the lake had receded, and we established the shore line of the lake in some places 9 miles beyond where the former survey had placed it.

Q. (By Mr. PHILLIPS.) What is the cause of the fall of that lake in your judgment?—A. There is an annual fluctuation that has never been explained, and there are periodical fluctuations that have never been explained. The level has been known to vary from period to period for reasons that are not at present known, but in addition to that the withdrawal of a large amount of water that is being used now for the irrigation of the surrounding lands, which does not go into the lake as formerly, is certainly a very large contributing cause to the lowering of the present surface.

Q. You spoke in regard to canals through the sandy soil portion, saying there ought to be something done to remedy the evil; have you any theory? Could the water be carried through pipes and thus prevent seeping through the soil?—A. I would state that in California, where water is more valuable, where the companies themselves are financially interested in how much water they sell, it is very common to protect canals from loss by seepage by running through wooden troughs or through wooden pipes, or as is frequently done where the water is carried through sandy areas, by cementing the sides and the bottoms of ditches. We have photographs (I wish I had brought them with me) of large-sized canals and laterals, constructed in California, with the sides and bottoms cemented.

Q. That would be entirely practicable to prevent seepage and thus prevent the destruction of lands below?—A. It is entirely practicable. In many cases simply the puddling of the canal would be sufficient, but where seepage causes injury by alkaline deposits, in my opinion, it should be stopped, and the companies should be required to protect their canals from undue loss.

Another cause of the abandonment of land is flooding and occasional inundations by storms and tides. The commission, of course, is well aware of the enormous losses from floods in the Mississippi Valley, and from the recent floods in Texas. This is a matter of such common knowledge that it hardly seems necessary for me to dwell upon it as one of the important causes of the abandonment of soils; where the conditions are so unsafe that settlers can no longer risk their lives or their crops. But I would call your attention also to the vast extent of the tide marshes and inland swamps of the United States. This question of the tide marshes has recently been brought to the attention of the Department of Agriculture from its economic importance in the New England States. It is estimated there are 168,000 acres of tide marshes along the Atlantic and the Gulf coast; and on the Pacific coast it is estimated that there are several million acres of tide marshes. These lands, if protected from the tide and drained, would be of value in agriculture. Some of the inland swamps of Illinois which were selling originally at \$1 to \$5 an acre have a value now of from \$60 to \$100 an acre. It is estimated that one-fifth of the area of Michigan is swamp land, which, if drained and reclaimed, would be of great value for celery and corn and potato crops. The tide marshes have also an indirect effect upon the values of adjacent lands, because of the prevalence of disease and the prevalence of mosquitoes. I would not say tide marshes only, but all marshes. The commission, of course, is aware of the commonly accepted views now that malaria is conveyed by mosquitoes, and the Department of Agriculture has been applied to recently from many sources to suggest means of reclaiming the tide marshes and the inland swamps of the United States, partly for their agricultural value and partly for the increase of the healthfulness of the surrounding land. There are many cases where areas and industries have been abandoned from the unhealthfulness of the neighboring marsh lands. I do not know that there is any cause that has contributed so much to the discomfort of many of the Atlantic coast States immediately upon the water, which would otherwise be a delightful location and a fine farming land, as the prevalence of malaria and similar diseases. That these causes have prevented to a large extent the settlement of some of our Southern States and have been the cause of abandonment of some others of our lands is unquestionably true. The prevalence of malaria and these malignant fevers near swamp lands of the South, the unhealthfulness which almost prevents the residence of white persons, is a matter that calls for very great and grave consideration, and it is one that the States, at least, it seems to me, might well consider.

An instance that I would cite as to the effect of inundation and floods as a cause of the abandonment of soils is in the rice lands of South Carolina. These lands before the war were protected by substantial levees that were built through cooperation between the individual and the State and maintained as a protection against the flooding of the fertile swamp lands by floods or by tides. During the

period of the civil war these levees were destroyed, the lands were for a time abandoned, and since that time it has been impossible to get labor to work in the canals, and it has been expensive to construct the levees, and large areas of this once fertile and extremely productive soil have been abandoned from this cause.

Q. (By Mr. CLARKE.) Why has it been impossible to get labor to reclaim this land—on account of unhealthfulness of the climate?—A. On account of unhealthfulness and the unwillingness of labor to work under conditions they have to in the swamp lands. In a way it would seem that machinery could be introduced, dredges; but so far as I know this has not been done on any extensive scale.

Q. Have you given attention to the development of rice growing in southwestern Louisiana?—A. Yes. The conditions there are that these lands, which were semiswamps, have been drained where necessary, and they are not subject to overflow, as the rice lands of South Carolina are. The Louisiana lands are higher, but still they are swamp lands, and the irrigation that is given to these lands is done by pumping or by artesian flow, usually by pumping, whereas the irrigation of the rice lands of South Carolina is from the rivers, and is without any pumping or artificial means, either for irrigation or for drainage.

Q. It is in evidence before the commission that the Louisiana rice region is very healthful?—A. That region is much more healthful than the South Carolina rice lands.

Another cause of the abandonment of lands, at least a contributing cause, is the expense of maintaining the proper physical conditions. The trouble and expense of clearing the stones off the New England fields have been so great and so laborious that they have had something, at least, to do with the abandonment of lands in that locality. The simple expense and labor involved in getting the fields into condition and maintaining them in condition to cultivate in competition with the large areas of the fertile western plains have been so great that they have unquestionably been a contributing cause to the abandonment of the soils. And the labor and expense and risk in maintaining the proper conditions of the rice lands of South Carolina, which I will refer to again, have been so great that there also these factors have operated against the continuance of the culture of the lands, and have been an insurmountable obstacle to the reclamation of what were once fertile and well-cultivated soils.

I would mention also the effect of transportation facilities. While cheap transportation has opened up new and important markets, it has also been the cause of the development of extensive areas of new and exceedingly fertile country. The effect upon this cause alone in the New England States and in the South has been very great, and will be referred to in a later place.

Another cause has been unquestionably the discrimination in rates and the high freight charges which have prevailed in certain localities. It is not my purpose to go fully into this question, as the commission have had in evidence before questions touching this important subject, but in my experience the commercial value of farm lands is often controlled to a considerable extent by the rates of freight which are locally applicable to these areas. It may be that the lands are situated at such a distance that cheap transportation can not be offered; it may be that there are conditions of expense in the marketing of the products, but certain it is that the possibilities of building up industries, agricultural industries, on certain soils and under certain climatic conditions which in themselves would be favorable is prevented by the impracticability of marketing the products with any profit under the prevailing conditions.

Q. (By Mr. PHILLIPS.) What section of the country is that most applicable to?—A. I would cite, in the case of Florida, the marketing of the bulky and tender products from the truck fields. These products have to be marketed under peculiar conditions. They have to be rushed to the Northern markets on the fast freight or passenger schedule. They have to be provided with proper refrigerating and ventilation cars, and they must be placed upon the market in the shortest possible time in order to be in fresh eatable condition, and to reach the market at the earliest possible date. Now, it is the common experience in Florida that the possibilities of marketing the crop with any profit to the farmer is a pretty close thing to figure on, and that it requires very nice and very close calculation in many cases to determine whether it is possible to send a crop to the Northern markets with any profit. I do not mean to say that there is discrimination, but I do want to show the commission that the possibilities of marketing the crop, the possibilities of transportation, have necessarily something and in many cases much to do with the possibilities of the development of any particular agricultural district, and that that is one of the important factors in the abandonment of many enterprises that have been started—in the abandonment of lands.

Another cause of this same kind which could be cited is in the marketing of the truck crops of southern Maryland. The development of the truck industry there a few years ago was very great, and the product had to be sent by river steamers to the railroad centers, or to the Northern market, and they were picked up by these steamers on their regular runs. The amount of product was large, the distance from the market was great, and the time that was consumed in getting the crop loaded and delivered in the Baltimore or Washington or Philadelphia markets became so great, and the transportation service was so irregular, that the industry on large areas has been given up for that one cause, namely, the inability to market the products in the proper way and in the quick time that is made necessary by our present transportation facilities.

Q. (By Mr. CLARKE.) You do not think that the difficulty of getting suitable farm labor for this truck farming was a potent factor in causing the abandonment of it?—A. Decidedly. I shall speak of the condition of labor in the South later on. This is an important contributing cause.

To come now to one of the most important problems—the social conditions and growth in manufactures, and the increase in wages. In treating this I shall take up specific cases, first, of the cause of the deterioration and abandonment of lands in New England, about which so much has lately been said. So far as I am aware, there is no evidence to show that the New England soils have any less plant food than they had when first cultivated. That is to say, that so far as the chemical analysis would show, they have all of the essential ingredients for crop production. I do not mean to say, however, that the soils are in as high a state of cultivation as they were, because I do not think that is universally the case; but the exhaustion of soils as it is usually considered has not contributed to any great extent to the present condition of the agricultural lands of New England in the 200 years in which they have been cultivated. It would be impossible, with the record we have of Eastern countries, to conceive that in 200 years these soils could be so impoverished by the actual withdrawal of plant food by the crops that have been marketed as to make them markedly deficient in plant food. We must remember that the country throughout the New England States has generally a rough, hilly, and frequently a stony soil, with rocks and boulders and gravel, left from the glacial period. The expense of clearing and cultivating these rough and rocky soils is considerable. With the development of the fertile lands in the West, with the ease of cultivation and the methods that can be employed, the cost of production has been reduced. The New England farmer can no longer afford to grow the staple farm products. When wheat was bringing \$1.25 and \$1.50 a bushel, as it was a few years ago, and when hay was correspondingly valuable and cattle a correspondingly important industry, the products from the New England farms were profitable. There is no question that the New England farmers made a comfortable living; but with wheat as low as it is at present, with cattle as cheaply raised as they are in the West, and with hay and grain as abundant, they have been unable to compete. The contributing cause of this condition has been the small areas which they could devote to any particular crop, and the labor and expense of cultivating and caring for their land. The development of transportation facilities, the lowering of freight rates in the rail and lake and canal transportation, has made it possible to bring products from the West at such a low price that it has been impossible on the rough and rocky New England soils to compete.

Another very important contributing cause has been in the increase in the number and size of factories. It is unquestionable that the social conditions of New England have changed in the past few years—that the growth of the factory system, that the increase in wages, that the lesser cost of the products of the mills, the increase in the number and variety of articles that are considered necessary for comfort and health, the general increase in the cost of living, the general feeling of discontent, and the unwillingness to remain in the quiet and laborious life of the farm have all had their influence.

It seems to me that of all the causes that have contributed to the abandonment of the lands in New England there is no other factor that has been more potent, more important, than this one, of the success of individuals in the commercial and industrial lines, and the apparent ease and comfort and luxury of their lives as compared with the laborious and simple life of the successful farmer.

Q. (By Mr. KENNEDY.) I read in the public press a short time since that the abandoned farms of New England were being taken up again at a very low price; that those who had abandoned them and gone to the West in many cases were returning and trying to get the old homesteads, and that if they could not do that they were buying abandoned farms in the neighborhood, and in one of the New England States, in Massachusetts or Connecticut, there was not now a single abandoned farm.—A. I think there is a reaction going on, but I should think that

statement rather overdrawn. Unquestionably, however, I think there will be a reaction, and that the lands will be taken up.

Q. (By Mr. PHILLIPS.) Have not a considerable portion of those lands been taken up by French Canadians in recent years?—A. Yes; they have. One other point I wish to convey to the commission is that lands in themselves are not worn out; they are in no worse condition. It is other conditions, and not the actual exhaustion of plant food, by which they are affected.

Q. (By Mr. CLARKE.) Is it not a fact that the products of agriculture in the manufacturing sections of New England are worth more to-day than they ever were before?—A. Do you mean of wheat and grain and fruit?

Q. I mean all crops grown by farmers, including, of course, truck farming.—A. Well, I should say not, so far as the general farming goes. Special industries are exceedingly important in the New England States, and I had aimed to speak of that fact in my suggestions for the amelioration of the conditions.

Q. Instead of manufacturing having the effect of depopulating the farms and of rendering agriculture unpopular, is it not true that manufacturing affords so good a market to the farmer near his farm that by changing his agriculture somewhat he finds it more profitable than ever before?—A. Have you not really given the key to the whole situation, namely, that they have not changed their method; they have persisted—farmers are a conservative class—in attempting to compete with the West, when they should have specialized and have met the changed conditions that have confronted them?

Q. My observation, as a New England man, reared upon a Vermont farm and an annual visitor to that State, and somewhat familiar with conditions in Massachusetts, where more manufacturing is carried on, is the reverse of that, and it is that they do conform to existing conditions and are making more money than they ever made before. Now, if I am wrong about that I hope that you or somebody else in the Department of Agriculture can enlighten the country on that subject. A few years ago a Professor Perry, of Williams College, made the statement that one-third of the farm lands from the summit of the Green Mountains in Vermont eastward to the Connecticut River had been abandoned. I contradicted it at the time from personal knowledge. That is one of the most favorable regions in this country. There is scarcely an abandoned farm to be found there, and agriculture near that region, while it has undergone some changes, is more profitable than ever before, and I would like to know why it is. As you say, the soils continue to be fertile and productive, and the markets have improved, and transportation facilities have improved; why is it, then, that the people will persist in claiming that there is a large abandonment of profitable agriculture in that region of the country? I undertake to say that it is not true, but that the exact reverse is true.

Q. (By Mr. PHILLIPS.) Is it or is it not the fact that the price of lands both in New England and the Central States, Pennsylvania, New York, and Ohio, are not nearly as valuable and would not bring as much per acre to-day as they would 25 or 30 years ago, or even before the war?—A. Generally, the land values have fallen, but in specific cases they have risen or have maintained their level. And in many cases in the New England States it is unquestionable that very important industries have been created there, notably the tobacco interests of the Connecticut Valley, which we have lately had under consideration, the area of which we have recently mapped; also the truck interests along the Sound, around Providence, around Boston, are very important, and the fruit interests of the lower Connecticut Valley, particularly the peaches, have all been exceedingly profitable, and I hope I did not convey the impression that I believed myself that there was any such general abandonment of lands as has been frequently stated in the press, because I think myself that there are many industries in the New England States now that are very important. It is certainly our most important tobacco section—the most important for wrapper tobacco—the finest we get in this country.

Q. Is it not a fact that throughout New England when a farm has been abandoned as a home it has been annexed to some neighboring farm and still carried on as a farm? Is not that almost universally the case?—A. I would not say universal, but it is generally the case; yes. There can be no question, however, that, particularly in the last 10 years, 12 years, there has been a period in New England in which agriculture has been at a low stage, and that there have been many abandoned tracts, and many people who have moved away. I have tried to show that these conditions are due to causes other than the poverty of the soil, which I do not believe in at all, and that there is no reason why they should not build up the industry of that country and make it as profitable as, and far more profitable by adjusting it to these new conditions, than it ever was.

Q. Now, I would like your estimate of the proportion, the relative importance of the causes which you have named which have contributed to this soil abandonment. Is it not, in your opinion, mainly due to the competition of the more fertile lands of the West—that is, the more easily tilled lands?—A. I should give that as the first cause, and I should give as the second cause, the increase in the factories, and the demoralizing effect of the factory life, and of the factory wages upon the farm people. There is a demoralization; it is more a panic than anything else; they have not the mature sense of perspective, the vision of what can be accomplished if they take new opportunities which have come to them. It is common through our Eastern States. It is a restless feeling that their old conditions have been changed, and a lack of that business planning and management that will enable them to fit their agriculture to new conditions.

Q. Do you think that the young men leave the farms in New England for the factories?—A. I think so.

Q. Have you any information on that subject?—A. I speak from my experience in New England. I lived in New England for many summers when I was a youth, and I have frequently visited there, as it is the home of my father. I spent 2 years at the Connecticut experiment station when these matters were under consideration, and have also done work since in the Connecticut Valley and in the truck areas of Boston and Providence.

Q. It may be true so far as the machine shops are concerned, and a few other skilled manufacturing industries. Is not the reverse true so far as the textile industries are concerned?—A. I should say that there is a general feeling among the farm boys in New England that they want the higher education. They want to get into and take up the professions. There is a great ambition on the part of the young men to go to an institute and to get into electrical works at the present time, because the young fellows that they may have been acquainted with are now getting high wages; and there is a desire among the young people of New England, so far as I have seen, to get into these commercial and industrial lines rather than remain on the farms, except where they are situated in communities in which special crops and special agricultural interests are being developed.

Q. Is it your opinion, then, that the system of education in New England is defective—that it tends to work against the best interests of agriculture?—A. That is a very difficult question to answer. It is a notable thing that few of the young men who go to the colleges for their so-called higher education attempt in any way to fit themselves for the farm, and a very striking case of that is found in the small number of students who have attended the agricultural courses at Yale University, which has had a permanent endowment for the purpose of agricultural education, and who have gone out from there as farmer boys. Harvard University maintains an agricultural school and a scientific or technical school, but there is by far a greater attendance at the technical school, as there is at the classical college, than there is at the agricultural courses. This is a question, of course, of the effect of education on farm life, which is widespread; it is found in all schools of the country. My own belief is that the education we are giving our boys is not calculated to make the best farmers, and that we are rather leading them away from the farm. I think there is a tendency the other way now, because we are showing that there are possibilities in agriculture that have never before been realized. We are showing them that there are possibilities of making money, for one thing—of earning salaries that are commensurate in every way with salaries paid to professional men. If we get a tobacco expert now we have to pay \$3,000 or \$4,000. Six thousand dollars is paid to some of the managers of tobacco estates in the South. The practical growers will willingly pay \$3,000 or \$4,000 to a man who can manage their estates and make them productive; and the same may be said in other lines of agriculture. In fruit and in dairy interests they think little now of paying \$4,000 to \$5,000 for experts in different lines—men who can make them successful. These possibilities now are opening up to young men, and they see opportunities for remunerative work. We have recently tried to get tobacco experts in the Department of Agriculture, and it has been necessary for us to pay \$4,000 to get a man who is qualified for the work. The Secretary has been desirous of having men trained, and I have presented the matter to several young men, and they have agreed to come at low salaries, \$40 a month—young men from colleges, and they are going to put themselves under the direction of this tobacco expert. They are going into the tobacco sheds and are going to learn how to handle the tobacco, and after they have acquired a practical knowledge they are going to have some training in our laboratories in the principles underlying the handling and manipulation of tobacco. The Secretary says, "Train young men for our own use." If we train them to make good tobacco experts they will go out from us at salaries of \$3,000, \$4,000, and \$5,000, just as we have lost men we have already trained. It is the training, it is the ability of these

men to produce products wanted now in this highly specialized industry of tobacco that counts.

The young men are seeing these opportunities, and we are able to get them now readily. They are readily coming to the Department because they acquire in our work an intimate knowledge of the operations on the farm, of the judging and classification of soils, of the treatment of alkali and seepage of waters and under-drainage, and of the production and management of tobacco, and we are having no difficulty in getting men who have been trained to some extent. Men are leaving positions in which they were getting \$1,000 or \$1,200 and coming to us for \$40 a month for the experience they will get and the value it will be to them. Some of our young men have had offers at \$2,500 or \$3,000 to go out and protect some of these Western lands from alkali, because they know how to handle the question. We have shown our ability to handle these questions, which are of so much importance to the people. There is one case which I wish to mention later of a sugar factory in California, that we found was situated on a delta plain. The owners have invested something like \$3,000,000 or \$4,000,000 in this plant, an immense sum, but their lands are underlain by alkali to such an extent that when they begin to irrigate, as they are planning to do now, there is no question in our minds that they will lose their crops and their lands also. Two factories have been shut up within the last 2 or 3 years from this same cause. They know that there is danger, and they offered one of our men a salary of \$3,000 just because he knew what the trouble was and could handle that matter for them.

A short while ago Japan took one of our tobacco experts from my own division and gave him \$6,000 to go over there to investigate the possibilities of raising and manipulating tobacco. They came again for another of our tobacco experts and offered him \$5,000 to go over and develop the interests on the island of Formosa. These things are having an effect on the people. They are seeing the possibilities in these special industries, and in my opinion the young men are turning more to the farm than they have ever done before, simply because there is something definite, there is a purpose, and they are willingly taking positions in the Department of Agriculture and the experiment stations, because they are getting into practical knowledge of these affairs. They are acquiring the practical methods and manipulations which give them control of these agricultural methods, and they are finding that they themselves can handle these industries now in a way in which they can make good money, or can get positions of trust and responsibility at salaries commensurate with what are being paid in commercial and industrial lines.

Q. (By Mr. CLARKE.) Are many of these branches of agricultural science capable of being taught in the public schools, say, of the grade of high schools and grammar schools?—A. I think so; and yet it is rather difficult to lay out a course or suggest lines of work and of teaching. But it seems to me, as you have asked me my opinion on this question of education, that we want more agricultural schools and we want, to say the least, no more agricultural colleges. That is, we want the schools right out on the farm lands where the boys work, where they are taught to care for products and for crops. When I want a tobacco expert I can not go to the agricultural colleges and get a young man who has any knowledge of tobacco. I must go to Florida or I must go to Pennsylvania, and I must pick up an otherwise uneducated man, and yet that man will command a salary of \$2,000, \$3,000, or \$4,000. He is not a college-bred man, but yet he is familiar with the manipulation and the details of that work. Now, if I should want to educate a young man in tobacco lines, to be a tobacco expert or to know how to raise tobacco in the Connecticut Valley, for example, I would take him and send him right to Florida, where they have the highest type of skill and industry in tobacco, so far as tobacco is concerned, of any place in this country. They have developed the industry along really scientific lines by their practical men.

Q. Now, most of the high schools of this country, even in the agricultural regions, have a curriculum chiefly devoted to preparation for entering classical colleges. Almost nothing is taught concerning practical farming in any line. Is it your opinion that the curriculum might be changed to the advantage of the farmer?—A. I think in certain cases it could be, and we would be extremely desirous of seeing in certain centers farming schools for the education of farming boys. If such a school were established in Lancaster County, Pa., under the splendid agricultural conditions prevailing there; if the boys could see the methods pursued there; if they could go out and actually learn how to handle stock, how to handle the soil, and how to handle the crops, they would acquire information in this individual locality that would be admirable in fitting them to take charge of estates and of farm lands of their own in other localities.

Q. Boys reared upon farms become familiar with practical methods; but what opportunity is offered to them in the neighboring schools to become familiar

with scientific agriculture? How much chemistry are they taught?—A. There is very little.

Q. What do they know about soiling crops and about the various plant foods and animal foods? Is any of that information taught in any of the high schools in this country that you know of?—A. Very little or none in any that I am familiar with, even in the agricultural districts.

Q. Then, when the system of education leaves the leading industry of a region to the work of ignorance and teaches the youth something else, are they not rather compelled to go out, and are not their ambitions led out into other pursuits?—A. Yes.

Q. (By Mr. PHILLIPS.) At present, it would be very difficult to have teachers qualified in these various rural districts to teach this. They would have to be educated for that purpose?—A. It seems to me, further, that when these schools are established they do not seem to be satisfied to remain schools; they so quickly aspire to the dignity of colleges, and from colleges to the dignity of universities. Abroad it is much more frequent to see real agricultural schools, a sort of primary school in agriculture, or high school in agriculture, where the school is situated in a farming district and the methods and thoughts are all upon farming lines. You take a young man and put him under those conditions and he is likely to be much more contented to follow in the pursuits of farming than if you put him into a university like Yale University where the farming course, the agricultural course, is looked down upon by all other students. Under such conditions the young men are not generally satisfied to take a course which is popularly supposed to be an easy one and one which does not maintain the rigorous training that the classical and mathematical lines are supposed to possess.

Q. Perhaps we have diverted you most too long. This is very interesting.—A. I wish I had prepared myself a little more on this line. I did not think of this coming into the discussion. It is a matter that I have often thought of, because I was professor of agriculture in South Carolina and always realized that I was not doing my duty, as it seemed to me, in the training of my men, partly because there is no course in agriculture for a professor to take up—he has to make one himself—and, secondly, the opportunities are not presented, it seems to me, to train people with the particular knowledge that is required in any line of agriculture. I think that in the New England States, perhaps even more than in the Southern States, that restless desire for material advancement and the higher education has been felt because of the more thickly settled condition and other natural conditions which have already been referred to. Another contributing cause to the tendency in the New England States has been the demoralizing effect of the summer boarders. It seems to me there is no question that, while their presence has been a benefit to the New England States in the main, it has had a demoralizing effect upon the agriculture of the region. Furthermore, the severe climate of New England has been against the development in some cases, and it has had some effect upon the development of the agricultural resources of the area.

It seems to me perfectly evident that the conditions which have contributed in any marked way to the depreciation of land values in New England have been, first, the development of the West and the lower prices for farm products through the development of the transportation systems, and the increase in the number of factories, in the restless desire of all of our people to a certain extent to leave the quiet and laborious life of the farm and enter the busy, hurried world of commercial and industrial activities. It is quite evident to me, however, that the future for the New England States, as for our Southern States, is in the line of specialization. They are close to the markets; they are peculiarly fitted, as they have already shown, for certain special industries; and the line of future development must be in that direction. They must give up all thought of competition with the general farm crops and must look forward to the building up of certain industries which their position, their locality, and their conditions specifically make possible to be carried on.

The one case of the Sumatra tobacco, that we succeeded in growing last year in the Connecticut Valley, that brought 71 cents a pound when the ordinary crop is grown for 20 cents a pound, was a result of soil-survey work, in which we thought that the conditions were favorable on a certain soil in the Connecticut Valley for the production of this tobacco under certain conditions which we brought about, and the result has been successful. So far as we know, there is no other area besides Florida and the Connecticut Valley, and only certain soils in the Connecticut Valley, where this industry can be pursued; and it is unquestionable in my mind that this industry can be built up, and that there is a possibility of producing \$6,000,000 worth of tobacco which we now import from the island of Sumatra every year.

I should also mention that the truck interests and the greenhouse interests around Boston are very great. They are enormous industries, and large amounts of money are invested in them and large profits maintained.

I come now to the cause of the deterioration and abandonment of lands in Maryland and Virginia.

The exhaustion of the soils, of which we have heard so much in Maryland, Virginia, and the Southern States, is due, unquestionably, to improper and injudicious methods of cultivation and cropping. This will be referred to more at length, under the head of fertilizers, when we come to speak of remedial measures. It is also due to the decrease in value of farm crops, due in turn to the cheaper production in the West and to the reduced cost of transportation, as has been referred to in the case of the New England States; also to the increase and the development of special industries in other localities—for example, in the production of the White Burley tobacco in Ohio, which yields more per acre, is grown at a less cost per pound, and can be sold at a cheaper price than the Maryland leaf, and has largely taken the place of the Maryland leaf in the foreign markets, particularly in the French and Belgian markets. Furthermore, the changes in the social conditions due to the civil war, and the mortgages which are still outstanding against the lands have been a contributing cause to the abandonment or to the deterioration of many of these areas. It has been found possible in many portions of Maryland, with the prevailing crops and methods of cultivation, to obtain a fair interest on the labor and expense of cultivation, but it has been impossible to obtain a living from the land if at the same time the interest on mortgages, which have been running since the war, has had to be met. And I know of once prosperous communities in southern Maryland where they could still be successful, where they could produce sufficient to maintain families without stint and with a fair degree of comfort, but where nearly all the farms are mortgaged as an inheritance of 30 years ago, and it is impossible to support the families and to pay off the mortgages at the same time. Areas now are being abandoned from that cause throughout Maryland and the South.

One of the most important causes of deterioration, however, and I think I should put this first of all, is the method and system of agriculture that prevails throughout these States. The Division of Soils made a careful soil survey with soil maps of two of the counties of southern Maryland this year—St. Mary County and Calvert County—and of Lancaster County, Pa.; and the study of the conditions which have prevailed and the methods, particularly, which have been used in these two areas has been a matter of considerable interest to me. In the first place, I would state that the soils of southern Maryland are in no way exhausted in the sense that that term is generally used—that is, a chemical analysis shows that they have sufficient plant food for innumerable crops and that there is apparently no lack of plant food in the soil. Unquestionably, the soil has been abused, the methods of cultivation and of cropping have been injudiciously selected, and the soils are not now as productive as they should be. There is one area in particular of a certain soil with a heavy subsoil in St. Mary County, probably about 40 per cent of the area of the county, that is, in my opinion, as valuable in its way, and in much the same way, as the limestone soil of Pennsylvania. This soil in St. Mary County sells for from \$1 to \$3 per acre in forest, as it usually is, or for about \$10 an acre where it is under cultivation, while the soils in Lancaster County sell now at from \$125 to \$250 an acre.

Q. (By Mr. PHILLIPS.) That is chiefly for tobacco, is it?—A. Yes; chiefly for tobacco. It is fit for general crops, but tobacco is grown in places. But on the soil in St. Mary County there have been several good farms that have been well kept up. The Maryland farmer grows on soils in good condition from 15 to 20 bushels of wheat; he grows clover; he grows tobacco, and he gets from 6 to 10 cents a pound for the tobacco. The Pennsylvania farmer grows from 25 to 35 bushels of wheat; he grows clover and grass, as in Maryland, under good treatment; and he grows tobacco, for which he gets from 6 to 10 cents a pound also. He gets the same price, but a larger yield. It is heavier tobacco. Now, from consideration of the crops that are obtained from this southern Maryland area, and of the staple crops and of the yields and values obtained from the soils of Lancaster County, Pa., it seems to me evident that the soils of southern Maryland ought to have a relatively higher value; and the reason why they have not is largely, in my opinion, because of the social conditions and the methods of farming. If you go into the home of a Lancaster County farmer and sit down to dinner with him, he has an abundance of food in great variety. Everything, the chances are, has been grown upon his own farm. The meat has been raised by himself, the vegetables have been grown in his garden or in his fields, the preserves, or whatever they may have for their dessert, have been made by their families from the products of their garden. Even the sugar, the chances are, has been pro-

duced on the place, and actually nothing but the tea, coffee, salt, and pepper have been purchased that goes to make up the family meal. The families as a rule are large. They have a good many children. The boys and girls are all brought up to work on the farm. It is the rarest thing that any of them leave the community or leave the farm. They stay there and they marry. It is a common thing for them to settle on a portion of the farm or on some neighboring farm. The farms are small, and labor is all done by the owner and his family. The girls are all brought up to look after the house. There is no expense for servants. They have their garden and their fruit. They put up their preserves and their apple butter, and such things for their winter use. We find that very few products are sold from Lancaster County; very few things are sent out of the county except tobacco and stock. And they not only feed up all their corn and hay that they grow to the stock, but they import it often from other States and from other countries, so that they can raise more stock and make more beef and mutton. Most of the products of the farm, including the wheat, which is ground up for flour in adjoining mills, are used on the farm or manufactured there into some sort of product that is sold or is used up in the district. There are manufactures and industries which require to be kept up in the large city of Lancaster and many smaller towns, in which there is a ready market for everything that is produced in the county; and the interesting thing is that this supply and demand is nearly equal, so that very little is sent out of the county and very little is brought in. The result is that it is a happy and contented and prosperous community. The lands have been handed down from generation to generation for ages and people seldom think of leaving the place. They are a contented and happy and prosperous people.

In Maryland the methods are altogether different. In the first place, the Maryland farm is seldom worked by the man who owns it. There is, for some reason, an unfortunate prejudice which prevails in many localities, at any rate in Maryland, for a man who actually goes into the field and works his land. He usually has an overseer, a man who is paid to look after and direct his interests instead of doing this himself. Frequently he has not even so much control over his interests, and lets his land out to a tenant farmer who farms it in his own way, by his own methods, and for a portion of the crop, and occasionally for a money consideration. The crops grown are the ordinary staple crops of general agriculture. They have corn, wheat, and tobacco. The competition from the West and the low prices of wheat and corn make them scarcely profitable. The competition with the Ohio tobacco and the general specialization which has taken place in the tobacco industry, and the necessity of producing something that is peculiarly adapted to a certain market or to a certain demand, has lowered the price of the Maryland tobacco. Now, after the Maryland farmer has raised these three things he has done, as he thinks, the best he can, and he has nothing further to consider for his development. The corn is fed mainly to his work stock, and it all goes to that and his own labor. The wheat is sold and sent off the farm in exchange for flour, which he buys at a considerable increase in cost over what it would have cost him if he could have had it ground in his own neighborhood. The tobacco, of course, is sold and goes out in exchange for productions of all kinds for himself and his family. He buys his meat, he buys his groceries, and he frequently buys the vegetables that he should have raised in his garden.

There is no comparison with the conditions in a prosperous community like Lancaster County and the improvident methods that prevail in some of our Maryland counties and Virginia communities. There is no comparison whatever in the economical methods that are employed; and it seems to me that one of the most important contributing causes to the abandonment and impoverishment of the lands in Maryland and Virginia and of many of the Southern States is due to this one fact, that they do not use the same thrifty methods that have marked the success in Lancaster County and in many other of the Northern States.

Mr. PHILLIPS. Without objection a recess will be taken until 2.30, when the professor will be with us again.

Whereupon, at 1.05 p. m., the commission took a recess until 2.30 p. m.

WASHINGTON, D. C., March 12, 1901.

The commission met at 2.30 p. m., pursuant to recess, Vice-Chairman Phillips presiding.

Prof. MILTON WHITNEY was still on the stand, and examination was resumed as follows:

Mr. PHILLIPS. You may proceed.

The WITNESS. At the time of the adjournment or recess I had compared the methods and system of agriculture prevailing in the southern counties of Mary-

land with the system prevailing in Lancaster County, Pa., and had drawn some suggestions as to the cause of the differences in the land values in the two localities. In following out our soil investigation and the mapping of lands, we find the same limestone soil which is so productive and valuable in Pennsylvania extending down to the Hagerstown Valley of Maryland and down through the Shenandoah Valley of Virginia. They have the same character of soil, essentially the same climatic conditions, and yet the soils of the valley of Virginia are selling to-day at from \$10 to \$20 an acre—rarely more than \$40 or \$50 an acre—while the farm prices in Lancaster County have been maintained about where they were—about as high as they ever have been—and I can not say that this is due to any cause connected with the soil, but conclude that it is due almost entirely to social conditions, to the respect agriculture has in the community, to the thrifty methods employed by the people, and the way in which the occupation is esteemed.

Undoubtedly, the system that has prevailed for so many years in the South was satisfactory under the conditions prevailing some years ago, but certainly, with the rapid and phenomenal advance and improvement in industrial lines and in the improvement of transportation facilities, the old methods are no longer applicable. The trouble with the South, it seems to me, is the lack of business method, the lack of appreciation of the changed conditions, and the necessity for business perception of opportunities that could be taken up and made productive.

In the States farther south than Maryland and Virginia there have been other causes which have operated in this same direction. In the first place, the kind of crop and the clean cultivation that has been given to the cotton crop has caused a tremendous oxidation and loss of the organic matter, and the soil is left relatively poor in these organic substances that are necessary for the normal weathering of the soil material and the preparation of the plant food into a form that is readily available to plants. It has also caused in many areas the erosion and washing of lands that has proved destructive to very considerable areas in the Southern States. There is one condition which has also prevailed against the competition with the South in certain lines of general agriculture—that is, the unfavorable climatic conditions for grain crops. The normal yield of grain in the South is about one-third of what it is in the Northern States. This is due to the fact, so far as we can see, that the greater humidity and larger rainfall are bringing about conditions favoring extensive leaf development rather than the production of grain. In the Northern States the cold, frosty nights are liable to occur about the time the plant has obtained its full development, and this condition favors the production of fruit, as is well known in all life functions. Where there is danger of the destruction of the plant it tends to reproduce itself in the formation of seed. In the Southern States, with the more equable climate, with the higher temperature, higher rainfall, and generally higher humidity, there is a persistent effort to the production of vegetable growth and a distinctly less chance of the production of grain and seeds. While this is natural, it is by no means necessary, for the largest yield of corn on record is from South Carolina, where there was an abundant growth—abundant vegetative growth—which was checked by methods of cultivation at the proper time—that is, the tendency to vegetative growth being checked, the plant produced seed in proportion to the vegetative growth, and the yield was phenomenal; and it has seemed to me at times as though by a change in the method of cultivation—by some mechanical checking of the growth—that the vegetative growth could be checked and the yield could be largely increased. However that may be, the fact remains that the climatic conditions in the South have never been favorable to a large yield of grain.

I have presented to the commission now the principal causes that operate in the exhaustion and abandonment of soils. These several lines, of course, operate in different proportions in different parts of the country. In nearly all localities one or more of the causes that I have mentioned have operated at the same time to produce the deterioration, if not the abandonment of soils.

I come now to the conditions of reclamation and certain recommendations that it seems desirable to make.

Q. (By Mr. PHILLIPS.) Before proceeding with that I should like to bring up a question which has been touched upon. You said in the early part of your testimony that in England the soils had not deteriorated; that the growers raised about the same amount on the land in the last 20 years as they had for 40 or 50 years, about 15 bushels. Is there anything in the climate favoring England in this respect? Would the climate in Virginia and Pennsylvania have the same power or force? Is it on account of the damp, or are the climatic conditions there different from ours?—A. Yes; the climatic conditions have a great deal to do with it.

Q. Then you would not, therefore, claim that 15 bushels could be raised on good wheat land in Pennsylvania, as is the case in England?—A. No; but what I

say is that under given climatic conditions and with a given soil, a soil even without fertilizer, there would be a certain grain yield that would be maintained for a good many years; indefinitely, so far as we know. It might be 5 bushels to the acre or it might be 10, or it might be 15. It happens to be that under the conditions in England in this one experiment, it was 12 bushels.

Q. I know of farms that have become quite poor on the hills because of the water. England being more level, perhaps the conditions would be more favorable?—A. In this experiment that I cite, yes; it was conducted on a level tract.

Q. Pardon the interruption and proceed.—A. The first method that I will speak of in the reclamation of lands, although in my opinion not the most important, is the subject of fertilization. The primary object of fertilization is the improvement or adaptation of soils to the cultivation of any desired crop or crops. As I have shown, all soils have a natural fertility which can probably be maintained under any condition of cultivation for an indefinite number of years. Very frequently this natural fertility is so low that it is unprofitable to raise a particular crop, as so little is obtained from the soil that it does not pay for the attention given to it. Frequently, also, on a very rich soil the aim is to force the crop, and we call it intensive cultivation—that is, we may have a soil which will produce a large crop, and yet we want to force it to produce all it can. It is like the fattening of stock. We can produce a fairly good animal on our ranges, but if we take an animal and feed it up with concentrated food mixed in the proper proportions for a good diet we can put fat and flesh on it, which will make it far more profitable than if we had depended upon the natural food of the locality. It is so with soils. We can unquestionably force the fertility far beyond the natural limit and far beyond the ordinary limits of crop production. This we see particularly in the truck crops, where the poor barren sands are highly fertilized and where large crops are grown from what would naturally be considered a poor soil. In this sense the effect of fertilization is a simple addition of plant food to the soil in such form that the crops can immediately use it. But fertilizers have another effect, that of increasing the decomposition of the soil particles themselves—that is, the mere addition of fertilizers of different kinds may increase the weathering power, and the soil itself will disintegrate and decompose under their influence faster than it would without their application.

The specific objects of fertilizing are to obtain an improvement in the texture of the soil—that is, frequently a wet refractory clay can be made more pliable, more easily handled; drainage is improved. Frequently also loose soil may be made more compact and more retentive of moisture. At times also the influence of the fertilizers is felt more in balancing up the ratio. We have in Maryland and Pennsylvania small areas of lands that are derived from the disintegration of serpentine rocks that carry a large proportion of magnesia; and it has been found that where the amount of magnesia is in excess of the amount of lime plants rarely do well and frequently are an entire failure. In such case the application of lime simply to reverse the ratio and make lime a predominating ingredient in the soil will restore the fertility of the land. Very frequently also, and probably more often even than we now suppose, soil is acid. It has been found that the soils of Rhode Island are very generally acid, and the addition of lime simply to neutralize this acidity will promote the fertility of the land in a very remarkable degree. This same cause of acidity of the soil is found now to be much more prevalent than we have heretofore supposed to be the case. The fertilizers that are commonly available are farm products—that is, stable manures and green manures, which are used to a very considerable extent and are both exceedingly important in the list of fertilizing materials. Then we have the commercial products, such as guano, ground bone, potash, and then the mineral fertilizers other than lime, and then lime, marls, and gypsum. It will hardly be necessary for me to go into the question of the fertilizer laws. As the commission knows, most of the Eastern States have rather stringent laws about the inspection and sale of fertilizers; and this subject has been taken up by the Department of Agriculture with the idea of having a more uniform system of laws, if possible, and with some idea of having national laws for the interstate commerce and trade. I am not at all sure how far this has gone, and I therefore do not feel competent to speak upon it.

Another series of fertilizing agents is found in the bacteria and other ferments. This newly discovered nitrogen, is really a pure culture of bacteria, which have by reason of their activities in the soil rendered available the plant food—that is, they increase the weathering of the rocks and also add to some extent (we do not know how much) nitrogen from the air, converting it into some form in which it can be used by the plants.

Still another method which I would call to your attention by which reclamation of these waste lands can be realized is in the rotation of crops. There is no question

whatever but that in general a rotation or a change in the crops grown on soils is of value in preventing undue waste and undue extraction of certain elements of plant food and the undue tendency for cultivation in a particular way, and unquestionably where intelligent rotation of crops can be inaugurated it is one of the most desirable things to do. There are instances, however, in which the same crop has been grown on the same land for many years without any apparent deleterious effect. On the eastern side of the Connecticut River, near Hartford, they have grown the broad leaf tobacco continuously for 25 years on the same land, and they claim that the quality of the tobacco as well as the yield is as fine as it was at the beginning, even better.

Q. Is that done without fertilizing?—A. No; that is with fertilizing.

Q. (By Mr. FARQUHAR.) Why is it that the tobacco soils of Virginia here are almost worthless to-day for raising anything?—A. The deterioration of the tobacco lands of Virginia is due more to the general methods of cultivation which have not looked forward to the maintenance of the fertility of the land or to the proper physical conditions. You will find it almost universally believed in Maryland and Virginia, that tobacco is a very exhausting crop and has ruined their soils. On the contrary, if you go to Ohio, or Kentucky, or Pennsylvania, or Connecticut, you will find that it is the one crop which they value as a renovator for their soil. This is, in my opinion, due to the fact that they take so much care of their tobacco lands. They cultivate them so carefully, so perfectly, and so thoroughly; they fertilize them so heavily in order to maintain a good yield and a good quality, that the land has actually improved in spite of the relatively large amount of plant food removed by the crop. I think unquestionably it is a matter of culture rather than of any other one factor. If the Virginia farmers took as good care of their land as they do in other localities, there would be no suggestion of deterioration of their soils. But they plant tobacco with little or no fertilizer, or manure, usually without much organic matter. They give the land a clean cultivation and leave it exposed for a considerable portion of the year; and the consequence is that it is not maintained in that vigorous condition in which these necessary changes go on as they should, and the soil is said to be worn out. It is not the loss of plant food; it is a change in the physical and chemical condition of the soil brought about by indifferent methods of cultivation.

One of the most important methods for the reclamation of abandoned and exhausted lands is in the specialization of crops. By this I do not mean the exclusive growing of one crop without regard to all other conditions, but I do mean the adaptation of the particular crop or crops that the land is best suited to, and specialization in that particular industry. I shall cite in support of this position the truck industry which has reclaimed vast areas of lands in the Atlantic States. Twenty-five or 30 years ago the sandy soils along the Atlantic coast were worth about \$1 or \$1.50 an acre. I remember myself well when they were worth no more than this. By the introduction of the truck crops—that is, the growing of vegetables for our early markets—those lands have risen in value until now they are the most valuable soils in those States, selling anywhere from \$50 to \$500 an acre according to their location with regard to the water, freedom from frost, and in regard to the markets and transportation facilities.

Q. (By Mr. PHILLIPS.) You do not mean in the primitive state, but that under a state of cultivation they are worth that amount?—A. Yes; I mean that the same land that was worth \$1 an acre is now worth \$100.

Q. By reason of cultivation, and not in the natural state?—A. In the natural state. Any soil that is suitably located for truck farming, especially near the water, and where there is a freedom from frost, and where the transportation facilities are adequate, is worth that in its natural state.

I should also state a similar fact as to the case of the pineapple industry in Florida. There is a narrow strip of sand along the coast in the southern part of the peninsula of Florida that was formerly comparatively worthless. It is simply beach sand thrown up by the tide in former times, and is in a ridge about 15 or 20 feet high. It is white, like glass sand, and to the northern farmer would be just as barren and unpromising as anything could be. By the introduction of pineapples these lands have been redeemed, and a very fine variety of pineapple can be grown upon them. They are worth now anywhere from \$200 to \$1,000 an acre, according as to whether they are set in pineapples or whether they are wild lands. Even the wild lands, covered with the native jungle, will sell now for from \$100 to \$200 an acre, when favorably located. I know of no more striking illustration of the possibility of specialization in the reclamation of waste and abandoned lands than this instance of the pineapple industry of Florida.

Q. Are they fertilized?—A. Fertilized very heavily. The sand is used simply as a medium apparently for the fertilizers that are put on. They would be of no value for general crop, but are of exceptional value for this one crop, because there

is no other soil which can compare with them in the possibilities of growing pine-apples of the superior quality that is grown on them.

Q. That strip is in the southern portion of the State, is it not; below Palm Beach?—A. Just above Palm Beach. It begins about there. It extends from Jensen down to Palm Beach.

I would also cite the case of the bright tobacco industry in the South. Many areas that were formerly of little value and considered very unproductive, have been developed by the introduction of that industry, and are now worth more than they were formerly, and are the most productive and valuable lands in that section. In this case, also, it is a special adaptation of a particular kind of crop to a particular soil. The bright tobacco can not be grown successfully on all soils. It is confined to certain soils with certain peculiarities, and they happen frequently to be conditions which are unfavorable for the general agricultural crops, fortunately.

I would cite another instance of the cultivation of tobacco in the Connecticut Valley. On the light sandy soils a fine grade of wrapper leaf is produced which can not be grown on the tobacco lands of Pennsylvania or of Maryland. It is confined to that one locality of the Connecticut Valley and the Housatonic Valley, and is a special industry that seems to be adapted to that place. The introduction in 1865 of the Sumatra tobacco from the island of Sumatra has had an effect upon the tobacco industry of the Connecticut Valley. The fine texture and fine veins and the working qualities of this Sumatra tobacco have been so appreciated by the cigar manufacturers that it has been imported in increasing amounts ever since, in spite of the revenue duty of \$1.85 per pound on all that is brought into this country. In other words, the cigar manufacturers prefer paying \$2.50 or \$3 a pound for Sumatra tobacco to paying 18 cents, or 20 cents for the Connecticut leaf, although, as far as quality goes, the Connecticut leaf is preferred by many. Now it has seemed to me that the industry in the Connecticut Valley was threatened. The trade wants this Sumatra type of tobacco, and have been giving but a low price for the Connecticut leaf. One dollar a pound is paid for the Sumatra and \$1.85 a pound is paid as duty upon it. We only take the best that they have, and there is more and more a feeling against the use of the domestic leaf.

Realizing this condition and the necessity of successfully competing with the Sumatra tobacco, the Department of Agriculture 2 or 3 years ago looked around for the possibility of raising a Sumatra tobacco in this country which would prevent the importation of such large quantities from that island, and we decided to try a particular soil in the Connecticut Valley.

Last year we procured some Sumatra seed and planted it under a shed. This shed was erected at the height of about 9 feet, and was covered with cheese cloth so as to partially protect the plants from the sun and maintain a very quiet and humid air. The tobacco was grown and cured by the methods used in Florida and in Sumatra and Cuba—a combination of the different methods—and it was pronounced by experts in New York and Philadelphia to be fully equal to the Sumatra leaf that is imported. We confidently expect to be able to establish an industry in the Connecticut Valley upon certain soils adapted to this very fine leaf, in which we hope to be able to successfully compete with the Sumatra tobacco, which we import to the extent of \$6,000,000 a year in addition to the duties.

Q. Could it be profitably produced by covering the ground with canvas as you describe?—A. Yes; the profits are good.

Q. Could it be produced without the covering?—A. No. That is necessary, in order to change the climatic conditions to get the particular growth that we want. Even with the expense of \$500 an acre, which we estimate for the first cost, the profits are likely to be large. We estimate this year \$1,400 worth of tobacco from our experimental crop of one-third of an acre.

Q. Have you sought any lands in the South where the climatic conditions would be somewhat similar to those of Sumatra, without the canvas?—A. Yes. Some Sumatra leaf is being grown in Florida and the growers are getting large yields. Their finest wrappers are bringing from \$2 to \$4 a pound.

Q. They raise it, then, without canvas?—A. No; with canvas there also. The climatic conditions during the growing season are not very different in Connecticut and in Florida. It is the same hot, tropical weather.

Q. (By Mr. CLARKE.) Is that cheese cloth strong enough to protect the leaves from hail?—A. There is no ill effect from hail, except possibly an exceptional storm. There is no injury from wind or from insects or worms of any kind. The protection is carried all the way down the sides. There is a gate with an opening for men and teams. It is entirely covered with canvas, and it is a perfect protection against all extraneous conditions.

Q. (By Mr. PHILLIPS.) It would be liable to destruction by storm, would it not?—A. In a very severe storm such as they had two or three years ago in Florida, where one of those gulf towns was destroyed by the floods that came up, they were destroyed to a considerable extent; but ours in the Connecticut Valley last year withstood the most severe storms. Any ordinary storm has no effect on it.

Q. (By Mr. CLARKE.) Can you give the expense of constructing and maintaining these canvas coverings?—A. The first cost is between \$200 and \$500 an acre. That seems rather a wide margin, but it depends on the cost of the lumber. In the South, where they have the sawmills right on the place and where lumber is cheap, it costs about \$200 an acre for the shed. In the North it will not exceed \$500 an acre, and the shed will last about 5 years. The cheesecloth will cost about \$100 an acre, and has to be renewed each year.

Q. (By Mr. PHILLIPS.) Is it taken down in the winter season?—A. The cheese cloth is hardly worth preserving.

Q. (By Mr. CLARKE.) Are those coverings for each row or are they broad enough to cover several rows?—A. The covering goes entirely over the field. It is 9 feet high, so that horse cultivation is carried on under the shed just as it would be in the open air. It may be a 10-acre field, or it may be a 30-acre field, but the entire field is covered.

Q. Like a great greenhouse, then?—A. It has the effect of a great greenhouse. The sunlight and the sun heat is very much reduced and modified, and the air is a stagnant and moist air, humid, because there is no wind to carry off the moisture or change the air. The conditions there are really tropical. The plants keep on growing, and in the Connecticut Valley they went right up to the top of the roof; that is, they were 9 feet high.

Q. (By Mr. KENNEDY.) What is the ordinary height of tobacco plants?—A. Ordinarily, about 4 feet.

Q. (By Mr. PHILLIPS.) This cheese cloth does not prevent the rain going through?—A. No. It does not prevent the rain, but it does prevent evaporation, and it conserves the moisture so that the crops do not suffer as much from drought as they do on the outside. It is also a protection against frost. Indeed, a covering of the kind described has been used very successfully in the cultivation of pineapples in Florida to protect them against frost. It seems to be a method that is coming into very extensive use in the protection of crops under intensive farming. In the production of truck crops, it is getting to be used extensively to protect them from frost and to maintain humid conditions and protect from drought on the sandy soils.

Q. In a very large per cent of these the flavor is due to the direct rays of the sun. For instance, strawberries would not be marketable raised under such conditions?—A. No; I should not think strawberries would. There is some sunlight under the cloth covering, but it is not so intense. It is the intense sun in the middle of the day that hurts some of our tender vegetables unless they have plenty of moisture. Covered, they have the sunlight, but it is diffused and not so intense as it is outside.

The commission is well aware of the important part celery has played in the reclamation of many areas of formerly wet, mucky lands in many parts of the country; also the importance of the fruit industry in the reclamation of what we considered worthless or abandoned lands.

The introduction of peach culture in Western Maryland has created an industry there on some of the soils which were formerly of little or no value, and where they are now worth anywhere up to \$1,000 an acre. The location and the character of the soil has made it possible to produce a late peach which does not come into competition with the peaches from the Eastern Shore and Southern Maryland, and which has a very fine color and a splendid flavor. These soils are of no value for general farm purposes, but they are particularly adapted to the production of peaches which ripen late, and which have a good flavor and a bright color.

The commission is also aware of the success of grapes and vineyard culture on gravelly soils, and it will hardly be necessary to dilate on the importance of this crop as a means of reclaiming such areas. The most valued soils along the Rhine are frequently so destitute of soil covering that the soil has to be maintained by stonework; and on these very gravelly soils the finest varieties of grapes have been produced. Over a large class of soils, particularly in rocky and stony areas, fruit trees and grapevines have been found a most important means of reclaiming otherwise worthless lands.

There is one consideration, of course, in the production of fruit which must always be considered, and that is the possibility of marketing. That problem has been solved to a considerable extent by the possibilities of marketing the fruit in a dried or canned condition, and the exportation of dried fruit is to-day a matter of the greatest importance, and one that is increasing in magnitude, especially on

the Pacific coast, where large and increasing quantities of fruit are being consigned to China and Japan.

Another important means for the reclamation of poor or abandoned lands is in the reforestation and the protection from fires and a more rational method of cutting the timber. This is a subject which is being investigated in the Department of Agriculture, where we have our Division of Forestry concerning itself with this one problem; and it is one of the important problems applicable to areas in which there seems at present to be no other means of improving the land.

The question of thrifty methods and efficiency of labor is one that is very hard to deal with. I can not understand how by education or by legislation or in any other way thrifty methods can be introduced into certain areas that are at present of little value simply because the methods are not good. I do not think that any kind of education would improve the farming conditions in southern Maryland and make them particularly attractive to the young man. It would be discouraging, no matter what kind of education he had, for him to go back and live under the conditions that prevail there at the present time. The social conditions are such that he can not work with his own hands, and he does not have the intelligent or efficient labor to organize and carry out his ideas. He is confronted from the start with conditions that are almost hopeless for the introduction of new methods and of new crops on a scale commensurate with the importance of the work and the facilities at his command.

Q. Is the negro population very numerous in southern Maryland?—A. It is quite large. It is the principal but not the only labor, and not nearly so large as it is farther south. In my opinion, the importance of reclaiming large areas of lands is indicated by the necessity of more thrifty methods and more businesslike plans than they have at the present time in the selection of industries and in the cultivation of crops.

Another very necessary means to the reclamation of lands is business methods and organization in the marketing of crops. The success of the truck industry in Norfolk is largely due to the splendid organization and to the means by which the truck farmers place their crops in certain markets, according as the demand may be greater in one or the other. That is an essential thing in truck farming, because the vegetables can not be held over, but must be marketed or sold as soon as they reach maturity, and they have to be sold for what they will bring. The organization of growers gets regular daily returns of the market conditions in different cities, and they are able to divide their crops and to send a certain portion to this market or to that, according as they think the conditions will stand. It seems to me that this organization and the introduction of these business methods is one of the most important factors in the reclamation of abandoned areas and the introduction of new crops.

The commission is, of course, quite well aware of the method of irrigation which has been so important in the reclamation of certain areas in the West. Unfortunately, about all of the available water has been already appropriated and is nearly all in use.

Q. (By Mr. KENNEDY.) Is that true? Governor Stenness, of Idaho, told me a week ago last Sunday that the possibilities of the Snake River for irrigation purposes were wonderful, saying they had not begun to use the water of the stream up to its full capacity.—A. That is so in certain cases. It is so in the case of the Yellowstone River, also. But nearly all of the water in California and in Washington and in certain portions of Arizona and in the Pecos Valley in New Mexico is now used to its fullest extent. There are other areas in Montana and in Idaho and in Wyoming where there is still some available water, but as a general statement it may be said that the available waters are already appropriated and in use, except, as I was going to say, such as may be added by the construction of reservoirs for the storage of waste waters.

Q. (By Mr. PHILLIPS.) There are very large possibilities in that regard, are there not?—A. Yes; it is estimated that about 74,000,000 acres can be irrigated by the construction of reservoirs.

Q. (By Representative BELL.) What are the possibilities of the irrigated soil?—A. They are very great for special crops, but they are not so very great for our general crops. For instance, it no longer pays to irrigate wheat. The principal crops are the fruit crops of all kinds, and alfalfa for stock feeding, and special industries of that kind. With these special industries the possibilities are enormous.

The average cost of placing land under irrigation, as shown by the last census, was \$12.12 per acre, and the annual cost thereafter of maintaining the water was \$1.07 per acre of the public lands. Newell estimates that 74,000,000 acres are capable of being irrigated. The cost of the opening of this area, taking the average of previous experiments, would be \$897,000,000. But as the methods of apply-

ing the water to the land heretofore have been the simplest possible, the cost per acre has been much less than the cost will be in the new areas that are to be taken up, where the water must be stored and carried over long distances. For the storage of water under the most favorable conditions in Arizona Mr. Lippincott estimates the cost at \$4.80 per acre foot, and as at least 5 acre feet of it must be stored for each acre in order to provide for 2 or 3 seasons of low water the cost would be about \$21.50 per acre. I would call your attention to the basis of this calculation. It assumes that all of the land that could be watered by the storage reservoir shall be actually taken up and put under water. If only half of that area is taken up, the cost would be twice as great per acre; if only a quarter, it would be four times as great, and so on. So this cost that is given in the estimates of the irrigation engineers is the cost provided all the land possible should be taken up and put under water, and the rate per acre was paid in to the canal company.

Q. What would be the value of this land after it was put under water?—A. It would be from \$60 to \$100 an acre.

Q. (By Mr. PHILLIPS.) Notwithstanding the cost of maintaining the water afterwards?—A. Yes.

Q. (By Mr. KENNEDY.) In what localities?—A. Through the arid regions. This example was in Arizona. Lands in Utah are worth from \$60 to \$100 an acre; and, set out in good varieties of fruit orchards, anywhere up to \$1,000 an acre. In southern California lands are worth generally from \$50 to \$100 an acre, but many of their orchards are worth from \$1,000 to \$2,000 an acre.

Q. (By Mr. PHILLIPS.) That would be when they were fruit bearing?—A. Fruit bearing, yes; in fine varieties of fruit. The difficulties in the way of the extension of irrigation by the construction of storage reservoirs are the alkali and the silt in the water. There is no question that the amount of alkali in the water is a very serious factor in many localities. In the Pecos Valley it has been found that the alkali increases in amount as they go down the valley to such an extent that in the lower part of the valley the water is entirely unfit for crops. In the storage reservoir in which water is stored above the town of Carlisbad the evaporation is so great that the salts become concentrated in the water, and at the end of a long dry season the water is too salty to be applied safely to the land. This region, by the way, has the highest evaporation of any place in the United States, approximately so. Considerable trouble has been experienced also and losses have been encountered by the storage of alkali waters in California, particularly in southern California.

Q. Is that water obtained in the hills and mountains or from the rivers? Do you not get pure water from the mountain streams?—A. Yes; and the water in Utah is very pure because there are short rivers that come right down from the snow-clad mountains and deliver pure water; but in the Pecos Valley the water travels 200 or 300 miles from the mountains and gathers up these salts as it goes along. The Pecos River is entirely taken up about 6 miles above the town of Carlisbad; and 6 miles below the reservoir the stream has about the same flow that it has above the reservoir. Frequently out in the Western lands the water is entirely used up before it gets down the whole course of the river, going out in seepage and flowing again into the river after it has been applied to the land. By the time it gets down to its mouth the water is pretty salty.

There is another difficulty in the storage of water in reservoirs that is particularly troublesome in some areas in the West: that is the amount of silt carried by the waters. In our work in Arizona where the waters are very heavily laden with silt, we found a soil that has been recognized as a distinct type, which is undoubtedly a sediment left by the irrigation of some prehistoric race. The old canal systems are there and the old irrigation works and the remains of the houses, indicating that irrigation was carried on in some prehistoric time, and the evidences show that this is simply a deposit of sediment or mud from the rivers. The amount of sediment is so great that the people now have great difficulty in maintaining their canals. They have already dug it out and piled it up as far as they can throw it, and it is a serious question now what they are going to do with the canals in certain areas of the Salt River Valley in order to keep them open. It is very generally believed that reservoirs will quickly fill up with the silt in such districts as that unless special precautions are taken to keep them open; and that is an engineering feature that has not yet been satisfactorily solved. In other localities there is no trouble with this silt, as the waters do not carry any great amount. Even if we get water that is free from silt and an absence of salt, there is the further danger of seepage waters and the accumulation of alkali in the soils, as I have already stated.

Q. This accumulation of alkali is only in arid countries? There is no alkali to speak of in the Appalachian Range, is there?—A. No; because the drainage is

so great. So much rainfall comes down that it is carried off. The alkali is the natural weathering of the rocks, resulting from their disintegration.

Q. Peculiar to arid regions?—A. Yes; although we have it here in the East occasionally. The mineral springs that we have are due to nothing more nor less than the decomposition of the rocks, and the same cause accounts for the alkali in the Western States. It is the weathering of the rocks being carried off by the water. In the West these decomposed rocks accumulate in the soil and stay there. Our iron springs and our alum springs and mineral springs generally are the products of the weathering of the rock being carried off by the water. But we get no such accumulations here as they get in the West, simply because we have 40 inches of rainfall here, 29 inches of which goes down through the ground and is carried off in the rivers. Out there we have a very small rainfall, only about 5 per cent of which ever goes off, and then usually over the surface of the ground.

In the consideration of irrigation as a means for the reclamation of lands, I would call the attention of the commission to the necessity of uniform State laws and the possibilities of national legislation. There are certain phases of this subject which will undoubtedly have to be taken up by the National Congress, particularly with interstate streams and where the streams form the boundaries of adjoining States. But as the Department of Agriculture has a distinct division for the study of irrigation and its laws and methods, it would hardly be advisable for me to go into it at any great length. My own connection with the matter, however, in our study of the soils and of the seepage waters and alkali has convinced me that it will be necessary to use more care in the application of water, not only conserving it for use elsewhere, but to protect from the injurious effects of overirrigation and the accumulation of seepage water and of alkali. I think it is safe to say that in nearly all the irrigated districts twice as much land could be irrigated with the water that is now used, with actual benefit to the soil, provided it was intelligently applied.

I would also refer again to the matter that I spoke of a while ago; that is, the necessity of legislation in the case of soils damaged by the accumulation of seepage water and of alkali from leaky ditches and from overirrigation on neighboring farms. It seems to me that a remedy of some kind must be worked out. It hardly seems fair or just that a person owning a piece of land which he has planted and cared for and upon which he uses the most careful and most intelligent means, should be allowed to be injured by a seepage from a canal or from the careless methods employed on a neighboring farm. It seems to me that either through State or national legislation recourse should be given for the recovery of damages in civil suits.

The next method to which I would call your attention for the reclamation of lands is the subject of drainage. There are many areas of swamp lands and still larger areas of cold, wet clays in the United States that are unproductive or have been abandoned from a small accumulation of water which needs to be removed by artificial means. It is claimed that one-fifth of the State of Michigan is swamp lands. The report of the Illinois board of agriculture for 1894 states that during 1893—that is, in 1 year—there was laid in the State of Illinois alone 26,985,000 feet of tile drains. Of this, 18,310,000 feet were laid in the northern part of the State, 8,607,000 feet in the central part, and the remainder in the southern part. In the north there were 28 feet of tile to each acre cultivated. In the central part there were 29 feet of tile for each acre cultivated, and in the southern part 1 foot of tile for each acre cultivated. In Douglas County there were 85 feet of tile for every acre of cultivated land, and in Livingston County 78 feet to each acre. In the eastern part of Livingston County is found the Vermilion Swamp. As late as 1880 lands could be purchased there for \$3 to \$5 per acre; the same lands, which have since been drained, are now valued at from \$60 to \$80 per acre for general farm purposes. As a result of this widespread system of drainage as practiced in Illinois and in Michigan, the swamp lands have become the most productive, the healthfulness of the vicinity has been much improved, and the public roads have been kept in much better repair. The drainage laws of Illinois, and in fact of most of the States where drainage is practiced to a considerable extent, are very complete and deal with all phases of the question, from the rights and liabilities of the drainage commissioners of the district down to the minute details which concern the individual. It seems to me that this question of drainage legislation is one of the important questions, at least for the Western country.

Q. What State has the best laws as to drainage?—A. My opinion is that Illinois has the most complete; Illinois, Michigan, Ohio, Wisconsin, Minnesota, and New York.

As a result of our soil investigations in the Salt Lake Valley last year, we found that it would be quite possible to reclaim the large tract of salt land west of Salt Lake City, and perhaps that this should be done by the people; but it was appar-

ent in the first place that if it were done it would have to be done by private enterprise, as the State was debarred by its own constitution from taking any part in internal improvements of that character, as is done in Minnesota and in some of the Central Western States. It was further found that, by reason of the lack of any drainage laws, it would be almost impossible to drain any considerable part of that area without getting the written consent of every individual land owner who would be in any way affected; and strange as it may seem, it was not found possible to get such consent in the attempts that have been made.

Another method for the protection and reclamation is by levees for protection from floods and from tide. The commission of course is aware of the important work of the commission having this matter in charge on the Mississippi River, and it is scarcely necessary for me to refer to it at this time. I have also spoken at some length in regard to the levees protecting the rice swamps of South Carolina and adjoining States.

A question that is assuming some proportions now in this country is the possibility of reclaiming the swamps of the Atlantic and Pacific coasts. Not only is it desirable to reclaim these lands for their agricultural value, which it is admitted would be great, but for the protection, the help, and the material welfare of the surrounding country. We have a very excellent illustration of the tremendous bearing this question has upon the healthfulness and prosperity of a community by reference to the conditions prevailing here in the city of Washington, where the swamps have rendered almost uninhabitable, at least to the wealthy and well-to-do people, certain portions of this city, and where there is no possible question that the cause could be removed, and an appreciation of property aggregating thousands and thousands of dollars could be effected simply by reclaiming the swamp lands.

Q. Have you any method of or any theory concerning the reclaiming of those lands? The tide comes up the Potomac. How can it be prevented from overflowing?—A. The same method would have to be used that is used in the rice lands of the South, where similar conditions prevail. There should be a levee with gates which will let the water out and drain the land, and will shut when the tide comes up and prevent any access from the outside. With that protection against the rise of the tide, accompanied by the necessary drainage in the soil itself to carry off the seepage waters which come from the surrounding country, the land could be reclaimed and put in a high state of cultivation.

This question has been asked in regard to the possibilities of reclaiming many of the marshes of Long Island and of New Jersey, particularly. It has been estimated that the reclamation of the marsh lands in New Jersey adjacent to Jersey City would cost something like \$3,000,000. The plans are under consideration now, and, in fact, large areas have already been undertaken in the reclamation of those lands. Also along the coast, particularly in connection with the residents on Long Island and along the Jersey coast, in Delaware and in Maryland, and in North Carolina and in Virginia, the disastrous effects of these swamps are keenly felt by the people who go there to spend the summer near the seashore. Not only are they unpleasant, but they are at times and in places distinctly dangerous because of the prevalence of mosquitoes, which convey malaria, and because of the presence of other fevers that are very fatal or injurious.

A plan has recently been proposed to the Department for the reclamation of a large area of swamp land on Long Island for the purpose of being able to treat the swamp for mosquitoes. They are not able without enormous expense now to control the mosquito pest and the consequent malaria that has come to the locality. They want to see if the land can be diked and subsequently drained so that they can entirely exterminate the mosquitoes from that locality. It is probable that the plan will be carried out.

It seems to me that such work as that is primarily for the individual and in the second place for the State. I hardly see that the National Government has any interest or control in the matter. It is certainly not like the development of harbor privileges or the improvement of rivers, for it applies only to the locality in which it is conducted.

Q. (By Mr. CLARKE.) Are you aware of the experiment in reclaiming marsh lands that was made in Marshfield, Mass?—A. Not particularly.

Q. There the dike had the effect to close the harbor, practically; not but that there was sufficient area of harbor below the dike, but the failure to accumulate a large body of water above that checked the passing out with the ebb of the tide, and resulted in the accumulation of sand bars in the lower harbor, so that the harbor was practically ruined, and there was a great clamor on the part of the fishermen, which finally came to be supplemented by that of cottagers who built along the shore of that small bay, until, finally, the legislature was induced to cut away

the diking and abandon the experiment of reclaiming the lands.—A. Oh; it was the outflow of this immense volume of water that filled up the channel?

Q. Yes; so I apprehend that whenever the experiment is entered upon along the shore anywhere to reclaim the marsh lands the question of harbor rights and the like will come in to affect the problem more or less.—A. There is no question that legislation will be necessary, and it is likely to be a complicated matter. It is one that would affect the State, however, and not the National Government, unless it interfered, of course, with the channels of the harbor; then it would be a national matter.

I think that I have covered in these remarks the principal causes of the exhaustion and the deterioration of soils, as I view the question, and I have spoken at some length in regard to measures which should be used for the reclamation of lands. If I have left anything unsaid that should have been said, or if I should have made anything clearer, I should be very glad to answer any questions that the commission may be pleased to ask.

Q. You said something about animalcules in the soils. Is that a comparatively recent discovery, or has it been long known to scientists that soil abounds in animal life?—A. It is comparatively recent, that is, within 30 or 40 years, that the bacteria have been recognized and their importance understood.

Q. I have seen a statement that you can take a small tract of soil which is very fertile, and accustomed to produce large crops, and strike it with a pole persistently until you kill all the animal life that there is in it, and that the next year it would not bear anything. Is that correct?—A. I do not think so; I do not think it would be possible to kill bacteria in that way.

Q. (By Mr. PHILLIPS.) You spoke of cultivating bacteria. What process is used?—A. Certain leguminous crops have tubercles on their roots, which are found to contain large numbers of these bacteria, and by inoculating with this suitable culture medium, they can be cultivated and pure cultures be made. Such cultures are for sale in Germany and, to a limited extent, in this country, and it is found that certain crops will not grow unless this bacteria is in the soil; therefore many of the leguminous crops, for example clover, will not grow unless there are certain forms of this bacteria in the soil, and by seeding this pure culture over the land, that is mixing with a little soil, and sowing on the land, the yield may be doubled, or increased even more than that.

Q. The small bulbs are used in producing cultures in the same way?—A. Yes; the tubercle is just mashed in the culture medium, so that the inside is exposed, and these bacteria get out and thrive on this culture medium.

Q. What is used for that culture medium?—A. I am not sure what is used; I am not acquainted with the method of making the pure culture.

Q. (By Mr. TOMPKINS.) That is similar to Conn's culture in giving flavor to butter?—A. To butter or cheese.

Q. Where is this culture made in this country?—A. Some important experiments have been made at the experiment station in Alabama.

Q. At Auburn?—A. At Auburn; yes. Some of the most important work has been done there.

Q. Under whose charge?—A. I do not recollect now.

Q. (By Mr. CLARKE.) Can you ordinarily determine by the examination of soil what is requisite to make it more productive?—A. No; you can not; and that is one of the most embarrassing questions that we have to answer. As I have shown in my testimony, the cause of the deterioration is quite often due to lack of good management, good judgment, and good practice on the part of the farmer, but we can not tell from a chemical or physical examination whether the soil is productive or not. We can often tell the kind of crop it is adapted to, whether it is a truck soil, or wheat soil, or a grass soil, but whether it is fertile in its condition the chemical analysis does not clearly indicate.

Q. Recently Mr. Hammond, of South Carolina, a very intelligent planter of long experience, testified before the commission that in his opinion the use of commercial fertilizers was an evil rather than a benefit, especially in his State, and particularly because it led many farmers to abandon making an application of the ordinary farm fertilizers, manures, etc. What is your opinion about that?—A. My opinion is that in the main that is correct; that the use of fertilizers tends to make the farmer more shiftless and less careful in saving, and in the cultivation of his land. Fertilizers have been introduced in comparatively recent years. There was never any trouble for lack of fertilizers in the Eastern countries. The lands there have been cultivated for hundreds and thousands of years, but it had been done by careful work. The farmers have saved everything that came off the place. They have saved all of the litter and put that back; all manure and put that back, and all excrements and waste of the farm

and put them back on the soil and worked it in; they have had small holdings and used intensive cultivation. With us, we have these large areas, entirely too large to manure with the ordinary waste from the farm, and we rely on these commercial fertilizers with no addition of organic matter, and often with clean cultivation. There is no question in my mind that much harm has been done by continuous and excessive use of commercial fertilizers without the intensive methods that should be employed when they are used.

Q. Would it not, in your opinion, be possible to reclaim very many of the so-called worn-out farms of Maryland and Virginia by gathering manure from the low places and subjecting it to the tread of live stock, and mingling with it the manure that ordinarily accumulates on a well-stocked farm, and applying that intelligently to the various soils of those farms?—A. It would be where the cost of the process would not be too great, but unless it was adjacent to the land it would not be feasible. The cheapest method in that case would be to grow cow-peas and other forms of green manure. There is no question if you adopt such methods as that, of being able to bring the land up. It is simply because farmers do not do what they know is the simplest and most efficient thing to do. There are lands that are kept up in good shape just by the methods that are used on the average farms, which are in very good condition, simply because they are attended to in those ways.

Q. Have the farmers of the West begun to practice fertilization a great deal more than formerly?—A. They are not using fertilizers to any great extent. I think the practice is increasing a very little, but very little fertilizer is used throughout the West at the present time.

Q. Is there not danger that their soils will become comparatively barren unless something is done to restore what is taken from them?—A. There will be if the owners persist in the cultivation of the same crop year after year, as is done now in Red River Valley and in some of our Central States; but by a rotation of crops or by introduction of more intensive methods when the soils begin to wear out their fertility can be maintained and improved. Now, they say very justly that while they are getting 12 or 15 bushels of wheat to the acre at the low cost at which it is produced, 20 cents, they don't care at all what becomes of their lands; they are going to last the lifetime of the present generation and they are not concerned with what becomes of them after that. I think very likely that that yield of 12 or 15 bushels that is obtained now in the Red River Valley can be obtained for a long series of years. The soils are almost identical with the fertile wheat lands of Russia that have produced wheat for a great many generations, but the time will come, I presume, when the yield will decrease below what they are getting now, and they will feel the need either of fertilizing the soil better or of changing their crops and introducing more intensive methods than they have at present.

Q. What is your advice on the subject?—A. I see no opportunity of changing the methods at the present time. It is a good deal like the arrangement made where you can rent range lands for 5 cents an acre per year, and where you can not afford to put much improvement on the lands. They are only worth \$1.25 an acre, and you certainly can not spend much money in maintaining the fertility of such lands. It seems to me it is an economic question; it is not an agricultural question. We simply can not afford to maintain the fertility of those lands with the expense attending that process until lands become more valuable than they are at the present time.

Q. It is cheaper, is it not, to maintain fertility than to restore it?—A. That, of course, is a relative matter; it is more expensive for us and it is less expensive for our grandchildren.

Q. Have you investigated the subject of flowing sewage upon the lands?—A. I have not, except quite incidentally. We have never made any investigation of that question at all.

Q. (By Mr. PHILLIPS.) What is the best green crop to raise to fertilize the land—plowing it down, for instance?—A. Clover is one of the best renovators of the soil where it can be grown, but the possibilities of growing it are limited and the most generally useful crop is the cowpea of the South.

Q. That came into use quite recently?—A. Yes; well, 25 years ago in an extensive way.

Q. Is it used to a considerable extent in the North and West?—A. It is being used to a considerable extent now in the North.

Q. It is supposed to have this bacteria, is it not?—A. Yes; it has these root tubercles.

Q. (By Representative BELL.) Have you ever visited Greeley in Colorado?—A. I was there once, 6 years ago.

Q. They have a rotation there on first wheat; then they follow with alfalfa, which they plow under; then follow with potatoes, and in turn follow the potatoes with wheat. They thus grow an enormous crop every year. I think they make over 40 bushels of wheat there to the acre following those crops.—A. And they get enormous yields of potatoes.

Q. Enormous. It is the best potato spot in the world. They haven't a rival in the United States. I think they ship the best potatoes to London.
(Testimony closed).

BOSTON, MASS., February 19, 1901.

TESTIMONY OF HON. J. W. STOCKWELL,

Secretary of the Massachusetts State board of agriculture.

The special subcommission met at the Home Market Club at 10.30 a. m., Mr. Clarke presiding. At that time Hon. J. W. Stockwell, of Sutton, Mass., secretary of the State board of agriculture of Massachusetts, was introduced as a witness and, being duly sworn, testified as follows:

Q. (By Mr. CLARKE.) Please give your name and post-office address.—A. J. W. Stockwell; State board of agriculture, rooms 134-136, Statehouse, Boston, Mass.

Q. Are you the secretary of the State board of agriculture?—A. I am.

Q. How long have you held that office?—A. Since July 1, 1899.

Q. (By Mr. A. L. HARRIS.) Previous to the time of being selected as secretary of the State board of agriculture what had been your occupation?—A. I am a farmer. I have always been a farmer, in connection with other business. I have been a member of the State board of agriculture for 6 years, by appointment of the governor, and have been connected with the Massachusetts State grange as a State lecturer for 6 years. From the time I was in the State senate, in 1879 and 1880, I have had more or less to do with matters of legislation in the interests of the farmers.

Q. Were you engaged in general farming or some special line?—A. General farming rather than special lines, except as a breeder of Devon stock.

Q. You have before you the plan of inquiry of the commission. You can take up the topics and answer them in your own way.—A. I will take each question and answer it as well as I can on the basis of the State of Massachusetts. On question 1, "Increase or decrease in number employed in agricultural labor in the several States during the past 50 years." I have found for Massachusetts: 1875, 74,500; 1885, 77,661; 1895, 37,556. This last, 1895, is on a different basis. It is exclusive of agricultural laborers, and therefore of no relative value. I think that the percentage of the previous decade will hold good, that there has been no lower number.

2. "Comparative condition of those so engaged." Better conditions in the farmers' homes all over the State, and, so far as these have influence, a higher plane of living. The progress of agriculture, the influence of the State board and its institutes, the work of the grange, the progress in all other lines are reflected in these advances. The laborers on our farms enjoy better conditions of life than formerly. It is our endeavor to keep the rural homes equal to those of the same class of citizens in our villages, with all conveniences and comforts found there. The surroundings of the home are more neat and more beautiful than they used to be. It is to this end that we protest against the undue burdens that take from the comfort of the farmer's home by taking from his ability to furnish these comforts because of reduced revenue or greater expenditure, whether caused by monopoly and higher prices or by undue and disproportionate taxation; and to this I shall refer later.

3. "Effect of improved machinery on labor." Its natural effect is to raise the quality, as more intelligence and skill are required for its profitable use. Yet this is offset somewhat by the different quality of labor seeking our shores. On this point I will refer you to a printed lecture before the board of agriculture, December 4, 1900, which I have not with me but which will appear soon in our report, on "Some lessons from the census." It was delivered by President Pritchett, of the school of technology, before our winter meeting of the board, and it is very instructive as showing that our early immigration was English, Irish, Scotch, and German, a valuable addition to our intelligent citizenship, while now the immigration is Polish, Italian, Finn, and other races not so high in the scale of intelligence. This we have to contend with, though these are more largely drawn into other pursuits and do not come to the farmer so directly.

4 and 5. "Causes of irregularity of employment," and "Transient labor in busy seasons." The wide-awake farmer will hire all the help he can with profit, and no more. When profits cease he will be the first to discharge help which he does not need.

Q. Where does your transient labor that you use on the farms in the busy season come from?—A. Mostly from our manufacturing villages, going about and asking for an opportunity because in busy times, like the haying season, they get better wages on the farm. In fact the farmer pays better wages than the manufacturer, and his desire to use help is regulated by his expectation of profitable returns from his work. As in any other line of business, the wide-awake farmer will adapt himself to the conditions of the season and the markets.

6. "Hours of labor in different agricultural pursuits." Ten hours is the legal day, and it is very carefully and very generally observed. The hours vary slightly in different cases, as on milk and vegetable farms, where there are persons paid in accordance with the length of day, they being hired with that understanding.

7. "Average number of days employed in the year." By the month help is hired for 8 or 12 months, either for the busy season of 8 months or for the entire season of 12 months. By the day it depends upon the character of the help and the necessity for hiring, and the ability of the worker. If a man is a good worker he usually finds work at all seasons. The farmer realizes the value of good help.

8. "Tendency of agricultural labor to seek other employment; causes and remedies." Farm life is secluded to a certain extent, and there is to-day a great desire to huddle in the larger centers; and while, as I said, 10 hours is a day, nevertheless it must be a longer day—not necessarily more hours, but the early feeding and the later care make it a longer day. For instance, from 6 to 7 o'clock, feeding and chores, 7 to 8 breakfast, and then 8 to 12 work, is only 5 hours, but still it is a different line of hours from those of a man who goes into a mill and begins and finishes his day's work with no reference to the care and feeding of stock. Then, another reason is that it is a "strenuous life," to use a present expression. It is not sitting on a stool and watching and guiding machinery, but strong, healthy labor. Too many prefer the stool, or, if life must be strenuous, wild-cats and wild oats are more attractive. Good, hard labor is not as attractive as it used to be, I fear.

9. "Wages and methods of payment. Daily, weekly, monthly, or yearly payments." Monthly, generally. Employee may draw on account and settle at the end of the season, and perhaps leave a little balance in the farmer's hands, so it shall accrue during the season; but I think the payments are generally made monthly. That is preferred by the employees; of course they can have it more often if they desire.

10. "Maximum wages; minimum; average, in different branches; in different States and sections." I am speaking only for my own State. It depends on the quality of help and the season of the year. By the month, with board, \$16 to \$25; without board, \$28 to \$35. Some few obtain higher. By the day, \$1.50 to \$1.75.

11. "Cash payment, store orders, payment in kind." Cash payment generally; nearly always cash payment. I do not know that there are any exceptions in Massachusetts to-day unless it is in the matter of corporations, and I think even there other methods are forbidden.

12. "Tenant houses and tenant-house allowances." House rent is always considered in making your price with an employee. If you have a tenement and he wants to live in it, he is supposed to pay you rent just as he would anyone else.

Q. In regard to the allowance of a house, usually, does that include the garden-truck patch, a cow pasture, or anything of that kind?—A. Yes; but, of course, the payment is conditioned upon it. The better the conditions granted the greater will be the payment.

Q. What is the character of the tenant houses?—A. For the farmers, generally good. So far as I know, in our section they are always good. Of course, a man has the choice of a tenement, and the farmer is glad to have good help, and so he is ready to do what he can for his help, that he may have good help.

Q. (By Mr. LITCHMAN.) The house he lives in is on the farm?—A. Not necessarily.

Q. In the village near the farm, or how?—A. With mine, my foreman now has his own farm, or house with a garden and small farm, and yet because he suits me he works for me, though I have a tenement right in the center of the village, a two-story house in very good condition.

Q. This is located in Sutton, your home?—A. At Sutton.

Q. Is the amount necessary to pay for the rent of the tenement considered in fixing the compensation between you?—A. Yes, certainly; if my house, with a garden, is worth \$4 per month, it is considered, in the amount paid per month, as a part of the price.

Q. Is it the custom for the help, in some instances, to live at the farm in the house, or adjoining the house, of the owner of the farm?—A. Very frequently. There are many farmers that desire to board their help. They prefer single men and board them, so as to have them right at the farm and right at hand. It is the general preference with a farmer to have his help right under his care, and they are well cared for, I think.

13. "Crop sharing, partnership, tenancy. Practicability and present status of these methods." 14. "Loans to tenants, liens on growing or prospected crops; extent of; effect of." I do not know anything about the thirteenth and fourteenth questions. I think there is very little crop sharing in Massachusetts, and I had not heard of such a case as would be called real crop sharing, except single fields, or in a small way. Sometimes a man makes an agreement with a farmer to raise a crop for him, takes it on shares, but it is so infrequent as to have but little effect on the status of farming operations.

15. "Immigration and education. Nationality and character of foreign immigrants." The lecture which you will have by Dr. Pritchett will give you a very good statement, but we were not able in our report to put in the illustrations by chart which he gave in his lecture of the classes of immigration. We could not afford the price and the State would not allow us to do it; but it shows very plainly that the early immigration was, as I have said, from the very first settlement, of rather a higher class, which has built up this country, and that the present immigration is from a different section and is of a different character.

Q. (By Mr. A. L. HARRIS.) Is there a disposition on the part of the immigrant to go to the farm?—A. The immigrant class comes over and takes the first labor at hand, and that is usually manufacturing or mere laborer's work. If our large corporations will bring over immigrants, going around the law, and these immigrants are able to do that kind of work for which they came, that is their first work, and they come here for a low price to do it; but as they get used to our prices and increase their price they leave the work for which they were brought here and drift into other lines—farming, for instance.

Q. When they do drift to the farms, do they make as good farmers as the older immigrants?—A. Some of them do make very good farmers. The Swedes, for instance, are a very good class of workers and citizens, and some of the Poles have done very well. There are also some that we very seldom see on the farms. The Italians are seldom on a farm, I think, in Massachusetts. They are very good workers, but they find work in other lines, and desire it. They are very much inclined to congregate together.

17. "Tendency to colonize—to preserve foreign customs and languages." I do not think, so far as my knowledge extends, that this tendency is general in Massachusetts. Foreigners desire to congregate rather than to colonize. The children attend our schools and learn our language and desire to associate with the children of our people. The French Canadians very soon after they come here become naturalized and take active part in town, county, and State affairs.

Q. Has the pupil a desire to learn the English language in preference to the native tongue?—A. I presume so. We do not have a sufficient number of immigrants coming here to furnish any opportunity for them to do otherwise than go into our schools, except in the parochial schools, and there we have a certain oversight. They must learn our language so as to become good citizens.

18. "Effect of such immigration upon American agriculture." The thrift of the New England agriculture is in the home market for our products. We have certain lines of agriculture which we can make profitable and certain others that we can not, and the home markets for our products are the sources on which we must rely for our profits. The labor of New England is the consumer. Whatever these people do, they eat, and they usually have large families, and the farmer and the market gardener are the gainers. It is well understood that the more people and the more industries and the more prosperous those industries the better it is for those who furnish the home market products. This diversifies our farming, draws it from the old lines into more profitable channels.

Q. (By Mr. LITCHMAN.) You find, then, the proximity of the farm to the factory valuable to the farmer?—A. Oh, very.

Q. By diversifying the product?—A. By changing the product almost entirely. The old lines of agriculture have passed away near these centers. It is the market garden and the improved methods that are now of profit to us, and because of this New England agriculture is more profitable to-day than it was a few years ago. This is certainly true of Massachusetts.

19. "Suggestions as to regulation of immigration." I said upon this that the cheapest labor in Europe, and in Asia to a lesser extent, is now brought to our shores for the benefit of our corporations representing the mining and railroading interests of the country. The influx is not as great as it was a few years ago, so

we are reaching after the cheap labor in the islands of the sea. It is a part of the commercialism of to-day. The cheaper the help that can do the work the more they are sought for by our great corporations. I am not speaking particularly of Massachusetts now, but rather of the spirit of the age.

20. "Colored labor, extent of." There is a very small percentage, and that is mostly in cities; only a small extent on farms.

21. "School age of children in the different States." The compulsory age in Massachusetts is 7 to 14 years, and the law is very generally enforced. We have the State board of education and our State police for the purpose of enforcing the school laws for compulsory education. I think they are doing a good work and are fairly successful.

Q. (By Mr. A. L. HARRIS.) Is your law well enforced?—A. Very well enforced, I think.

22. "Sufficiency of public-school facilities; per cent enrolled." I am not prepared to speak of the per cent enrolled, but the public-school facilities are generally sufficient. The quality in some of the hill towns, where the taxes are most oppressive, is not of the best. Appearing before a committee at the last session of our legislature with reference to assistance for the country towns in the cause of education, it was rather sad to hear the reports from some of the educators in the western part of the State, in the hill towns, as to the conditions there and the necessity for taking the farmer's daughter, educated in those schools and in that limited way, as teacher because taxation was so severe. The taxation for school purposes in the towns and cities of Massachusetts varies from \$1.05 per thousand in the richer centers to \$9.75 per thousand in the sparsely populated hill towns, and this notwithstanding the best possible distribution of the small State fund now available.

Q. Have you any provision for the farmer's boy or girl obtaining high school privileges at the public expense?—A. We have high school privileges in every town, and there is a law at the present time, I think, that furnishes transportation to the school. If there is no high school in town transportation is furnished to the neighboring high school. I have no exact knowledge of the law, but it is amply sufficient.

23. "Adaptation of public curriculum to the needs of the agricultural people." There has been no special adaptation that I know of until just now nature studies are being introduced. So general is the knowledge required of the farmer of to-day that the common schools can only supply the foundation, and this must be general. I do not know anyone that needs more a technical and thorough knowledge than the farmer, in order to understand his soils and his work. Each farm has different varieties of soil, and how best to apply the fertilizers to meet conditions of soil, and what fertilizers and crops will make the best return, requires careful study. It requires an education that can only have its foundation in the public schools.

Q. Is there any effort made on the part of the farmers' clubs or farmers' organizations to have object lessons peculiar to the farm introduced in the common school?—A. I do not know how largely. We are sending out nature studies, leaflets, and they are supplied to the schools in such number as they may desire when called for. I think within the last two or three years there has been a marked advance in the matter of interesting children in nature studies, with good results.

24. "Technical education." Technical education is very important, and the State agricultural colleges are doing a grand work in sending out those who are lecturers and teachers in agriculture by example as well as by institute work. Any force that gradually uplifts the people is never appreciated except by the careful observer. From the standpoint of 20 or even 10 years ago, there has been a great advance, partly at any rate, and I believe largely to be attributed to technical and experimental education.

There is one thing not included in our schools: Our education covers so many weeks in the year, and is so arranged that actual hard work does not enter into its curriculum, and good, honest hand labor is something the boy and girl do not know until they get beyond 15. After that they do not think it wise to take it up. So the idea of good, hard manual labor does not enter into life and is falling into disuse, I fear. Costly athletics take the old place of honest work, except at our agricultural college, and there "sports" must be encouraged or we lose students. So our boys are in it, and we want them to make a good record.

25. "Total capital employed in agricultural pursuits." The total capital employed in Massachusetts in 1895 was \$219,557,314. I have no later figures.

26. "Earnings of capital compared with 40 years ago." I have thought of this a good deal, but I am not able to make an answer that is satisfactory to myself. Perhaps it is equal; it should be more. To keep abreast of the times costs more

than it did a few years ago. The farmer can not afford to fall behind, nor can the country afford to have him.

Q. You might take a more recent period than 40 years.—A. It is unfortunate conditions that have depopulated our farming towns. Forty years ago the hill towns were engaged in various manufacturing enterprises. The land was well and regularly laid out in fine farms. Business of all kinds was prosperous. The farmer was making money, and, better than all, was bringing up children who were destined to spread abroad throughout the land, and whose influence, as I have said, is now felt throughout the Union. It was no sudden movement that reduced the population of these hill towns.

The general story of a great agricultural decline is, however, only half the story. The decline of manufacturing industries in the hill towns more than equals the decline of agricultural industries. The proportion of abandoned wagon shops, shoe shops, sawmills, and other small mechanical businesses, which were once the life of flourishing villages, has kept pace with, and indeed far outstripped, the abandonment of farms; and much of the so-called decadence of the hill towns is due to the changed methods of manufacturing industries, taking away the work that was scattered through these towns and concentrating it in the larger plant and the improved machinery of the stronger combination, and thus drawing the workmen to the larger towns and railroad centers.

I shall touch upon some of these unfortunate conditions later as I proceed.

28. "Taxation of agricultural property." Taxation is one of the world's unfortunate conditions toward agriculture. In speaking of this decline before the farmers' congress I showed how the decline, as reported in the State of New York, and as reported in the State of Connecticut, is regarded. In New York the result was summed up with the statement that farming had very seriously depreciated. I quote from that report: "Farming land had depreciated at an average of 48 per cent; that 30 per cent of the farmers are anxious to leave their homes and would drift into the city if they only knew how to get work there; that 86 per cent of the farmers report that their children as they grow up can not be influenced to remain on the farms; that tenant farming is on the increase; that 35 per cent of the New York farmers are losing money; 50 per cent dangerously near it; 14 per cent making a profit, and 20 per cent do not know whether they are or not." That is a report made to the New York Society for Improving the Condition of the Poor. These figures are significant, and they were compiled at a great deal of expense and with great care. I suppose you have that report before you. I then took the farms in Massachusetts to show something of the same thing. By studying the census returns we find the following data:

	1880	1890	Decrease.
Number of farms.....	38,406	34,374	4,032
Number of acres.....	3,359,079	2,998,282	360,797
Valuation.....	\$164,288,956	\$146,197,415	\$18,091,541

These are hard facts and not theories—facts that have had much to do with the welfare of the country, and will have more unless changed.

In speaking of taxation, I say it is one of the unfortunate conditions. The farm is seen and taxed. There is no escape from it. Probably from 1,500 to 2,000 millions of wealth in intangible form escapes taxation in Massachusetts. If that is a fact, it would lower the taxation of the farmer very greatly if it were remedied. Of course, the double burden falls back on the productive industries, and most heavily on the farmer. The farmer asks no exemption, only equal taxation, according to ability.

Under the same head, it should be stated that the school tax is not entirely for the benefit of the town, but of the State. The roads are not entirely for the benefit of the town, but of the traveling public; but the taxes are all on the town.

Add to these the removal of the industries, taking away population and wealth, and there is a heavy burden the farms can not support. The State lays these burdens without mercy, but touches them not with an adequate hand.

Third, it seems to me there should be national agreement or national control of corporations, or corporation laws if there can be. Massachusetts has the best corporation laws of any State. Honesty is the foundation stone, and honest returns are enforced. Our people, desiring a little water or a little fraud, and with an earnest desire to cheat the government in taxes, just step into the adjoining States and come back with a Maine, Delaware, or New Jersey charter; and Massachusetts business is carried on in our cities and towns outside the control of

the tax commissioner of the State. They receive all the advantages and protection of the laws of the State and contribute nothing.

Those are three of the ways in which taxation has laid very hardly on the farmers. And let me say, the decline in farm lands in Massachusetts is consequent in part upon the removal of industries to the large centers, as I have already said. In the old times, 20 or 40 years ago, every part of a town was alive with little industries, and on every water privilege was a mill or some little manufactory. The shoe business was done in the towns, each center being a manufactory, the farmers, or the young people in the farm homes, doing the work. This all brought to the town a certain amount of life, a certain home market, and a certain amount of money, and everything was prosperous in the town until that industry moved away to the larger center. In the natural course of events it took with it these young laborers. It took with it the support given to the church and the school, and in consequence the farmer had the whole burden to bear, adding very greatly to his taxes; and more than that was the discouraging fact that his sons and daughters went away, and he was left alone. That led to his going after them and the farm being abandoned. Really, I think the beginning of the decline of New England agriculture dates from the concentrating of the industries in the large centers and the withdrawing from the towns of the aid they naturally gave to the support of society in all its lines.

Q. How is your property valued for taxation in Massachusetts?—A. It is intended to be assessed for its exact value. In our farming communities I think the real estate is valued in some cases for more than it will bring at forced sale. At any rate, we find it so when auctions occur.

Q. No margin is left, then, on the part of the assessor, but he values it on account of its being visible and tangible.—A. Not intended to be. Their oath is to assess a true value.

Q. Is your assessor elected or appointed?—A. Elected by the people of the town.

Q. Is that method better than to appoint by some authority and remove him from the influence of the elector?—A. We think it would be far better if he were so removed, and if I were at the State House, I would be advocating the change now before the committee on taxation of the present legislature. Even one man, in one of our towns, having large wealth and being prominent, can insure the election of an assessor to his liking, or endanger the election of an assessor who does his duty. The rich influence the assessor in two ways, by threatening to leave the town and by putting the honest assessor out of office. In speaking of taxation with a gentleman well known throughout the nation, he said: "Mr. Stockwell, do all you can; the poor always have paid the taxes, and they always will." I do not want to believe this will be the everlasting condition of the foremost Christian nation, or its standard of justice, saying nothing of the finer qualities that are supposed to be included in that word "Christian."

Q. Who fixes the rate of taxation?—A. The town in town meeting; at the annual meeting the people fix it. That is not decided by any moneyed interests. Every voter has an equal right to a voice in the town expenditures.

Q. (By Mr. LITCHMAN.) Is not the rate of taxation fixed by the board of assessors?—A. The rate of taxation is, but the appropriations are made in town meeting, and the rate must cover the appropriation, so that it really goes back primarily to the town meeting. The town really fixes its rate in the annual town meeting by its appropriations. Of course, the State and county tax are included also in the assessment.

Q. (By Mr. CLARKE.) Is farm land in and near cities and towns that is really held for building lots appraised at its full value?—A. I do not know. I am talking to-day more of the country town. I think when you get near the cities and large centers it is a very difficult thing. For instance, the taxation committee of 1893 traveled over the State to find out the condition of the people. They came back recommending a change something like what has been suggested. We found in going through the western part of the State, about North Adams and Williamstown, the ordinary farmers dependent on their farm crops in the outer sections were really oppressed by taxation. The amount of wealth that had come in there demanded so much and so many improvements, while their returns for their crops remained the same, so that it was a burden to them. We went down to Pittsfield and met the farmers there, and to Lenox, where they are very proud of their town, and it is a perfect paradise of beauty. The burden, after all, has fallen upon the farmers in these towns because the town is obliged to do so much. They are proud of the town, of course. They do not want the wealth and beauty to go away, and yet they want some relief from the taxation that is driving them out of it because of the increased demands upon them in many ways.

Q. Is Lenox a great summer resort for wealthy New York people who own large estates there?—A. They own large estates that are given up to beauty. There are lawns of 50 to 100 acres that are marvels of beauty. Newport does not compare with it at all.

Q. Has not the real estate valuation of the town of Lenox increased in consequence of those improvements?—A. I think not as it should have done. I do not know why. It is this way: Here is a man that has a farm from which he is getting his livelihood. It is right adjoining another piece of land which is not by nature any better. The one you tax for \$1,000 an acre, and if you tax the other for \$50 an acre you are oppressing the owner, the farmer. Therefore, these acres on which thousands have been expended are not taxed on that basis. I am only giving you the facts as they came to us at that time.

Q. (By Mr. A. L. HARRIS.) Is your State government partly supported by direct taxes?—A. To a certain extent.

Q. What is the proportion between the amount assessed by the State and the amount assessed by the locality—that is, the county and town?—A. It depends on the town and the extravagance of the people, or the demands of the people rather. The State tax may be \$2,000, the county tax \$1,000, and the town tax \$12,000. I should think those proportions would be fair. I am simply giving you an off-hand guess at it, but from my own town and my acquaintance elsewhere I should think this a fair statement of the proportion.

Q. That \$12,000 is used for the benefit of the town, of course?—A. For schools, roads, the poor, very largely. These are the three appropriations drawing most heavily on the towns, the main items, and it seems to us that in all of them the State is somewhat interested.

Q. Have you any suggestions to make as a remedy for the conditions that you have described, further than the one you just suggested a moment ago in regard to the assessor?—A. I think if we could have a fair assessment of all property that it would so reduce the assessment on farming lands that there would be no necessity for other measures. I think it would have a great effect. I do not think the school should be a matter entirely, or nearly so, for town tax. I think the State should take a greater interest. Perhaps you know Massachusetts as a State gives in proportion the least of any State in the Union, excepting New Hampshire, for the benefit of schools. The towns give very largely. I am referring to the State as a State. The towns support the schools and the laws of the State obliges them to do so.

Q. Without that qualification your statement may seem strange to outsiders where the aid is from the State.—A. That should not be, for the amount contributed in the State of Massachusetts for schools is very liberal: the towns give beyond their ability for the schools. In fact, it is one of the things of which Massachusetts may be proud—the way in which the people of her towns will tax themselves and deny themselves that their children may be educated. One of the things that leads the farmer to give up the country home and go to the city is the education of his children. The following are the figures in regard to taxation for school purposes in Massachusetts:

Massachusetts school fund, 1900	\$4,370,548.14
Income, 1900, expended yearly	213,066.18

Half of this income goes to 250 towns and half to general educational expenses, or about \$100,000 annually to the country schools.

Amount of money raised by annual appropriation for the support of schools in the cities and towns of the State

Valuation per pupil:

Highest (Nahant)	42,921.00
Lowest (Gay Head)	728.06

Tax for support of public schools, per thousand:

Highest, 1899 (West Boylston)	11.09
Lowest, 1899 (Nahant)	1.18

Percentage of tax expended for support of public schools for 1899–1900:

Highest (Wilbraham) .....	.65
Lowest (Hull) .....	.08

Amount raised by taxation for support of public schools for 1899–1900:

Highest (Nahant), per pupil	50.77
Lowest (Middlefield), per pupil	5.12
Gay Head, per pupil	3.21

Q. Does the State of Massachusetts compel the towns and cities to provide free text-books for the pupils?—A. It does. It also compels us to have 40 weeks of schooling each year, and it compels us to have a proper corps of teachers, so far as may be.

Q. This provision for free text-books applies to all, including the high schools?—A. Yes. And there is a bill before the legislature now that the text-books shall become the property of the pupil; not only for his use in school, but his property.

Q. To take away when his school year ends?—A. Yes; and I am in favor of that. The old text-books which I studied are the ones I refer to now, although there are doubtless much better ones.

Q. Are colored pupils permitted to go to the white schools?—A. Certainly; there is no distinction.

Q. You raise a State school fund?—A. We have a school fund which has been funded for a long time, and the interest of which is distributed to the schools. Then we have a small fund or tax which is raised each year, and that has been added to the other amount.

Q. How is that distributed, according to school youth?—A. As far as maybe—of course there are exceptions—to the weaker schools and the towns where the taxation for schooling is most burdensome. It is intended to cover that point. Of course, in making any general law there must be exception, but the point is to benefit the weaker towns. We have some of us felt it should be increased, and have asked for a half-mill tax in favor of the country towns, and we carried that proposition through the legislature 3 years ago. It was vetoed by the governor. That has been the distribution as far as it goes. We simply proposed to add to it one-half mill, and our law of distribution was based on the average attendance in the schools. As you see, while Boston would get its proportionate share of this tax, it would not get all that it contributed, and this would hold good in the richer towns and those most favored as to tax rate. It would be distributed according to average attendance, and Boston would annually contribute about \$500,000 to benefit the poorer towns and the State at large. But we realize that Boston, on the other hand, is drawing every day not only the money of the State into its coffers, but the best manhood and womanhood of the State, and therefore she gets her return for this loss in a higher manhood and womanhood and a better citizenship.

Q. (By Mr. LITCHMAN.) The school fund is augmented by minor taxes added to the school fund?—A. Yes; the dog tax is added to the fund; and in our town there is an old parish gift which comes in to augment the fund, given by some one years ago to be annually distributed.

Q. Are there any statistics that would show the total amount per capita contributed for the schools of Massachusetts, combining the amount contributed by the State and by the town?—A. The grand total for support of schools and buildings is \$13,826,243.41; the local taxation burden is \$13,550,395.78; the whole number of children attending the schools is 474,891; the average membership is 399,423; the average taxation cost of support for each child in the average membership is \$26.06; the average cost of support and buildings for each child in the average membership is \$33.92.

30. "Decline in prices of agricultural products."—A. I do not know that there has been any decline in late years. There is an improvement at present and the outlook is good at the present time.

31. "Decline in money value of agricultural lands."—A. That is treated quite considerably in a little pamphlet which I will leave with you.

Q. (By Mr. A. L. HARRIS.) Do you desire to submit the entire pamphlet?—A. I will quote as follows: "As a farming nation the United States is equalled by none in the amount of her agricultural productions. The farmer has touched nothing but to improve it. The grain is finer, the fruit more luscious, the flower more beautiful than ever before. Under his skillful care he has improved the old, he has created the new, in constantly ascending lines. Each year he is adding to the wealth of the country more, far more, than all other industries combined. The total value of the agricultural production for 1898 was \$4,000,000,000, and the relative value, as seen in the per cent of our exports, has averaged for the last 50 years nearly 80 per cent. Our agricultural export is the measure of our prosperity as a nation. On it rests the great commercial, manufacturing, and transportation interests of the country. It is the golden grain that heaps the nation's treasury with gold. We, therefore, have the right to fair and honorable recognition in all lines of advance. It must be admitted that the farmer is the wealth producer of the nation. It must be admitted that there has been a decline in his relative importance, as also in farm values. In 1850 the farmers owned one-half the wealth of the country; in 1890, one-fourth.

"And the first point is: What is the condition of agriculture in the New England States? Is it prosperous? On this point I shall not deal in theory, but give you facts and figures. The Connecticut labor commissioner made a careful examination of the accounts of 693 farms in 1888, averaging 110 acres each, with the following result:

Value of farms, including buildings	\$3,214,275
Value of farms mortgaged	1,008,350
Amount of mortgages	351,109
Per cent of interest paid	5.66
Value of live stock, utensils, etc	596,467
Total capital employed	3,810,742
Total receipts, including products consumed	707,153

Expense account:

Interest	\$19,673
Insurance and taxes	37,526
Help and their board	157,940
Products consumed in family	126,962
Other expenses	348,889

Total

690,990

Net profits, \$16,163.

"For the condition of agriculture in the fertile farming sections of the country outside of New England, New York gives the latest and most authentic data:

"The New York Society for Improving the Condition of the Poor recently instituted an exhaustive inquiry, at a large cost, into the causes of the depression of the farming interests in New York State. Mr. Kjeigaard, an intelligent Pennsylvania farmer, was employed to travel through such agricultural districts as he could reach during the summer months, in order to gather accurate information by personal inquiry. At the same time Mr. George T. Powell, of Ghent, Columbia County, undertook to pursue the same line of investigation by correspondence. The result is summed up in the statement that farming land had depreciated in value at an average of some 48 per cent; that 30 per cent of the farmers are anxious to leave their farms, and would drift into the city if they only knew how to get work there; that 86 per cent of the farmers report that their children as they grow up can not be influenced to remain on the farms; that tenant farming is on the increase; that 35 per cent of the New York farmers are losing money, 50 per cent dangerously near it, 14 per cent making a profit, and 20 per cent don't know whether they are or not.

"For the condition of the agricultural industry in the Great West, there is hardly a town in New England that has not many reminders of the hard times you have experienced, that have rested upon your farms as a chilling frost, and upon the farm mortgage companies of New England as a nightmare.

"Massachusetts has not been exempt; she can also bring her lesson. By studying the census returns we find the following data:

	1880.	1890.	Decrease.
Number of farms	38,406	34,374	4,032
Number of acres	3,359,079	2,998,282	360,797
Valuation	\$164,288,356	\$146,197,415	\$18,091,941

"These are hard facts and not theories—facts that have had much to do with the welfare of the country, and will have more unless changed, for when the strength of the hills wanes, when the fertile plain is barren, there is sorrow throughout the land, for it lays its benumbing hand on every industry, it stalks through every mart, it carries its chill into the homes of the nation.

"Therefore the prosperity of agriculture is a question for Congress to consider very carefully. It is a question for the statesmen to study—it is the foundation stone of national wealth."

32. "Decline in the productive condition of soil."—A. That is also treated; here is what I say: "Too many of us farmers are mercenaries, not from choice, but driven to it from necessity. The need of the present dollar to support our family, to educate our children, to meet the tax collector is imminent with us. It taxes all our energies to the utmost. The future of the farm must be forgotten, because of the necessity of the present hour. The joy that should spring up to brighten

life, the satisfaction of work well done, the improvement of our farms, the added beauty, the enriched soil are pushed out of sight by the necessity of present needs—demands that must of necessity take from us the joy of life and trail our ideal in the dust; and where is the joy of work, the glory of life, with ideals covered by the hard necessities of unremunerative labor?"

It is a fact that we have been obliged to take from the farm somewhat to meet present necessities, but I think that is past. I think the records of the last 2 years, under the conditions of drought which Massachusetts has suffered, give a wonderful illustration in the prosperity of our farmers of what can be done by intelligent culture and of the strength of our soils. You know we have counties that, in the value of their agricultural products, rank very high. My own county, Worcester, I think, has been third in the value of its products in the whole United States, and Middlesex County was seventh under the last census.

Q. Have you any abandoned farms in Massachusetts?—A. We have partially abandoned farms, but I should say that the State has been doing something toward the repopulation of them with success. We asked an appropriation of the legislature last year to send out invitations for the farmers to send in their list for a new edition of the catalogue. It was partially a failure, and we were very glad to report it so. It shows the improved condition of Massachusetts to-day; there is not a large number of abandoned farms.

Q. Are many of them being reclaimed?—A. They are, yes; and they are being sought for. The conditions of 5 or 10 years ago, it seems to me, are passing away and the outlook is brighter.

Q. Can you speak for any other State except Massachusetts on that important question?—A. It may be New England. It is so thoroughly illustrated by the fate of this publication which we have put out and the returns that came in in comparison with the earlier editions. That of itself seems to demonstrate very plainly that agriculture is improving in Massachusetts to-day.

Q. Are these farms being reclaimed by native Americans or by foreign immigrants?—A. The foreign immigrants, as we would call them, are not coming to them; but the immigrant of years ago who has become a part of our citizenship, is taking them up. On page 33 of this pamphlet, I say: "Inquiries have developed the fact that 159 of the 269 purchasers were residents of Massachusetts, 14 of New York, 10 of Connecticut, 5 of New Hampshire, and the rest scattering or unknown. So far as we can judge 151 were Americans, 14 Irish, 8 Germans, 7 French, 4 Scotch, and the rest unknown. Massachusetts was largely her own purchaser." This was in October, 1899. I say: "Since August 20 last, by actual count, 73 requests for catalogues have been received by mail, and many individual calls have been made at the office. Twenty-nine of these requests were from this State, 17 from New York, 5 each from Connecticut and Pennsylvania, 3 each from New Jersey and Vermont, 2 from Nova Scotia, and 1 each from New Hampshire, Canada, North Carolina, Michigan, Ohio, Texas, Illinois, and Tennessee." It really looks as though those who had gone out from Massachusetts in the years past to the far West were making inquiries as to the conditions in Massachusetts to-day, desiring to return, and frequently they express themselves so to us in writing to our office.

36. "Organizations of agriculturists; causes inducing; objects sought; results secured; rules governing. There are very many organizations, beginning with the board of agriculture, which is followed by the agricultural societies represented on the board, and then by horticultural societies, farmers' clubs, and Pomona and subordinate granges. There are in the State 34 agricultural societies represented on the board of agriculture, 9 horticultural societies, 16 farmers' and mechanics' clubs and associations, 24 farmers' clubs, 16 Pomona and 158 subordinate granges as well as the State grange, and 18 agricultural organizations of a miscellaneous nature. In our annual report is a complete list of them with their officers and location.

I think the improvement in agriculture has very largely come through these organizations. They meet together and discuss methods of farming until the old methods have disappeared and we are adopting better ones. Our institute lecturers comprise as fine a class of our college professors and practical agriculturists as can be found in the New England States. I am sorry that I have not with me a copy of our list of institute speakers and their subjects which is sent to every agricultural society; and their institute committee, or the member of the board of agriculture representing that society, selects the speaker best suited to their needs and conditions. They then send to us asking that such a speaker on such a subject be furnished them. We at once make arrangements and he is sent to them. We take up subjects on every line, not simply on fertilizers, and soils, and crops, but improved conditions in the house and farm, household conditions,

etc. We have one or two ladies among our lecturers and I hope we will have more.

Q. Do you have assistants from the locality—local talent?—A. Always. We furnish one institute speaker who is paid for by the State—his expenses and so much per lecture; anyone on this list. The people usually meet in the morning and have a topic discussed by local agriculturists, or they may select a local lecturer, if they please, and pay him. Then follows the speaker we furnish them in the afternoon. We desire the local people to take part in the discussion at every institute, as only in that way do we get the most interest and the best results.

Q. Who makes up the programme?—A. Aside from the lecture it is made up by the agricultural society, according to the needs of the towns. It induces a local interest which gives us a large attendance. Last winter was an exceptional one on account of storms, yet our institute attendance averaged 91, in spite of storms and other incidents that came in to lower the percentage in certain localities. This winter, I think, we shall go beyond that average. Never before have we had such a demand for lecturers. We are carried beyond our means, and the appropriation of the State is supplying them. Another pleasant feature is that the report of the board of agriculture, coming out a year ago, has been entirely distributed, so that we are now obliged to send to the local agricultural societies to see if they have any remaining not distributed, and asking them in that case to let us have them to fill present calls. We find that we are receiving but very few from this source. By and by some will come back to us, because each member of the legislature has so many copies, and some of the legislators in the cities do not care for them, and the 1st of April they will be turned over to us to supply the deficiency. It was something never known before, that the visible supply of the report of the board of agriculture was exhausted within the first year after its issue. Our annual edition is 15,000 volumes.

Q. Do you hold more than 1 institute in a county in a year?—A. Yes; we have, as I have said, 34 agricultural societies. Each 1 of these societies, in order to receive the \$600 bounty from the State is obliged to hold 3 institutes. Add to that number those we furnish to the granges in sections where there is no agricultural society covering the territory, and you will see that every section of the State is supplied with institute speakers, and as we have only 14 counties in the State we usually have 8 institutes, at least, to a county. That is, on an average, the meetings being distributed by area rather than by counties, and the larger counties getting more of them than the smaller ones. We furnish the granges and farmers' clubs with speakers so far as we can, but the call is greater than we can supply at the present time under the appropriation for carrying on this work, and we are obliged to disappoint many of them.

Q. Nothing has been said, I believe, about your experiment station. We would like to have the work that your experiment station is doing for the farmer explained.—A. I am not prepared to speak on that work as I would desire. I wish you could have President Goodell, of the agricultural college, to tell you of the work there, because they are doing a very fine work. All the experiment stations are doing fine work in the New England States.

Q. I do not care about going into the particulars, but I would like you to give us your judgment as to the advisability of continuing the agricultural experiment stations.—A. I think they have done a very, very great deal for agriculture in New England. It was our experiment station which first led us to see the way in which the farmers were being cheated in fertilizers, and under the lead of Dr. Goessmann we secured the law on that subject, which was the first of its kind, and which has been followed by nearly every State in the Union. Of course the experiment station was started as an experiment. It had to strike out lines for itself. It was a new thing. Everyone was calling for experiments in his particular line. It could not take up all the lines, but, choosing those that seemed to its management most pressing, they have worked along those lines until they have obtained exceedingly good results. Before the establishment of these experiment stations experiments by private individuals were often widely advertised as demonstrating some particular truth, and were afterwards found to be simply the result of 3 or 4 years of continued peculiar conditions, and the experiments were valueless for that reason. Our experiment stations are not working in that way; they are taking no chances, but are making such conditions that the experiment when tested and proved is beyond cavil, and the result is assured. Thus our experiment station is at work, as it has been, in the testing of fertilizers, the germinating power of seeds, the application of fertilizers to plant growth, the relative value and productiveness of grasses and forage crops, insecticides and spraying and diseases of trees and plants, the sterilizing of soils to promote plant growth, stock feeding and determining relative quality, productiveness and value of grasses, fruits, and vegetables for markets. These are some of the ques-

tions there demonstrated. Having been educated by the institutes and by the necessities of the case, our farmers are buying the elements of plant food very carefully. They are not wasting money on fertilizers, but are buying the proper ingredients needed by the soil and crop they desire to produce. All this has been brought about by the experiment station, the institute, the meetings of the granges, and our farmers' clubs working together as a band of brothers.

Q. Is your institute connected with the agricultural college?—A. There is no connection, but all the professors are on the list of institute speakers.

Q. I had in mind your experiment station. Is your experiment station connected with the agricultural and mechanical college?—A. It is, and yet it is not. They are working in harmony.

Q. Have you any other organizations except those you speak of?—A. We have the grange, of which I have not particularly spoken. It is doing an excellent work and working in perfect harmony with our board. It has done a great deal to uplift the home and to add to the attractiveness of farm life. As I say, I was State lecturer for 6 years, and was all over the State and met the farmers in their homes and in their meetings. There has been a wonderful improvement, quite largely through the influence of the grange. It has added beauty to the farmer's home, as well as intelligence and attractiveness to the home life, because it incites pride in the surroundings and content on the whole.

Q. Have you an organization of farmers' clubs?—A. We have farmers' clubs, but no organization of them. The grange has very largely taken the place of them. Some still remain. We meet them just as we do the grange, and supply them institutes where we can. Organizations of agriculturists in the State are as follows:

Agricultural societies	34
Horticultural societies	16
Farmers' and mechanics' associations and clubs	47
Pomona granges	15
Subordinate granges	159
Lectures given under the auspices of the board of agriculture	135
Average attendance at these lectures	91

The objects sought are educational and social. The lecturers for our institutes are the best talent we can obtain, securing practical men on each subject from the colleges and experiment station forces, or our most successful and progressive agriculturists on their best considered specialties.

Q. What have you to say in regard to the diversification of agriculture in Massachusetts?—A. I should say it is very diversified, but still in the line of the home market. The market garden, truck farming, and selling truck direct from producer to consumer in our larger villages as well as the large cities lead to a very diversified line of farming. The old lines are followed largely in some parts of the State, as in the Berkshire Hills, where they have no such market. The prosperous farmer is the one that has some specialty—not entirely working on a specialty, but has some one thing in which he is trying to meet present demands and the present market. We are not, as farmers, working for the foreign market. We are glad if it is good because it helps our own market by raising our prices; but the productions are largely for the home market.

Q. Have you much dairy farming?—A. Yes; milk and creameries. The milk supply for our cities is a large item in our farming life.

Q. Is that profitable?—A. Yes, to a certain extent it is profitable. The milk farming is of course for the large cities. I think it is profitable in all sections except in those which supply the Boston market; and I suppose it must also be profitable there or the farmers would not continue it, although matters in this market are not satisfactory. But around our smaller cities milk farming is profitable, and the making of butter among our country towns is quite so, because they have their special lines and special trade, and they receive remunerative prices—prices higher than the market because they are making a good article of uniform character and quality.

40. "Effect of improved agricultural machinery." That is an important factor with us. Of course it does away with a great deal of labor and enables us to produce larger crops at a smaller cost, so it gives us a margin of profit which we could not have but for the improved machinery. We could not to-day go back to the old methods and supply the New England market.

Q. Have you much fruit farming in your State?—A. Yes, we have fruit farming. Apples are raised to a large extent and are profitable, I think. Our apples are of a good quality and they find a foreign market. That is one of the things we ship very largely.

Q. (By Mr. LITCHMAN.) Can you name the varieties of apples?—A. The main apple for shipping purposes is the Baldwin, but we have the Ben Davis, the Gravenstein, the Greening, the Roxbury Russet. The Sutton Beauty is another variety, originating in my town, that is now taking the lead for quality and market properties for the home market or for shipping. The list includes all our best varieties of apples.

Q. The Baldwin is a very hardy fruit, is it not?—A. It has been so. The foreign market demands a red apple, and the Baldwin is red; and while its quality is not up to some varieties it is a good shipping apple. It is attractive and they appreciate it. It has been the apple of New England.

Q. In how high a latitude can it be cultivated?—A. It is raised in Canada.

Q. How high up?—A. I can not say. Canadian apples stand high in the foreign market. The northern apple keeps better than the southern. I suppose our apples keep better than those grown in Pennsylvania. We are raising peaches again in Massachusetts. How successful the crop may be I do not know; but there is quite an experiment in that line and profitable so far, I think.

Q. Peaches used to be generally cultivated in Massachusetts, did they not?—A. Yes.

Q. Have you any reason for their going out?—A. Conditions of soil, lack of certain elements, insect enemies, and other reasons hard to understand. Even now we think if a peach tree lives its 7 years and we get 2 or 3 crops it is profitable, and we are ready to throw it away. As a boy, I used to pick peaches up under the trees as we now pick up apples.

Q. (By A. L. HARRIS.) What is the character of your roads and highways?—A. I think, in comparison with other States, good.

Q. Is the interest in their improvement increasing?—A. Well, we have the highway commission, and we have the law under which they furnish a road to a town free, or very largely free, as an incentive to the town to have good roads. In our country towns there is so good a piece of road that the country can hardly imitate it, but it is having a good effect and is increasing the number of good roads. We realize that in Massachusetts, as I suppose in all other States, the roads are an index of the character of the people; that the civilization of the people is shown by the roads. We think our roads and roadsides are growing increasingly comfortable and attractive to the traveler, and the roadside increasingly beautiful. Not only our board of agriculture takes an interest in this, but we have a forestry association which is looking to this point also, and in all these points we work in harmony.

Q. Does your State aid in the building of roads?—A. It builds roads. As I indicated, it has not done much so far in continuous lines, but a mile here and a mile there, but the plan is to eventually bring these lines into continuous communication so they will be of great value to the traveling public.

Q. (By Mr. CLARKE.) What have been the appropriations of the State for State roads since the policy of building State roads was entered upon?—A. \$3,021,867.76, including cost of bridges and culverts.

Q. (By Mr. LITCHMAN.) Will that policy eventually result in State roads from the eastern to the western boundary of the State?—A. That is the plan as now being carried out.

Q. (By Mr. A. L. HARRIS.) I have seen in the paper something about the great milk combine.—A. Oh! in Boston; I think one of the milk producers could give you light on that subject. Mr. Ward, of the Milk Producers' Union, would, I doubt not, be very glad to come before you.

Q. You are not conversant with it?—A. I am not a milk producer.

Q. Such a thing as the combine exists?—A. Oh, yes, indeed; and it needs a remedy.

Q. Can you say whether such a thing is looked upon as a benefit to the producers or not?—A. The action of the producers at their last meeting would not indicate that it is. Nevertheless, they can not get along without some combination to dispose of their milk and they must go outside of the producers and the railroads.

Q. Is it generally supposed to be satisfactory?—A. It is not satisfactory. It has caused a great deal of dissatisfaction, and I do not know how it will result. There is an undetermined factor called "surplus" that causes a great deal of dissatisfaction and friction. It has caused the present strike, if you call it that, of the Milk Producers' Union, and both parties are, I think, anxious for a settlement.

But, returning to my statement, when it comes to the Federal and State laws touching agricultural industry, when we speak of taxation and its effect upon the farmer, we need ourselves to take into account that the increased cost above what is actually necessary in any line is unjust, and, to that extent, a tax; and when we consider the question of trusts, as they are now, I conceive them to be an evil.

while they might be a great benefit. But it would seem to me, with our great combinations and giant monopolies, national legislation should step in and say that they are not infant industries to be protected, and leave them outside and give the consumer the benefit of the world's market, at any rate.

Q. Have you a remedy to suggest?—A. In every case of a large combination or trust the world's market should be opened to this country. Protection is a misnomer and a fraud under these circumstances. Infant industries and giant monopolies are not synonymous. To-day the people are more than the industry. The man is better than the product, and it is the man that needs protection.

Q. (By Mr. CLARKE.) Representatives of 6 independent tin-plate plants in this country, those entirely outside of the trust, have testified that if tin plate were put on the free list that action would ruin their industries and would not essentially harm the trust; therefore it would destroy competition in America, and, in their opinion, would result in an international combine, so that prices would be higher to the consumer than now. Can you conceive that it might work that way?—A. Yes; the Standard Oil Company is international, I believe, and protected; but I do not think that is an answer to the question, because you take very many other giant monopolies and if there were some way by which the consumer obtained a fair equivalent, instead of an immense preponderance to the monopolies, it would be a great benefit. There are exceptions to every rule. In the case of the tin plate suggested, while the country is helping by its protective tariff, to a limited extent, these 6 plants, it is also putting immense profits into the hands of this trust octopus by which it can, at an opportune moment, destroy the weak industries named, or bring them into perfect accord with the trust; or, perhaps, they are allowed to live for the influence they have in sustaining this very tariff. One thing seems to me sure, this immense revenue to the rich by oppression of the poor can not continue in this country. The man is more than the product; the people more than the trusts. The enormous aggregations of capital and the unequal division of wealth are the menace to our institutions to-day. Besides, it seems to me suicidal. These taxes and exorbitant prices may enrich the few, but they are taking bread from the laborer and clothing from his family by curtailing his power to buy, and thereby the mills are rendered idle and the product unsold. The farmer is the loser. As I have before said, a prosperous, intelligent, and contented people are the wealth of a country and the home market of its products. We farmers realize this when we take a load of truck to a manufacturing village. The intelligent laborer, standing for his right, is the safest trust in this country to-day.

Q. Have you any way to suggest of controlling the trusts?—A. No; not at all. Only with a great many of these combinations I should throw open as far as may be the markets of the world, and reach others by taxation and severe laws against combinations endeavoring to control trade.

Q. Would not that destroy domestic competition with them?—A. I think not. The trusts have destroyed that already.

Q. Is it not the small concerns that need the protection rather than the large?—A. There are very few small concerns in such an industry as the oil industry for instance. The combination has killed them out. The book *Wealth Against Commonwealth* gives the method and the results.

Q. Are you not aware that there is a very large oil company in the country with millions of capital involved which competes with the Standard Oil Company?—A. It is trying to do so, but it will eventually be dissolved, or else it will work into perfect harmony with the Standard Oil Company, as the so-called competing sugar refining companies are with the American Sugar Refining Company.

Q. Is it not the rule with our industries that when one becomes very profitable capital rushes in and competes with it?—A. Yes; if it sees safety and profit in the contest rather than in consolidation or combination.

Q. Do you not think that if the protective policy is maintained capital will still be induced to compete with any concern which is formed by the combination of others?—A. The results of the sugar contest between the American Sugar Company and the Spreckels interests, and the coffee war between Havemeyer and the Arbuckles are not encouraging symptoms in regard to such matters, and the fate of the smaller producers in their contest with the Standard Oil Company, as set forth in *Wealth Against Commonwealth*, are not likely to encourage small capital in entering on contests with large combinations. In the battle of the giants the people have gained nothing. In the case of the telephone it so happens that I was in the legislature at the time the first charter was given out. I was chairman of the committee, and was therefore somewhat familiar with those who were engaged in it. Some 20 years later I went to the telephone office to inquire as to the probability of its continuing to be a profitable investment—not that I had a dollar in

it, but for another party. They informed me that they were covering the ground so perfectly or were endeavoring to do so that there should be no opportunity for another company or another corporation, thereby holding their grip upon the situation, which was wise in them. It was good business policy, but it would seem to me that after the Government had protected them, given them all the benefit which accrued to them from the patents, that it should not continue to protect the monopoly so that it should receive more than a fair profit. The rest should be the people's.

Q. How does the Government protect the monopoly?—A. By the charter granted by the State, under which the stock to the amount of about \$50 millions is exempted from taxation, while the company protects its monopoly by covering the ground so that nobody else can get a foothold.

Q. Is it not a fact that there are competing companies?—A. It is very hard work for them to get a foothold.

Q. Why?—A. Because the ground is so well covered now that competing companies can not offer sufficient inducements so that cities will allow their streets to be taken up with a double line of appliances.

Q. Is it not a fact that a competing company has been laying wires in Boston within the last year?—A. Yes; they attempted to get the same right in Worcester, but I think the conditions were so hard that they had to give it up. I did not wish to speak upon this matter, because it is outside of my line, but I think it the duty of the State or nation to cease to protect any corporations which are receiving an undue proportion of the profit of that protection and are not sharing it with the people.

Q. There are people who claim that when an industry is able to export part of its product it ceases to need protection and that the tariff is inoperative. If that is so, would the repeal of the tariff do any harm to that corporation?—A. My impression is that in certain lines there are industries that are exporting their products and selling them at a less price than at home. In such cases the tariff should be taken off, and if exemption from taxation has been obtained it should be revoked.

Q. Are you not aware that that is the practice of all exporting countries, irrespective of their tariff conditions?—A. Perhaps so, but does that make it right, or politic even?

Q. When remedies are recommended we wish to find out whether they are remedies or not?—A. I believe that is for you to judge.

Q. If you have any information on that point, as to the practical working of it, we would like to receive it.—A. In the first place, I would reach them by taxation. These corporations that will bring a return of 12, 20, and 40 per cent ought to be taxed "according to ability." That is our good phrase in Massachusetts, and it is perfectly legitimate to let their returns be open and known to the Government that protects them and gives them their opportunity.

Q. Would you reach them by local taxation under State laws or by Federal taxation under the internal-revenue system?—A. I do not know how you would reach them. That is for the lawmakers to decide. I will do all I can to see that Massachusetts shall reach them.

Q. You mean to say that so far as it can be done within constitutional limits you would do it by State or by national laws?—A. Yes; and if you break over and throw aside the Constitution for any purpose, it should be for this rather than for any other. There is no greater crime in Massachusetts than the double taxation of the poor and the exemption of the rich—indirect taxes levied by tariff duties and trust monopolies and direct taxes caused by the exemption of 15 millions of wealth in this State. No truer words were ever spoken than those used in the declaration of ex-President Harrison in his address on "The obligations of wealth," when he said: "Equality is the golden thread that runs through all the fabric of our civil institutions. We must inaugurate and at once a system that will equalize tax burdens. Mr. Lincoln's startling declaration that this country could not continue to exist half slave and half free may be paraphrased to-day by saying that this country can not continue to exist half taxed and half free. If we admit the disgraceful conclusion that the state of public and private morals is such in our country that the wealthy may not be brought under the law and compelled to yield it reverence and obedience, have we not confessed the failure of republican institutions?"

President McKinley has said: "Equality in taxation should be had. Real estate and other tangible property now pay the large share of the taxes, while other varieties of property, which are not tangible, either wholly escape or bear a disproportionate share. One class of property should not be exempt at the expense of another."

Q. Is there any sheep husbandry in Massachusetts?—A. Very little at present.
 Q. Why are there not more sheep in the western part of the State?—A. There are more there than elsewhere, and I hope that sheep raising is coming back to Massachusetts. We, as a board, are doing what we may now to encourage the return of the sheep to the State, but the industry has not been a profitable one. In my boyhood days sheep were on every farm and were considered a necessary part of the farmer's outfit.

Q. Is the absence of an effective dog law in the State a reason for the farmers not going into sheep husbandry more?—A. It is, very largely. I do not know if we had the sheep we used to have but that the dogs might get used to them and not worry and destroy them, but at present there is no effectual barrier against dogs by our laws. Going into sheep husbandry includes wire fencing and the necessary protection from dogs by careful work and constant watchfulness.

Q. Is it not a fact that every time farmers appear before the general court and ask for an effective dog law it is strongly opposed by the owners of dogs in cities and towns?—A. Certainly it is. Some of the hardest fought hearings that we have and the most largely attended and most violent, if I may use that expression, are when the farmers appear there and ask that their sheep shall be protected. Any slight suggestion that we make with reference to the owner having the dog on his own premises or caring for him personally, so as to get rid of tramp dogs, is badly received. The dog in Massachusetts is supreme. Even the society with the long name never considers the sheep as against the dog.

Q. Is it your opinion that if sheep could be adequately protected from dogs in Massachusetts the industry would grow here and be a source of revenue amounting to millions of dollars a year to the farmers?—A. I think it would. It would be a great help if we could have the sheep industry. But I have been in the country towns and I have seen too much of the injury to flocks of sheep from dogs to advocate sheep husbandry very strongly under present conditions. The State protects the farmer to a certain extent by paying him for a sheep that is destroyed; but that is no protection, because when one sheep is destroyed the whole flock is demoralized, and the owner never knows the amount of damage to the flock within perhaps a year after. The after effect of fright upon sheep is something wonderful. I went to one farmer's house where his sheep had been mutilated by dogs and I saw them in different conditions. It was enough to make anyone sick. Sheep were trailing their entrails upon the ground and still alive when I got there. They were otherwise mutilated as dogs do mutilate sheep. I paid the farmer, or asked that he be paid liberally, and the award went to the county commissioners and was paid. Six months later he asked me if I would come to his place. I went over there and saw his flock of sheep, and he had not been half remunerated for the loss. The number of sheep that had produced no young and the quality of the young showed the after effect of the fright on the flock. One peculiar instance was a lamb that had very nearly the appearance and the bark of a dog, caused by the shock of that fright. And there was no remedy whatever; the farmer had to suffer the loss. There are no sheep upon that farm now. They continued the business years after, but the dogs so frequently worried them that he let it pass and gave up the husbandry.

Q. Is there a considerable tobacco industry in Massachusetts?—A. Yes; in the Connecticut Valley and to a limited extent in the Housatonic Valley.

Q. Is it in a thriving condition at the present time?—A. It has been for the last 3 years.

Q. Was it depressed from 1894 to 1897?—A. I can not tell you the exact years of this depression, but it was very much depressed, so that there was no sale for it, and the farmers were in bad lines because of having their crops on hand and the cost of production, which was great.

Q. What was the cause of the depression?—A. No sales, because of fear of tariff changes.

Q. Are you able to state the cause of the present prosperity?—A. In both cases it was the favorable season and remunerative price, of course; but you mean the ulterior or previous cause.

Q. I mean the cause that affected the price.—A. I can not go into that. It was not the actual tariff, as the changes have been slight under the McKinley, Wilson, and Dingley tariff acts.

Q. (By Mr. LITCHMAN.) You intimated your opinion as being in favor of action by the nation to reach these monopolies. Do you mean by that the removal of the tariff?—A. It seems to me that the idea of the tariff was for the advantage of infant industries. That was the original idea, and it is the right idea, it seems to me. And when the infant industry becomes a giant monopoly, holding the whole nation in its grasp, it is time that it should receive no help in so holding it, at any rate. The people should be protected, not the industry.

Q. Those industries, to get into the markets of the world, must necessarily compete with manufacturers and countries where there is no tariff?—A. Certainly.

Q. Will not competition, then, come purely on the price paid for labor in the respective countries?—A. I do not think so. Labor will protect itself.

Q. It has been testified repeatedly before this commission that the labor in this country is compensated from 50—I think in one extreme instance to 500 per cent higher than similar labor in foreign countries. Now, in this country if the doors were thrown open to labor receiving only 50 per cent of the wages of the labor of this country, would it not compel the scaling down of the wages of the labor of this country?—A. Labor depends upon several conditions. Where you find labor lower in the old country you find it because of the conditions by which it is surrounded, to a certain extent. For instance, the house is cheaper; everything that labor lives upon is cheaper. They have a lower scale of living, to be sure; but it seems to me that we have no fear of that when our corporations send abroad and compete with this labor on its own shores at less prices and hold us to the high prices.

Q. That is the assertion, but as yet no evidence of that fact has been brought before this commission. But assuming that that is the case, may it not be a similar condition of affairs to that under which, as testimony before this commission shows, foreign manufacturers have dumped the surplus products of their mills and factories on the United States at a price less than the same goods were sold at the same time in foreign countries, like causes producing like effects? It has also been testified before this commission that it is more profitable for a factory to run its production at the full limit and extent of machinery employed, even if a portion of the product should be sold in foreign markets at a little less price. In the general average of production, do you think that may be a fact?—A. I think it probably is a fact, and that is what I object to—that the farmer or consumer in this country is at the wrong end of the average.

Q. And may explain why, under certain circumstances, products have been sold at a less price in foreign markets?—A. That would be, in part; but if it were not for the percentage which they are getting over and above the actual value of money they would not continue to manufacture and extend their manufacturing here, holding these prices so high.

Q. It has been testified repeatedly also that during the last 3 or 4 years—during the present period of so-called prosperity—that the price of the finished article has been constantly decreasing, while the price of labor has been constantly advancing.—A. But you have machinery which is making that possible and still giving better returns. It is conditions which are making that possible and still giving better returns to the investor.

Q. But how can you escape the competition of foreign-made goods, if there is open access to this market, except by a reduction of the wages paid to labor in this country?—A. By a reduction in the returns to the manufacturer himself or to the trust or combination that is receiving it unduly.

Q. Is it not true that the higher the type of the product the greater the skill of the labor employed in it, as a rule?—A. In certain lines. The intelligence of machinery is to-day the most wonderful thing in the world.

Q. How can you prevent such a monopoly from operating when there are no duties on the product to be repealed?—A. I am only suggesting one simple case of the giant monopolies, and I say that if there is any way in which they can be reached, I think taxation according to their ability would certainly have an effect upon them. This would not lower the price to the consumer, but it would lessen the burden of taxation.

Q. I understood your intimation to be that you would take off the tariff on those industries?—A. Certainly, where the tariff would affect them, but in every case I would make taxation according to ability. For instance, right here in our State of Massachusetts, and I suppose it is so in other States, there are in the cities our rich men who are paying taxes on half that they possess, and perhaps less. They are building beautiful halls and libraries and things of that kind, and their names go down to posterity as being benefactors to their cities and their race. Instead of that, they have cheated their cities and towns out of taxes, and put upon others the taxes which they themselves should have paid.

Q. What is your opinion of the income tax?—A. I think it is a just tax.

Q. Do you not think it would be a good thing to have an income tax?—A. I do not think it is sufficient. I think we should have the taxes upon property. If a man will lie, that is the end of it; but we certainly should do what we can to bring about equal taxation, and honest returns should be enforced. It is the Government's right and the State's duty to enforce the law, and there is no hardship in its enforcement. The hardship is in the cheat, and the danger in the lack of moral honesty and the sentiment that the country will go to the dogs if idle capital pays

its equal share, forgetting that stocks and bonds or idle capital is of small advantage to any State compared with its productive industries, the true wealth of State or nation.

Q. That is the remedy that you would suggest as a matter of State legislation?—A. State legislation.

Q. There is an income tax in Massachusetts, is there not?—A. Yes; for over \$2,000.

Q. I understand your idea is that you would force each man to declare his property under oath?—A. Yes; the Government has a right to do that.

Q. Have you in Massachusetts a law that has substantially that provision now, but which gives the assessors power to assess according to their will and opinion if that declaration is not made?—A. We have, but our assessors are under the control of the towns, and that law has been set aside. It is legal advice rather than law, because there are no penalties attached. Doomage under our present law is a cheap expedient for the tax dodger, and multitudes avail themselves of it here in Boston, and in our other cities and towns, and some few build libraries, art schools, etc., posing as public benefactors on the money stolen from the State's dues, while the great majority simply cheat the State and glory in their work.

Q. You would, then, have the law so fixed that there would be no possible evasion of the sworn declaration by every taxpayer?—A. Yes.

Q. (By Mr. A. L. HARRIS.) You spoke a moment ago of the farmer being prosperous at the present time in Massachusetts. Has that condition obtained for many years past?—A. It has not. It is coming to us now.

Q. How long was it that the agriculturist was in a bad condition financially?—A. Four or 5 years, I think. The improvement is marked at the present time; there is a brighter outlook.

Q. How do you account for the change?—A. The prices and conditions are better. The farmer's improvement is different from what it was. His opportunities are different from what they were; prices are better; he has turned his attention from the old lines to the new, and he has got into the new lines, so that he is receiving the benefit.

Q. Do you think of any law, either Federal or State, that has had any effect upon the present prosperity of the farmer?—A. I do not think that any have had. I think these were natural conditions. Massachusetts and the adjoining States were at the lowest point; land was so cheap that it was being bought for investment. People saw that it was a condition that could not continue, under the circumstances, and there has been in very many of our towns land bought simply for investment. I met a gentleman in Boston Saturday afternoon walking on the street who had bought land in Vermont lately at an auction sale simply for investment. So people realized that it was at the lowest point, and therefore they are looking for brighter times. Then we see, in connection with our abandoned farm work, that there is more desire to retain the farms. Practically, there are no abandoned farms in Massachusetts to-day.

Q. Does the farmer get any advantage from protective legislation—not directly, but indirectly?—A. I would not care to answer that question. That is a subject that I have not studied, but I should say that protective legislation is rather to the injury of the farmer, increasing the prices of what he has to buy and of labor. This more than offsets the advantages he receives from a better home market. He has no part in protective legislation to-day under present conditions to which I have alluded. Overproduction of wheat and corn in the West, and lack of a European market, the ranches on the plains, and the beef combine left New England no profit on the farm in the old lines of farm work. Now the progressive farmer is working on new lines, which are more profitable and with a brighter outlook.

Q. Does the farmer reap any advantage from the general prosperity of the country?—A. Oh, certainly. He is reaping it now to quite an extent.

Q. Can you account for the present prosperity of the country?—A. I do not think it is entirely due to the protective tariff; neither do I think the present prosperity, so called, is entirely healthful. The Government is the large factor, the large purchaser; and the farmer, if unduly taxed, must pay an undue price for the seeming prosperity, which must be transient, and the people must pay for what the people's Government has bought. We forget the settlement day, which must come as a natural sequence. War is a tax always and ever, and is only to be justified by dire necessity in this age of the world.

Q. Has the protective tariff had any effect?—A. I have no doubt it has to a certain extent on the present condition of the country. The farmers of New England gain somewhat from the protection given from the agricultural products imported from Canada and the Provinces, particularly hay and potatoes, and also from the tobacco tariff to which I have referred. There are several advantages, but, taken

all in all, to-day under present conditions it is a serious question with me whether there must not be a change. The farmers have been, and are now generally for the protective tariff for the benefit of the people, but not to build up trusts and combinations of capital that are unjust and oppressive, whether it be to lower the price of the raw material or increase the price of the finished product by absolute control. You understand, I do not oppose the protective tariff for the benefit of the people only when such effect is nullified by the power of combination. How this is to be remedied I do not know, but I am convinced that it must be remedied, for this is going to continue to be a government of the people, for the people, and by the people.

Q. Is not the indirect effect very important to the farmer?—A. Certainly; the farmers are generally for the protective tariff to encourage industries, but not to build up giant monopolies that are oppressive.

Q. That is as far as you go, but would you be able to draw the line or stop at that point?—A. I think so.

Q. Have you a pure-food law in Massachusetts?—A. Yes; we have pure-food laws in Massachusetts, and a State board of health with money to enforce the laws. We have a dairy bureau and an oleomargarine law to punish fraud in food products which has stood the test of the highest courts, and is being largely copied in other States.

Q. Your laws are satisfactory, so far as you know?—A. I think so, and are working well.

Q. Have you any suggestions as to additional legislation upon either oleomargarine or pure food?—A. We have done what we could to encourage the Grout bill in the Congress of the United States, feeling that oleomargarine is a fraud upon the dairy interests of the country that should be abated, and that the manufacturer of oleo should take some other color at any rate by which to distinguish this product so that it might be sold upon its own merits, simply acting against it as a fraud.

Q. Can you give the commission any information as to Federal legislation upon the subject of pure food?—A. I can not at this moment.

Q. Do you think it is important?—A. I do. We have, as I say, urged the Grout bill, which is now before the Senate.

Q. I have in my mind something after the Brosius bill. The pure-food bill and the oleomargarine bill are different.—A. The Brosius bill we are in favor of.

Q. Would you lodge the execution of the law in the Agricultural Department at Washington?—A. Anywhere that it would be most effective.

Q. I wish you would state whether your laws to prevent the spread of infectious diseases among animals and plants are sufficient?—A. We do not think so.

Q. Have you any suggestions to make for their amendment?—A. The board of agriculture had thrown upon it a few years ago the work of suppressing the gipsy moth, which is a pest which was brought here from a foreign country by a professor in Medford, producing a caterpillar which eats every green thing, multiplying in large numbers. When it became thoroughly unbearable there they came to the legislature of Massachusetts, and later a commission was appointed. That commission not working satisfactorily, it was thrown upon the board of agriculture, and the board had the care of it and spent a million dollars towards its extermination. Last year the legislature seemed to have gotten tired of the work, and no appropriation was made. I presume none will be this year, and the moths will therefore be allowed to spread. It seems to me that when that covers our country it will be the greatest pest ever introduced or brought here. I do not see any stopping of its ravages unless we find some aid from nature or from parasites. Our climate seems to agree with it. It does more damage by far than in its old haunts in the Old World.

Q. To what extent was your effort successful?—A. It was such that there was an investigating committee last winter with reference to the subject, and the investigating committee at the close of the investigation said that there was not now a single large colony extant. We felt we had it under control and that in a few years more we would have entirely wiped it out of the State and thus out of the country.

Q. Have you made any effort to have the Federal Government take up the subject?—A. There has been an effort made by Congressman Thayer, and there was a committee appointed who appeared before the General Government at Washington 4 years ago, I think; and now that Massachusetts has given up the work it must be national, of course; in order to stop it.

Q. Can you recommend some legislation along that line by the Federal Government, not only to include the gipsy moth, but also other insects?—A. The gipsy moth is a peculiarly dangerous insect, and also an insect which can, if attacked at once, be exterminated. The female moth never flies. It never moves far from

the place where it emerges. It remains right there, or near there, lays 600 eggs upon an average, and then drops to the ground dead. It therefore does not spread rapidly, but only as the caterpillars crawl, seeking food. We have the brown-tail moth here, and it is doing a great deal of damage, but in that case the female flies over the country and we can not control it. The expenditure of money would simply lessen its ravages, but it can not be exterminated. The gypsy moth can be exterminated now before it has made greater headway. Therefore it is peculiarly a matter that the National or the State government should take hold of. The State government has done so, and the National Government ought to take hold, and the work ought to be continued. But I have no hope now that it will do so until after the moth has spread or been carried so broadly over Essex and Middlesex counties that it can not be exterminated. But it must be suppressed, and the State will, I believe, spend four times more money in the next 15 years in suppression than it would have cost to accomplish extermination, and then at the end of 15 years the cost to individuals, the State, and the nation will have only begun. Yet the leaders in State legislation believed it a fad and a scare, though every reputable entomologist in the nation, including Professor Howard, of the United States Department of Agriculture, urged forward the work.

Q. (By Mr. LITCHMAN.) How much has the State expended? Do you recall?—A. \$1,100,000.

Q. (By Mr. CLARKE.) The brown-tail moth is also a recent importation, is it not?—A. Yes.

Q. How large an area is infested by that moth now?—A. To speak generally, quite considerable of the eastern part of Massachusetts.

Q. And that has occurred within what time?—A. Largely within 6 years. There is a very strong effort being made now by Cambridge and the cities and towns around here to get rid of that for the coming year by destroying the nests.

Q. Do you think that it has got beyond control now?—A. I think it has got beyond extermination. It began in a very small territory. Then was the proper time for extermination; but the next year the circle was much larger. In spite of anything that the board could do we found it constantly spreading, and with the female flying as far as it could, its extermination soon became impossible. The nest is easily seen and can be destroyed in the early spring; after that spraying is all that can be done, and that is hardly effective. But the gypsy moth should be exterminated for the benefit of the whole country. It has been the fear, I think, with the National Government that if it took hold to exterminate one insect pest there are so many of them which it would be called upon to exterminate or suppress that it would be impracticable, and therefore they were afraid to take hold of the one which was a necessity, for fear it would lead to other expenditures which would not be wise because they could not be controlled.

Q. (By Mr. LITCHMAN.) There has been no other insect found that would prey upon and destroy the gypsy moth as yet?—A. Not yet; there are many birds and there are some insects that do prey upon the gypsy moth, but not to any extent. We have tried to discover insect parasites, but have found none which did any appreciable amount of good. I understand Secretary Wilson has imported from Europe two insects or parasites, and the result of bringing them may be like that of the scientist over in Medford. He brought the gypsy moth here to improve on the silkworm, if possible. Professor Shaler, of Harvard, told him the danger and Mr. Trouvelot attempted to destroy them, realizing the danger; but unfortunately some had escaped him, and a few years later the people of Medford were at the statehouse saying that their houses and walks were covered with caterpillars and life was unbearable because of them. It was an accident for which they are very sorry.

Q. (By Mr. CLARKE.) Did not the fight of the State against the gypsy moth succeed in circumscribing it about 75 per cent?—A. Yes; more than that. As I said, the investigating committee were obliged to say in their report that there was not a single large colony extant to-day. We had so nearly exterminated the moth and had it so well under control that watching and care for a few years longer was all that was necessary, and we were looking forward to its entire eradication with perfect certainty.

Q. Is any bill pending in the present general court for a new appropriation to continue the work?—A. I think not. The report of the State board of agriculture upon the matter is before the general court, and I think that one senator has a bill before the general court with reference to doing away with the law which places the pest under care of the board of agriculture.

Q. (By Mr. A. L. HARRIS.) Is your law to prevent the spread of disease among domestic animals sufficient?—A. It is certainly holding disease in check. We have our cattle commission, and the appropriation under its control is holding contagious diseases in check and preventing their influx into Massachusetts.

The natural increase of disease I do not think is fully covered by the law, for the appropriation is not sufficient to wipe out tuberculosis.

Q. Who executes that law?—A. The cattle commission, a commission of 8 members.

Q. Is it authorized to destroy infected herds?—A. No, it is not. It is authorized to destroy certain infected cattle in a herd, but it does not go to the extent that it used to in cleaning out disease.

Q. Any compensation provided for?—A. Yes; there is a slight compensation.

Q. Would you recommend any Federal legislation on the line of more careful protection against disease in domestic animals?—A. I would recommend any legislation by which, so far as may be, disease can be kept out of the country. Forty years ago, perhaps, when pleuro-pneumonia was brought here by cattle from Europe, the board took right hold of it. The legislature saw the necessity, appropriated money, and killed every animal infected or exposed, and we stamped it out at once. It never spread beyond our borders, but was entirely stamped out in 2 years. It was very effective work and was done by the State of Massachusetts, largely through the persistence of the State board of agriculture. I think every effort should be made that no such disease should be brought into the State. This was stamped out because it was taken at the very beginning.

Q. Would a stringent law well executed to prevent disease among domestic animals have any effect upon the price of meat products in Europe or abroad?—A. I do not know how it would effect the price, but you know there has been danger that some of the markets of Europe would be closed to us because of the fear of diseased meat. I think that is unquestionably so.

Q. That complaint could only be lodged with the Federal Government, I suppose?—A. With the Federal Government.

Q. Do you know whether the present law is defective in any way in that respect?—A. I do not.

Q. Do you know whether or not our meat products have a better standing in Europe now than they had a few years ago?—A. Yes; there has been that gain.

Q. Do the farmers of Massachusetts favor free rural mail delivery?—A. They do, generally.

Q. What are some of the advantages that they think would be afforded them by that?—A. In my own town, Sutton, I live within a short distance of the post-office. I can see a great advantage peculiarly in the free delivery of the mail at my own door. It is a pecuniary advantage; it is the bringing of country life into communication quicker, easier, and more directly with the outside world. It leaves more contentment on the farm and it is better. I said in my paper before the Farmers' Congress on this question: "It seems strange that free mail delivery in rural communities is so long delayed. Not an Italian in the city but is served by the Government at least three times each day, while the native citizens in our country town, who helps to pay for this service, must at his personal cost and inconvenience get his mail as best he can. While in the business portion of this city there are 9 mail deliveries daily, the business man in the country town receives not even one. Were our Government so poor as to require this sacrifice on the part of the rural citizen we would not ask her aid. The city is to-day almost burdened by excess of service while the town is neglected. As the electric cars are speeding their way over the hills and through the valleys of New England, why should they not be utilized for carrying the daily mails to the country home? Free mail delivery is the imperative demand of the times. It is the duty of the Government to constantly broaden this service, from town to town, from village to village, from farm to farm, till this public economy becomes the law of the land."

Q. Is there any feeling among the farmers of Massachusetts in favor of postal savings banks?—A. I think there is.

Q. What advantage does the farmer expect to gain by the postal savings bank system?—A. I think they are not so interested in those banks as formerly. There is a slight interest, but I do not think it amounts to any demand in reference to it. Our banking facilities in every line are almost perfection in Massachusetts.

Mr. CLARKE. Do you think of any further statement you would like to make?—A. Only one favor I ask. Will you quote "the brighter outlook" with which I closed the address to which we have referred: "To-day the agriculture of New England is improving. Of Massachusetts I know what I affirm. In my present position I have seen new light. Wealth sees the coming change and invests for future profit. The farmer is not discouraged or downhearted to-day, but looks forward to the coming prosperity, and goes forth to meet it. He believes the undue burdens now resting on his labor are to be removed, and as never before he realizes his strength. The farmer is getting to believe in himself and to have greater faith in his brother. He realizes the dignity of his calling, its importance

to the State, its right to favor. He sees that through cooperation and united effort much can be accomplished to improve his condition and advance his position.

"Competition with the West in the great grain staples for a while led to loss and hardship, even as the West has since suffered by the competition of Russia and India; but to-day New England has found other channels of industry more profitable and better adapted to her soil, her markets, and her people. We see the fruits of summer grown in January in our own greenhouses, more profitably than in their proper season. We see our own dependent population supplied with every luxury by New England enterprise on New England soil. We see the farmer taking his old stand as a leader in all good enterprises. We see his sons, educated and strong, taking their rightful place and exerting their old-time influence, the strength of the hills, the backbone of the cities. We see the electric car speeding its way from town to town and from village to village, carrying the child to the larger and better schools and giving free mail delivery to the homes of the country as to the city. We see equal taxation resting "like the atmosphere" on rich and poor alike—every man according to his ability. We see the trusts that hold the farmers in their iron grasp destroyed or made to subserve righteous ends for the benefit of all. We see the bright day when arbitration shall settle the differences of nations, as law now settles the disputes of individuals, and war's costly tribute shall cease. We see the home in which all the comforts are found and all graces abound, its approach lines of beauty, its crown and blessing, the love and contentment that dwell therein. We see wealth of character and honesty of purpose and life honored more than gold, and honest industry more prized than the indolence of wealth. Money valued for the good it can do, 'the man the gold for a' that.' We see all this, not a mirage or a far-distant view, but growing nearer and nearer, and never hastening so rapidly to its accomplishment as to-day.

"Glance back 20 years and note the wonderful unfolding of electric power, and imagine, if you can, its undiscovered possibilities. Bottle the air we breathe into a mighty power, chill it to a wonderful agency, and realize that this is only a single vista in the glorious agencies pressing forward for the benefit and blessing of man. Let us go forth to meet the future with a firm purpose to do our duty as men, a strong faith in the fruition it is to bring to us, and a happy heart and God's blessing shall go with us."

(Testimony closed.)

WASHINGTON, D. C., March 15, 1901.

TESTIMONY OF HON. O. B. STEVENS,

Commissioner of Agriculture of the State of Georgia.

The commission met at 11 a. m., Mr. Clarke presiding. At that time Hon. O. B. Stevens, of Griffin, Ga., commissioner of agriculture of the State of Georgia, was introduced as a witness and, being duly sworn, testified as follows:

Q. (By Mr. CLARKE.) Will you please give your name, post-office address, and your official position?—A. O. B. Stevens, Griffin, Ga.: commissioner of agriculture for the State of Georgia.

Q. The commission will be pleased to hear you upon the general subject of agriculture in your State, and will be glad to have you proceed in your own way.—A. I have made a memorandum in reply to all the questions which you propound that apply to our State, and it would be better reading matter, in my judgment, just to let me reply to those questions without reference to number, for the reason that one of the questions would likely run into a preceding one. I did not make these answers as full as I wanted to make them, but simply about what I wanted to say so as to fill in as we go along. There are a great many of these questions that I have simply answered in a very rough way that I would like to add something to.

(Reading:)

"First question. The progress of Georgia on all lines of industry has been very marked during the last decade, and especially gratifying is the advancement of the State in the 2 years just passed. This is particularly true of agricultural conditions. Within the last 50 years the increase of the total population of Georgia has been 144 per cent. Considering the increase in population of the 5 largest cities—Atlanta, Savannah, Augusta, Macon, and Columbus—the increase of the urban population is 427 per cent. This percentage would be considerably increased by the addition of the population of 1 city, Athens, having 10,000

inhabitants; 1, Brunswick, having 9,000, and 11 with more than 4,000 and less than 9,000 inhabitants each, of which there is no accurate record available for 1850."

Therefore we can not compare with that year. But while we have no record, still these towns and cities have grown up since and have a very large population. So if you add these 11 other towns the increase in the urban population will be very much larger than I have given it.

(Reading:)

"This shows a considerably higher increase of the urban than of the rural population of Georgia during the past 50 years, but it is at the same time an evidence of a gratifying growth in the diversity of industrial pursuits, which argues greatly increased prosperity.

"Second and third questions. There is a larger percentage of attractive homes among our agricultural population now than at any previous time in our history. Almost every kind of improved machinery has been introduced, and within the last 2 years especially the increase in their use has been particularly marked. Of course the management of this improved machinery requires a more intelligent class of laborers than formerly. With the introduction of mowers, reapers, shredders, the best plows, and all the other modern agricultural implements, the improvement in methods of cultivation has been as great as in other sections of the Union.

"During the busy season the farmers often find trouble to secure all the necessary labor. They then send into the cities and towns and hire hands, who at that time find that they can make more working on the farm than working at odd jobs at home.

"Sixth question. The hours of labor in the field are usually from sunup to sundown, with 2 hours in the middle of the day for dinner and rest."

I state here that that is the rule, from sunup to sundown, because the ordinary laborer understands that. You gentlemen will readily understand that they do not all have timepieces, and therefore would not be able to tell when 12 o'clock came, or 6 o'clock, or any other time, but they all understand when the sun rises and when it sets, and those are the hours usually fixed.

(Reading:)

"Seventh question. Counting all the days lost by the average negro farm laborer for taking a rest, or going on excursions, picnics, etc., the average number of working days for farm hands is between 180 and 200. That may appear a little surprising to you gentlemen, but nevertheless it is true.

"Eighth question. There is a tendency among agricultural laborers to seek other employment. The young white man goes to the city to see the world, and imagines that he can there make a larger fortune in a shorter time than by engaging in the work of tilling his paternal acres.

"Sometimes the young negro goes to town induced by the promise of a little higher daily wages, not stopping to consider the fact that the increase in cash does not come near making up for items furnished him on the farm free of cost, for which he must pay out his cash in the towns. This is why so many of them become loafers, vagrants, and criminals. The remedy is: Better churches and better schools, more attractive homes and tenant houses, improved roads, and better mail facilities."

That is to say, that the more you enlighten these people, the better they do for themselves, and I know of no better way of enlightening them than that which I have suggested.

Q. (By Mr. CLARKE.) One of our witnesses suggested that if they could be brought together in little villages in the farming neighborhoods, farm life would be much more attractive to them; what do you think of that?—A. I doubt that very materially. I do not see what advantage that could be. There may be a different state of facts in his State from what there is in ours; but in the rural districts the population is very largely negroes, and there is no part of our State, except in the mountainous country where we have no negroes scarcely, in which there is not within a radius of 3 miles a sufficient number of children between the ages of 6 and 18 to form schools and churches. That fact has benefited them a great deal. I doubt whether it is better to collect them altogether. They do not do so well in our State where there are so many of them together. They do better where they are separated.

(Reading:)

"Ninth question. The best method of paying wages is by the month. Some very successful farmers adopt the plan of paying half the monthly cash wages on the first Saturday of every month, putting the rest aside until the 24th day of December."

That is to say, the first Saturday in every month the farmer pays his hired man one-half of his monthly wages, and the other half is usually set aside to be paid him on the 24th day of December. That is usually provided for in the contract.

Q. (By Mr. FARQUHAR.) Why is the 24th of December chosen?—A. That is the day before Christmas, you know, and we usually try to save up money so that they can have something for the Christmas holidays.

(Reading:)

Then the laborer, much to his delight, finds that he has money for the Christmas holidays, which would have been squandered long ago, under the plan of paying him in full each month. A few farmers pay weekly, others monthly, while a majority pay a portion of the monthly wages in either cash or trade at the stores.

"Tenth, eleventh, and twelfth questions. To every farm hand is furnished a home, a garden, fuel, water, and ordinary rations. In money the maximum pay is \$15 a month, the minimum \$3 a month. Some skilled laborers understanding well the use of improved farm machinery receive from \$1 to \$1.50 per day.

"The above methods of payment are the prevailing ones, and give the most satisfactory results.

"According to the census of 1890 the farms in Georgia cultivated by the owners were about 46½ per cent of the whole; those rented for a money value, 17½ per cent, and those rented for a share of the products, 36½ per cent.

"Thirteenth and fourteenth questions. Where the tenant system prevails the average tenant is furnished with a home, water, fuel, pasturage for his stock, a share of the fruit on the place, a garden, an outhouse for stock, and storage for crops. The sharing of the crop is usually on this plan: One-fourth of the cotton, one-third of the corn, and one-half of the small grain goes to the landlord; the balance to the tenant, the landlord furnishing the land and seed and his share of the fertilizers. These conditions vary with individuals."

Q. (By Mr. TOMPKINS.) What is his share of the fertilizers, how much?—A. Where he uses it on cotton he pays for one-fourth of it, and where he uses it on corn he pays one-third. He pays the same pro rata share that he draws for the crop.

Q. His share is then proportioned to what he gets for the crop?—A. Yes; and on grain, where they use it, they usually divide the grain profits equally—that is, wheat, oats, barley, etc.—and they divide the expense of the fertilizer.

(Reading:)

"We think the tenant system as a whole has a tendency to reduce the average production per acre of most of the crops, because a great deal is left to the management of the unintelligent negro farm hand, the landlord being interested to only the extent of his rent. Loans or advances to the tenants by the landlord are general. The landlord must furnish supplies and mules with which to make the crop. If the landlord prefers he has his factor or merchant to furnish these supplies to his tenants to be paid for when the crop is marketed, the merchants frequently taking liens on the crops of their tenants to the extent of their advances. The effect of this is that frequently the tenant pays a large and exorbitant rate of interest on the supplies or advances which he receives on time."

Q. (By Mr. FARQUHAR.) Do you care to say anything more than you have said about this crop lien matter and its disastrous operations as far as tenant farmers are concerned?—A. That system has always been the rule in our section. It is not only the rule among the colored tenants, but it is the rule with the whites.

Q. Is that system on the increase or not?—A. No, I think not.

Q. Is public opinion against it? Is not there a general feeling in Georgia that it is not entirely fair?—A. Yes; the public opinion is against renting at all. We doubt the propriety of it for the reason that the crop to a great extent and the land also are neglected. You rent your land to a man and he goes in to get what he can out of it for the least expense possible without paying any attention whatever to building up the land or saving it. For instance, you lay out your farm nicely; terrace it and fertilize it up, and rotate your crops and improve your land. The tenant and renter has no interest in your landed estate whatever. He therefore goes in to get the best crops he possibly can out of the land with the least expense, and as fast as the land gets to where it is not remunerative to him he abandons it and leaves it and goes to some other man. And for that reason we do not feel like the tenant system is what we desire; it is not the best for our country.

Q. And would you say it was bad economy both for the owner of the land and the tenant?—A. For both; yes.

Q. Is this land that is rented in this way owned by native Georgians, people that live near by?—A. Oh, yes.

Q. And they sit by and see the deterioration of this land under this cropping system and do not intervene as a matter of economy to themselves?—A. Well, yes.

land to-day? That will be true of the next generation.—A. I am glad you brought that up, because it is a very important question. I maintain it is almost impossible for a young man to-day to purchase a home at the present price of land and go in debt for the price and also for implements, horses, and cattle that he must use in order to work the farm; that if he does so, it is almost impossible for him within his natural life to become a free man; that is, get out of debt and own a farm. But when I say the farmer's boy may acquire a home, I mean the farmer's land will be divided up among his family.

Q. (By Mr. PHILLIPS.) How is it in cases where the father only owns 100 or 200 acres and has 5 or 6 children? Will that land divided among them make a competency for each?—A. That question I can answer in this way: That the family in its efforts and by the labor of its members on the homestead owned by the father are enabled to buy lands adjoining them or from their neighbors. That is the cause to a great extent of the increase in value of our land, that causing it to average a bigger price.

Q. (By Senator KYLE.) The question occurs to me whether or not it is going to be the same in Minnesota and the Dakotas as it was in Illinois and Ohio probably a generation ago. Lands in that country 25 years ago were worth what they are in Minnesota to-day probably. They are of higher value to-day. A young man was able by frugality, industry, and with good health to gain a living and acquire a home of his own, maybe not more than 80 or 100 acres; and he had to meet the problems in those days as they meet them now. A young man frequently began with nothing. He would work for other farmers for \$20 or \$25 a month, and through frugality and economy acquire a little sum with which to buy implements and teams, and by and by he would rent a farm which he would operate for 3 or 4 years and ultimately buy a piece of land of his own. Can that method be pursued now by a young man starting with nothing in Minnesota?—A. In my opinion it can not generally. There may be some exceptions to the rule, as you are aware of, from the statement that I have made, and it is beyond successful contradiction, because I have figured at the lowest price at which the work could be performed. When renting a farm we usually give half to the tenant, the owner of the land furnishing the seed and usually paying half the actual money paid for the thrashing. The price of grain given shows that he raises grain at a loss, allowing a reasonable remuneration for his time, and I fail to see, with land at \$20 an acre (which is around our country about the average price), and allowing interest at 7 per cent, where a young man is going to get a foothold raising wheat. I maintain that it is almost impossible for him to pay for his land during his natural lifetime.

Now, I venture to say that, even getting the homesteads as we have done, fully 50 per cent or more of them are already mortgaged. If that is the case, and I know it can not be successfully contradicted, then under those circumstances how is the young man that starts in with nothing—buying everything on time—raising wheat; how is he going to be able to pay for that land during his lifetime? There are, however, instances where it can be done. In those days in the older States wheat was higher. In my younger days I have sold wheat as high as \$1.37, and I might have sold it as high as \$1.50 if I had taken advantage of the market at the time. Contrast that figure with the price at 50 and 55 cents and you will find there is a vast difference in the opportunity presented to a young man now and what it was then. In the early days, also, we used the cradle. The cradle cost only a trifle. Now we use the self-binder, and it costs us from \$125 to \$135; and that, of course, we buy on time and with interest at 7 per cent. Expenditures soon count up. I remember the first self-binder I purchased. I bought it for \$300 and paid \$15 freight, making \$315 for the self-binder. That price, with 7 per cent interest added, was a good deal of money before it was paid for.

Q. (By Mr. LITCHMAN.) Have you contrasted the cost of living and other things at the time when wheat sold for \$1.37 with the price now in comparison?—A. With the exception of the few rags of clothes which we wear, we raise our own things on the farm and do not look upon our living as costing anything; of course, we raise it.

Q. The difference in the selling price of wheat is largely, even almost exclusively, taken from the farmer?—A. Yes.

Q. This difficulty that you complain of concerning the farmer's son; does not that apply equally in other parts of the country with other industries?—A. I am only speaking as a farmer and from a farmer's standpoint.

Q. The point I wished to develop was whether the general trend of affairs that operated with the farmer and the farmer's son does not also operate in other lines of industry.—A. That I am unable to answer.

Q. (By Senator KYLE.) What about the comparative prices paid for farm help

between now and 25 or 30 years ago?—A. When I used the McCormick reaper I used to pay as high as \$3 a day for laborers to bind grain. Now we pay from \$2 to \$2.50 during harvest time, which is a short period, so that we paid a little more in the earlier days.

Q. What is the average price of the wages of farm hands in your country?—A. We get along during a good deal of the time without farm help; that is, we do what is known as the chores ourselves; invariably during the winter time. If we have more stock than we are able to take care of, we usually hire a man by the year, and the usual price given a man by the year is from \$175 to \$200. When we hire men during the harvest time by the day, we pay from \$2 to \$2.50 for the actual days they work. You city people might call our day a day and a half, but we call it a day. If we hire men by the month for the busy season, say 2 or 3 months, we usually pay them \$20 or \$30 per month and board.

Q. (By Mr. PHILLIPS.) In the price per year is the board included?—A. Yes; when we hire a man on the farm the board is usually included, because we raise what he eats and we call it nothing.

Q. (By Senator KYLE.) So the average wage is from \$16 to \$20 per month by the year?—A. Yes.

Q. What was it 25 or 30 years ago?—A. It varied a little. I worked for less money 40 years ago.

Q. Forty years, yes; but how was it 25 or 30 years ago?—A. The wages are pretty near the same. They have not varied much for the yearly laborer on the farm.

Q. Is the young man getting \$200 a year with his board able to save anything?—A. He has to get his clothes from that and his shoes and washing, etc., and other incidental expenses, so that at the expiration of the year he possibly has a trifle; it may be \$100, if he is careful.

Q. (By Mr. A. L. HARRIS.) Can a farm hand do more now with improved machinery than he could 20 years ago with the machinery then in use?—A. Yes; I am glad you mentioned that. Yes; we can perform as much work to-day on the farm with improved machinery—with 1 man and a team—I might almost say as much in 1 day as we could then in 5. I am pretty positive we could accomplish as good results from 1 man driving a self-binder with 3 or 4 horses to the binder in 1 day as that man could do with his cradle in 5. That is when we used to cradle the grain and swing it in that way [indicating].

Q. Has that change reduced the cost of production?—A. It has reduced the cost of production to some extent; but, what is strange to say, in those cradling days it appeared to be as easy for the farmer to pay his lawful debts then as it is now, and if you put that question to 100 farmers, I venture to say that 99 of them would say, "much easier." Then the hours of labor naturally would decrease from the use of machinery, but it is right the reverse: it appears that our hours are as long, and if anything longer than they were in those days. Now, how can I account for that? It is impossible for me to account for it, but the facts are there, notwithstanding; there is something wrong that ought to be made right. If we do as much work in 1 day as we did in 5, the natural question would be, why do you work so long hours now?

Q. Does the farmer at the present time enjoy more luxuries than he did 25 or 30 years ago?—A. As far as that is concerned I think the tendency is to live a little better; but we do not live as well as we ought to, because we can not afford to do so.

Here witness read the following paper:

Transportation.

Owing to the advanced ground which we have taken on this all-important subject and the reversal of our policy of the past on this subject, we will not be surprised to have severe criticism leveled at our attitude by our critics and persons who have not reasoned out this great problem to an intelligent and logical conclusion.

Before declaring our position definitely it must be borne in mind that we approach this question as farmers and deal with it only in so far as it affects the products and industry of agriculture. The general belief prevailing among the citizens of this country, and perhaps throughout the world, is that any reduction in freight rates on our grain crops will go to the producer to the extent of such reduction on freight to the markets of the world.

We believe we can reasonably show that this proposition, as far as it applies to the product of wheat, is entirely erroneous. My remarks will be therefore

land to-day? That will be true of the next generation.—A. I am glad you brought that up, because it is a very important question. I maintain it is almost impossible for a young man to-day to purchase a home at the present price of land and go in debt for the price and also for implements, horses, and cattle that he must use in order to work the farm; that if he does so, it is almost impossible for him within his natural life to become a free man; that is, get out of debt and own a farm. But when I say the farmer's boy may acquire a home, I mean the farmer's land will be divided up among his family.

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Q. (By Senator KYLE.) Are there any questions upon the subject upon which he has just touched?—A. I am here to answer them, gentlemen. This seems to be a very hard question. It seems to be the prevailing opinion, not only of the American farmer, but of the world's farmers, that the lower you can bring wheat to market the better the price should be and the more the farmer ought to get; but we have only that one market. As soon as you get us another market then the results will be different.

Q. (By Mr. LITCHMAN.) How has the combination between the Great Northern and the Northern Pacific affected you?—A. I am not prepared to answer that question, because I confess I am ignorant. I do not know of any combination between them.

Q. I am speaking now of the combination announced by the newspapers.—A. O. yes; I am unable to answer that.

Q. (By Mr. FARQUHAR.) You are prepared to say that if 10 cents is eliminated from the transportation charge on your through bill of lading from the Minneapolis terminal to Liverpool the farmer gets no benefit out of that 10 cents elimination?—A. Yes; I am prepared to say, from experience, that the buyer—the consumer—is the man who gets the benefit, for the reason that we come in competition with the other wheat growers of the world, and they are at that market selling their wheat, and the price that is made in Liverpool is cabled all over the universe in a few hours. That is the established market of the world.

Q. When you sell your grain there at home, do you sell it under the quotations of the Minneapolis or Chicago market?—A. The quotations of the Minneapolis market, generally.

Q. Is the Minneapolis sale under the Chicago or New York market?—A. Sometimes the market of Minneapolis is lower than the Chicago and sometimes it is a little higher than the Chicago quotation.

Q. Your grain passes through several hands before it reaches the Liverpool market, does it not?—A. Usually; yes.

Q. And the main cost is transportation; now, suppose you make a reduction of 8 or 10 cents on the transportation, as you have spoken of in your paper, and in the commission on your through shipment from Minneapolis clear to Liverpool 6 or 7 cents commission fees is eliminated, do you pretend to say it is logical or practical or businesslike to say that it does not change your market at home and that you don't get a better price than you otherwise would for all that saving which occurs?—A. If we had another market; but we have only the one market, and the various other wheat countries of the world bring all of the wheat of the world to that market, and the consumer or the buyer in that market of Liverpool makes the price of the wheat sold. The man that sent the wheat to the Liverpool market in the first instance, might have a larger margin than he ought to have and he might by reason of that margin make his bid lower than the other people of the world that were there to sell their wheat, and he would possibly get the order; but the instant he did that the other competitors would drop in order to get the order themselves, and it would be optional after the other sellers in the world came down on a level with the price asked by the American seller, it would be optional then with the buyer at Liverpool to place his order either with the American, who first made the price lower, or with his competitors that came down to the level of his price. Hence, we maintain that if the entire freight charge was wiped out and wheat was landed in Liverpool without cost it would not add one penny to the price received by the farmer, for the reason that the seller in the Liverpool market would then offer wheat lower, and the moment he offered it lower the wheat there from the other countries to be sold would come down to his price.

Q. (By Mr. A. L. HARRIS.) You mean if freight was reduced all over the world?—A. If it was reduced all over the world, it would be different. If freight was reduced all over the world or reduced in any other country, the same as our freights here would be reduced, those two countries would have for an instant the advantage of the other countries and would receive that benefit, but the other countries would come down on their level even if they had to sell their product below cost, because there is a surplus, and it must be marketed.

Q. (By Mr. FARQUHAR.) You think if there was a reduction of 10 cents in the through bill to Liverpool on the whole wheat crop of the Northwest it would make no difference in the Liverpool market?—A. Yes; I think it would reduce the price on the wheat of the world.

Q. Do you think there are any American or English or French or German sellers in the Liverpool market that are selling and endeavoring to bear the market in Liverpool? Do you think there are any sellers from America that intend to sell at the cheapest figure they can to get rid of the grain?—A. If they have the wheat to sell, of course they want to get the biggest price they possibly can.

Q. Is it a cash product? They have paid for it and it is there on hand?—A. It is a cash product, and they have it on hand and they want to get the biggest price; but the competition is strong and there is only the one buyer.

Q. Does the one buyer supply the demand that buys in Liverpool?—A. Yes.

Q. It is the sellers of Europe that buy in Liverpool?—A. Undoubtedly; and Liverpool, being the principal market of the world, is equivalent only to one market, because it rules the price of the world's market.

Q. (By Mr. LITCHMAN.) Is it not the surplus of the product of the farmer which is sold in the Liverpool market?—A. The surplus; and I want you to understand that the surplus, though small—usually from 100,000,000 to 125,000,000 bushels in the United States—sets the price upon every bushel of wheat that is raised in the United States of America. Now, if we could wipe away that surplus and have no surplus, by procuring a market somewhere else, we would not be at the mercy of the Liverpool market as we are. That 125,000,000 surplus that we have sets the price of every bushel of wheat sold in the markets.

Q. (By Mr. FARQUHAR.) The opinions you are giving this morning here that a moderate reduction of the through bills of lading in Liverpool, that even the abolition of the entire freight rate, would work no advantage to the producer, but would naturally be a benefit to the consumer. Is that the opinion you state?—A. That is the opinion of the Grain Growers' Association. It is the logical opinion that they have formed upon this question. That is their opinion. It is not the public opinion, because, proclaiming this view as I proclaim it here before you to-day (if I made that statement four or five years ago), I would be laughed and mocked at and pointed to with the finger of scorn; but when we have logically figured out the question and followed it out to a determination we find that the consumer gets the benefit of the reduction. Take the reverse, now. For instance, if the railroads made a reduction on a carload of fuel to our Northwestern country, we would be consuming that and would get the benefit just as the consumer of wheat gets the benefit of the reduction on that article.

Q. (By Mr. PHILLIPS.) If the railroads made that reduction of 10 cents, could they not and would they not pay you that 10 cents?—A. It would not affect the local market much, for the reason that the wheat would go direct to Liverpool, where it would come into competition with other wheat, just as I spoke of in case of the reduction of a car of coal from Duluth to Graceville. If I should consume a portion of that car, I would get the benefit, not the miner that produces the coal.

Q. Do you mean that if you were allowed 10 cents more on the wheat that is shipped abroad that would affect the markets of the world and they could not afford to pay you 10 cents more or 10 cents less; that that would not affect the whole market of the world?—A. It would affect the whole market of the world, for the reason that our exporter or importer, our buyer or seller, those selling wheat to Liverpool, would give the purchaser a slight advantage over his competitors, and if he wanted to sell his cargo he would then be enabled to underbid the wheat sellers of other countries.

Q. Not if he paid you 10 cents more a bushel?—A. No; he would not be able to do it, but being, as he is, obliged to compete with the other sellers in the one market—

Q. (By Senator KYLE.) Your idea is that in case the exporter to Liverpool gets a reduction of 10 cents a bushel on what he has shipped to New York that he will use that reduction as a leverage on the foreign buyer?—A. Yes.

Q. Instead of paying it to you?—A. Yes. Not exactly that; but he is enabled to sell wheat a little lower than his competitors, and the moment he reduces the price the competitors also fall.

Q. (By Mr. FARQUHAR.) Your market, you say, is based on Minneapolis quotations. How do you know whether your wheat goes to foreign export or domestic manufacture?—A. We have no way of knowing exactly unless we ship direct to New York. That is the only way we could know, because it goes through different hands; but we do know that Liverpool makes the market for us.

Q. Suppose we leave that foreign question out. How do you know that out of the entire consumption of America here, with the small export trade, the prices in America do not make the prices for American wheat?—A. The price in America?

Q. Yes; the whole consumption price and the price that you get. How do you know that you get the foreign price at all?—A. For the reason that we raise more wheat in America than we are able to consume. Therefore the surplus must go somewhere.

Q. But the question is, Why is not the great mass of consumption in this country a factor that makes the price of American flour and wheat? Why do you bring in a foreign market?—A. For the reason that our Chicago board and our Minne-

apolis board and the Duluth board watch the cable news, and that the market is made there by them and that they are governed by them.

Q. Undoubtedly for export trade that is true, but what do they depend upon for domestic trade?—A. That export trade sets the price upon the wheat that is sold at home.

Q. You could not tell that a single bushel of wheat raised in 40 years has been ground in St. Paul or Minneapolis?—A. No.

Q. (By Mr. LITCHMAN.) Who pays the freight on wheat?—A. The farmer.

Q. How do you figure that out, then? Show that, please.—A. How do I figure out that the farmer pays the freight?

Q. Yes.—A. Why, the very reason that much less is taken ought to be enough to start in on.

Q. But you said when the 10 cents reduction on freight is made the farmer does not get it?—A. I say the farmer does not get it, for the reason that it goes to the benefit of the consumer, just as I illustrated it.

Q. Now, I will not speak as a matter of theory, but as a matter of fact. You stated that your average for 10 years was 59½ cents a bushel. That is 59½ cents at the farm, is it not?—A. Yes.

Q. Well, whatever is paid for freight is added to that?—A. Yes.

Q. Is that not paid by the buyer in Minneapolis?—A. It is paid by the buyer, most undoubtedly, in that sense, but it comes out of the wheat; the wheat is that much less.

Q. What I wanted to get at is to trace it from the farmer to the consumer. Now, then, to the price of the wheat on the farm is added the price of the freight in making the price at Minneapolis, is it not?—A. That is, you mean that, considering the transportation of the wheat from the farm to Minneapolis, the price is that much less when it gets to Minneapolis?

Q. No. What I mean is, if the price of wheat at the farm is 59½ cents and the price at Minneapolis is 70 cents a bushel, the supposition is that that difference of 10½ cents is the cost of transportation?—A. Yes.

Q. Now, then, the price at Minneapolis is fixed by two factors, is it not: the consumption in the home market and the consumption in the foreign market?—A. No. We think and believe that the home consumption has nothing whatever to do with setting the price upon the wheat, for the reason that the export wheat that is shipped abroad makes the price.

Q. Now, then, can you give the proportion? You have estimated about one hundred and fifty millions of bushels is exported?—A. From a hundred millions to one hundred and fifty millions.

Q. Can you give the total production of wheat in the United States?—A. I am not prepared to give that in figures at the present time, but approximately about six hundred millions.

Q. Then one-fifth or one-fourth goes into the export trade?—A. Yes.

Q. This amount that is exported, then, is the surplus product of America, is it not?—A. Yes.

Q. Your theory is that the selling of that one-fifth or one-fourth fixes the price for the entire production?—A. For every bushel we raise.

Q. That the law of supply and demand operates to fix the price to the farmer by the amount of the crop?—A. Yes.

Q. And the larger the surplus the lower the price to the farmer?—A. That is it exactly. That is my position.

Q. Your idea is that if the crop was only sufficient to supply the American market a higher price would be obtained for the wheat?—A. Yes.

Q. (By Mr. PHILLIPS.) Is it not a fact that in any article of export in package the freight takes nearly all the profit of those that are engaged in it: that the profit is frequently about all taken by the cost of shipping abroad?—A. You speak of flour or wheat?

Q. Flour, or anything. Is it not a fact that those that are engaged in exporting find that there are times that the freight rates go up so high, both on land and on sea—and especially on ocean freights—that there is nothing in it?—A. The exporter's profits on wheat are very small; it is a very small margin.

Q. (By Mr. LITCHMAN.) Supposing there was no market for this 150,000,000 of surplus, would it not have a very material effect upon the price obtained on the home product?—A. It would have a very material effect in reducing the price at home, because the law of supply and demand governs the price.

Q. (By Mr. A. L. HARRIS.) Suppose there are only 10,000,000 bushels to export. Does the export still have a tendency to fix prices?—A. Yes; no matter how small the export is. As long as there is a surplus left, it has a tendency to set the price upon every bushel of wheat we raise in America.

Q. (By Senator KYLE.) I take it from your testimony that you are in favor of

opening up a market in the Orient?—A. I am in favor of getting another market anywhere, so we will have competition. Is there anything under the canopy of heaven more degrading than a man's not being able to set a price upon the staff of life which he has raised? On every other product of every country in the universe, including our own, a man is able to set a price. If I go into a store for a dozen eggs I have to ask the merchant, "What are you charging for eggs to-day?" If I go to an elevator with my load of wheat I have to go the man standing behind the scale and say, "Please tell me what you are paying for wheat to-day." He replies, 50 cents or 55 cents. I drive out, not satisfied to sell, and I go to another elevator, and the man there repeats the same price. Nay, I can go north, east, south, or west 10, 20, or 30 miles, and the price is just the same. I have no more to say as to the price than the man in the moon. There is something wrong.

Q. (By Mr. LITCHMAN.) You are coming to that question of elevators, are you not?—A. Yes.

Q. (By Senator KYLE.) I think also you are in favor of the reconstruction of the merchant marine?—A. I am, because I think it is very wrong for us to be depending upon foreign bottoms to transport the product of our own labor abroad.

Q. Are you in favor of subsidizing certain American ships?—A. I am in favor of that; notwithstanding that the bulk of the tax comes from ourselves, we are still in favor of it.

Q. You speak the sentiment of the majority of the farmers in the Northwest?—A. I do. In several conventions we have had we have gone over this matter.

Q. (By Mr. PHILLIPS.) Do you think the farmers of the Northwest would be in favor of a subsidy given to the richest people in the world, and be taxed for it themselves?—A. No.

Q. Do you think they favor giving a subsidy when they are shipping their own commodities at a very large profit, as some of them are? The largest beneficiaries of the subsidy have one of the largest fleets on the ocean, and they are making a very large profit now on shipping their own commodity. Would you be in favor of subsidizing them?—A. I would be in favor of anything that would increase the American ships and open another market for our surplus crop. I would be in favor of that. I am not in favor of subsidizing to the extent of nine millions that is proposed by the pending bill, to be given only to the ships engaged in foreign trade. I am not in favor of giving any portion whatever of that to ships that would not carry freight. I would be in favor of giving only to the ship that carried the freight—that did the work.

Q. (By Mr. LITCHMAN.) And if that happened to be owned by a very wealthy corporation, provided it did the work, you are perfectly willing to give a subsidy?—A. Yes; certainly.

Q. (By Mr. PHILLIPS.) Would you be in favor of the Government's giving a large subsidy to large corporations without having anything to say in fixing the price at which they should ship, leaving that wholly to their own discretion?—A. No; under no circumstances. If they should receive the subsidy, there should be some form by which the Government should control them, so that they could not combine to raise freights.

Q. Has there ever been any law proposed to regulate freights or touch these people—to regulate freights, or to give reasonable freights?—A. I think the Sherman law would effect that, but from the copy of the bill I have seen the Sherman bill has been ignored. We, as farmers, are in favor of subsidizing American ships for the actual amount of what they carry, and no more.

Q. (By Mr. A. L. HARRIS.) You would be willing to leave the rates to competition?—A. Corporations seem to overcome competition to a great extent by uniting their forces one with the other, and therefore I think that the Government should have some control by which it could regulate freight charges.

Q. (By Mr. FARQUHAR.) You would be in favor of a bill of that kind providing the Sherman Act should be applied to that—an exact provision in the bill to that effect?—A. I am willing to be placed on record as being in favor of any bill that will open the oriental market for us and build up our American shipping, and for the actual work that is done—for the actual freight that is carried.

Q. (By Mr. CONGER.) What is the feeling of the farmers of the Northwest on this subsidy bill now pending before the Senate? Do they like it?—A. As it stands now the farmers will oppose it.

Q. What changes would they desire to have made in it?—A. The farmers desire to limit the time to 10 years of giving the subsidy, for the reason that if it should prove to be a failure and of no benefit to the farmers, 10 years is too long. If it proved to be a benefit to the farmers, then there would be nothing at the expiration of the 10 years' contract to prevent Congress extending it then to 20 years or 30 years, if it proved a benefit to the farmers, who produce 75 per cent of the freights that would be carried.

Q. (By Mr. PHILLIPS.) You alluded to Mr. Hill, of the Great Northern, lecturing before you. Is he or is he not opposed to this ship-subsidy bill?—A. Some time ago it appeared that Mr. Hill, from his speech, was in favor of the subsidy bill, but he has been before many of our large State conventions and he has heard the discussion there himself, and has also spoken, and it appears that he agrees to some extent with the farmers that this bill is not in its present state beneficial to the farmers. We find clauses that give the benefit of this subsidy bill to what is known as fast boats—10, 20, and 31 knot ships—which apparently would not be able to carry much bulky freight, if they are able to carry any at all. They would compete with the work of the farmer, which is pretty hard on the farmer. If we hire a man we propose to make him pay for everything he gets. We do not propose to give our money away to those who do not earn it.

Q. (By Senator KYLE.) Does Mr. Hill think there is discrimination against Pacific shipping?—A. We take this view of it, that we have already the European market, to our detriment to some extent, for the reason that they want to get the price of our feed lower than we want to sell it to them, and hence we maintain that subsidizing ships upon the Atlantic would be of very little benefit to us, because we have already got that market. If we get, on the other hand, ships on the Pacific coast going to the oriental markets, we believe that there we will get the benefit, and there is where we farmers—

Q. (Interrupting.) The farmers are generally in favor, then, of any benefit given to the Pacific steamships?—A. They are, and of giving it only to ships carrying freight.

Q. (By Mr. FARQUHAR.) Have you a paper on that subject?—A. I have a paper that says a little something on that. I will get to it by and by.

The witness then read the following paper by himself on elevator combinations:

"Elevator combinations.

"The existence of a general elevator combination throughout the wheat-producing belt exists to a considerable extent, to the detriment of the producing classes, for the reason that as a result of these combinations they are enabled to set the price which is paid at the local stations throughout the territory where they operate. These prices reach from 1 cent per bushel to as high as 11 cents per bushel below the price which a farmer could get for his grain if he loaded up a carload and shipped it to a terminal market.

"This system of combination exists at nearly every station throughout the wheat belt of the country where there is no farmers' or independent elevator. Often where we start one of these elevators on the cooperative plan the most intense opposition is shown by the line elevators, which bid up the price often to 1, 2, and 3 cents higher than they can get for wheat in the terminal markets, pocketing this loss and making the advantageous rates which they establish at other points make it up. If they keep up this practice long enough they in time will make the farmers' house an unprofitable enterprise, so that the farmers' or independent house will be glad to sell out and stop further continuance of an unprofitable business. And when the independent house is once out of the way the line companies exact further and greater tribute from their helpless victims, who must pay it without any redress. The line elevators will soon make up the loss which this active and hostile competition brought on them when they have a clear field to operate in.

"They are further enabled to carry on this warfare through the aid which they receive from the railroad companies of the districts where they operate. This aid is given in many ways—in the prompt and active supply of cars in the busy season; in the refusal of many roads to grant sites to farmers' elevators; in giving rebates to the line elevators on freight, which are often given by the officers of the railroads who are participants in the division of profits of the line elevator companies. Owing to the peculiar nature of these transactions, it is most difficult to reach and secure such evidence as would make a case against them and prove that which is commonly known and understood—that these conditions exist on many of the roads in the country.

"Another element which enters into this condition that gives these line elevators a great advantage is their terminal elevator facilities, which enable them to take their customer's grain for storage and charge him for it, while at the same time mixing it with an inferior grade of grain, and, when delivery comes, delivering the degraded grain to the customer, who must accept it, because the rules of the board of trade will allow the elevator to deliver such grain as long as it passes what is known as 'contract grade,' which is commonly known as 'skin grade,' or the lowest possible grade of that number or grade, while it is generally known that

the value of the highest and best grade to the lowest point of the same grade is often a difference of from 1 to 2 cents per bushel. The profit to the mixer is often greater per bushel for mixing than the profit of the farmer who spent a year's toil to produce the grain.

"The same elevators, becoming traffickers in the products of their customers, are enabled to sell futures to such an enormous extent that they can sell millions of bushels of 'wind' and charge the regular fixed charges of storage and commission on stuff that never existed, and this is done in such vast volumes that the sales of 'wind' in one day will amount to fully 600,000,000 bushels, or as much as the entire crop of this nation in one year. This amount is sold for 300 days of the year, and it is one of the greatest influences in destroying the value of farm products.

"Legislation along these lines that would prevent any combination to prevent restraint of commerce and trade would be a great boon to the farming community."

Q. (By Mr. CONGER.) When a cooperative elevator has been established, and the line elevator men bid higher for the grain, who receives the benefit?—A. Your question, as I understand it, is that when an elevator bids up the price of grain higher than the farmer's elevator could pay, who will receive the benefit?

Q. Yes, temporarily?—A. I am happy to announce that we honest grangers for once come in for benefit at that time.

Q. A little while ago you said that the price of grain at your station is about 10 cents lower than it is at St. Paul.—A. At St. Paul and Minneapolis, usually.

Q. Now, suppose the freight rate were cut in two, so that the total of charges for freight, commission, elevator charges, etc., between your local point and St. Paul were 5 cents instead of 10, would not the farmers temporarily get that benefit?—A. For probably a very short time they might temporarily be benefited, but as that wheat goes to its destination, which is Liverpool, then it comes into competition with the product of the wheat growers of the world, and then, in order to get an order, the American seller would offer part of his profit or margin that he held to get the order. The very instant that he did that the other competitors would come down. For a temporary and short duration we might possibly receive some benefit, but it would be so small that it would be impossible for us to see. Now, for instance, this 14 per cent that the Great Northern Railroad gave us in the way of freight reduction went into existence on the 16th day of July, 1898. We watched; I went myself in person and watched more particularly after that the price of wheat to see if the change in freight made any difference. To my astonishment I found that there was not any whatever.

Q. What did you make comparisons with?—A. I made comparisons upon the price paid for wheat the day before the reduction went into existence, and also made comparisons for a week later and a week earlier.

Q. Did you make comparisons with the prices in Liverpool; that is, did you compare the difference between the prices on your farm or at your station and the Liverpool price to see whether that difference had decreased or whether it had remained the same?—A. Yes. I had made inquiries as far as I could learn through the public press as to the foreign market and away from my own station. I did look into that, and found there was no difference whatever. Of course the reduction was small; 14 per cent on freights would probably not amount to quite 2 cents a bushel.

Q. Do the farmers generally in your section believe that a reduction of freight rates would not benefit them?—A. We do. Those that are connected with our organization do. We discuss this question thoroughly and ask questions the same as you people are asking me now; we ask questions of one another. Even when we are in Scandinavian settlements, where they do not speak the English language so very extensively and know more about their own language than about our language, they ask us to go away, and then they form themselves into a committee of the whole and discuss the question in their own language thoroughly, and then, coming to order again, they ask questions of us. So I know that others believe the same as I believe, and would make the same statement to you as far as their language would permit them. But generally outside of our organization they have not come to this conclusion, but still believe that a reduction of freight goes to the farmer instead of going to the consumer.

Q. What is the attitude of the railroad men of your section—what is the attitude of Mr. Hill, for instance? Does he contend before your organizations that freight rates would make no difference in the price of grain to the producer?—A. At the time he made that reduction he firmly believed that that reduction went into the pockets of the farmer, every cent of it, but he changed his views, and believes with us now that the farmer does not get the benefit of a reduction on wheat.

Q. (By Senator KYLE.) Has he offered to carry your coal into you for a less price?—A. I am very sorry to say he has not.

Q. (By Mr. A. L. HARRIS.) Have you a law in Minnesota regulating the warehouses?—A. I think we have a law regulating warehouses, but, like many other laws on our statute books, I am sorry to say it is a dead letter.

Q. Does your law draw distinction between a public warehouse and private warehouse?—A. I am not positive about that. I think the law regards all warehouses that receive grain from the public—now, I won't make this statement from a positive standpoint—but I am under the impression it looks upon them as public warehouses.

Q. Does your law permit the keeper of public warehouses to buy grain?—A. Yes; the law permits that.

Q. Does the local buyer mix grain?—A. No; that is done at the terminal elevators. That is where they do the mixing. The virgin soil produces virgin wheat, and our hard No. 1 wheat is worth more in the markets of the world, as it comes in its virginity from the soil, but the buyer in the foreign markets does not receive it, for the reason that the elevator men mix it at their terminal points, and there is a difference between the first part of the grain, which would grow full and which would be known as No. 1, and the part that barely touches No. 1. There is quite a little difference between the two, and they take this grain and reduce this higher level to the lower grade in order that they can let it out of their elevator as simply a skin grade—simply to pass the grade.

Q. Do you think the man who manages the terminal elevator should be permitted to buy grain?—A. The man that manages the terminal elevator, I think, should not be permitted to buy grain, and we will ask for legislation to that effect. I have another paper that covers that point.

The witness here read the following paper:

"Conclusions.

"In conclusion I would suggest the following remedies to relieve this condition, which, in brief, would be to extend our foreign markets into the oriental countries, where two-thirds of the inhabitants of the globe dwell and who are not our customers, nor do they to any great extent consume our raw or manufactured products. This is a first and necessary effort we must make to secure these markets. As a further aid in carrying out this first proposition I would suggest the following attendant conditions that would be necessary to make the first proposition possible and apply the other remedies to bring about conditions that would make the great industry of this nation prosperous:

"We must see that our merchant marine and commerce are restored by the building of American ships to carry our products to these new-found markets, and hold this trade when once secured. As it is at present, we have nothing worthy of an American commerce, and are dependent on foreign nations to take our products to these markets in their ships, which may often be in competition with the products of their own countries, which naturally would place this nation at a great disadvantage in reaching out into this new territory and securing our share of this trade and holding it when once secured.

"We therefore favor subsidizing American built and operated ships, and of making two classes of compensation—one for the fast ship and one for the slow or freight ship. Pay the slow ship for the actual freight she carries to foreign markets; pay double for the outward trip, but nothing for the return trip. Make the experiment for 10 years. If this aid produces new American built and operated ships, we can extend and increase the compensation to a satisfactory point to keep them up.

"Another measure that we propose is to create a trade commission of 9 members, of which agriculture shall have 3 members and labor at least 1, the balance to represent the transportation, manufacturing, and financial interests, to visit those countries and devise ways and means by which we can increase and secure their trade, etc.

"For the interior development of the interests of agriculture I would suggest the following:

"To enact legislation that will place terminal elevators under the control of the Government by appointing an inspector to have charge of these public warehouses and prevent the mixing of grain, and to prevent public warehousemen from engaging in the business of trafficking in grain or using the commodities of their customers to trade in the open markets; also to prevent their keeping the better qualities of their customers' grain and delivering the poorest grades on contract, which are generally so poor that no one desires to take a delivery.

"We desire a rigid execution of the law preventing railroads from granting

rebates to especially favored shippers, which system is used to strangle competition at local and terminal points to the detriment of the producing classes.

"We desire the abolition of what is known as trading in futures, as one of the greatest evils which have an influence in destroying the value of farm products.

"We also desire legislation that will abolish bucket shops and their peculiar and disastrous form of gambling as a destroyer of values.

"We desire the abolition of the forecast crop reports by the Department of Agriculture as one of the most disastrous elements in destroying the value of farm products by the official nature and extravagance of these reports, which very often are based on erroneous data. These reports can not be reliable or accurate until the thrashing machine has done the work and told the story.

"We approve increasing the annual appropriation for the Department of Agriculture to at least \$10,000,000 to enable it to keep pace with the importance of the greatest industry of the country and the dignity of the nation.

"We are unalterably opposed to the opening of the Nicaragua Canal and the paying out of immense sums by this nation to benefit our European competitors.

"We desire that an official inquiry of the cost of raising a bushel of grain, pound of cotton, or pound of meat be taken up by the General Government, under direction of the Department of Agriculture, as the first proposition that will be necessary in furnishing accurate and reliable data upon which to propose remedies and enact laws that will give prosperity to the industry of agriculture."

Q. (By Mr. CONGER.) Your people are opposed to the Nicaraguan Canal?—
A. Yes; I have a paper here giving our reasons for it.

The witness read as follows:

Nicaragua Canal.

"The position which I take and the action which the Allied National Agricultural Associations of America have taken on this apparently popular measure, must sound like treason when compared to the almost unanimous and popular approval given to the scheme by the daily press of the nation.

"But I am not here to say pleasant things, but to disturb the harmony of misguided approbation to one of the most far-reaching and disastrous schemes that was ever seriously proposed, and which will have a tremendous and disastrous consequence to the prosperity of this nation if consummated. And when we see what swift and tremendous strides it is making toward consummation, it is not surprising to learn the awakening among the people to denounce and oppose it, when it is found that unless the most earnest and active efforts are made by the people to rise in popular demonstration against the scheme it will become a reality.

"It is with shame and mortification as an American citizen that I view the situation and position of the United States, in which it permits itself to become the cat's paw of England or any other nation which is jealous of our increasing importance as a world power. I see the awakening of those jealous nations to a realization of the immense opportunities and natural advantages which we possess in reaching out and securing an extension of our export trade which will compel those countries that are now our only customers to pay higher prices for our food and textile products, which they must have. These new found markets will place this nation in active competition against European nations to displace their manufactured products and become permanent customers of the peoples of the world, especially in the Orient.

"Owing to our naturally favored condition as to situation and nearness to the oriental countries by several weeks' voyage (at least to Japan and northern China, etc.), it seems almost incredible that our statesmen and national officers could be brought to the pitiable condition they present to the world in this game of diplomacy. It is a mad scramble for advantage to secure the trade of 1,000,000,000 people and we are in the most favored position to secure it through ordinary business enterprise. Apparently they overlook our advantage and become so infatuated with the siren song of royal favor and approbation that they forget that they do not owe their allegiance to foreign courts and countries instead of the nation and people who elected them to look after their interests.

"What does this scheme mean to the farmers and citizens of this nation? By building this canal we at once place competing countries in a position to make a short cut across our bows and invade a commercial field which belongs to us now by every possible right of advantage.

"It reminds me of a number of rich neighbors living near each other and with teeming fields laden with all the fruits of a fertile soil and a bountiful Providence, who, in order to protect these fields from the ravages of roving herds of cattle that would soon invade and destroy them, found it necessary to fence and guard well from such invasions. Under these conditions a number of the smaller neighbors were

jealous of the rapidly growing wealth and prosperity of one of their number who had a field twice as large and more fertile than theirs. They conspired together to ruin him by going to him and inviting him to banquet at their homes, giving him such distinctions and effusive compliments and attentions that they finally turned his head, causing him to actually believe that those cunning chaps were in reality his best friends. When they got him to the point where he believed he was the great factor in the development of the community they proposed to him that the best way to advance the prosperity of the community was for him to remove the fence, build a gate in lieu thereof, and then leave the gate open so that their live stock could enter and enjoy the privileges of dividing up the products of his field. For the privilege of becoming closer neighbors and better friends they would continue to extend the same courtesies and attentions which he had enjoyed up to the present. Aye, even they would let him once in a while come within the charmed circle of royal favor. What would you think of a man that would actually do such a thing? There are only two conclusions to come to—he would be either drunk or crazy.

"What application has this illustration to the subject in question? Why, it has the most direct and important bearing on the case. Here we have the entire Pacific Ocean trade—a vast field to the west, teeming with millions of inhabitants in Asia and South America, which is fenced in by the Western Continent from our competitors, who are not situated as advantageously as we are, whose ships of commerce are roaming the wide domain of the world to secure an existence. They see that with the few ships we have at present there is a vast field for the development of our commerce, and, fearing that development will drive them from their once exclusive field, they seek to accomplish through the channels of diplomacy and cunning what they can not achieve by open and legitimate business methods.

"The Secretary of State proposes that we, the American people, should actually assess ourselves \$300,000,000 as a starter to build this canal, with the probability that it will reach \$500,000,000. If the experience with like enterprises in the past is any guide we may consider ourselves safe if we get off with the last named amount.

"Who do they intend shall pay for this tremendous undertaking? Why, of course the farmers of the country, as they pay fully 75 per cent of all the taxes. We will find ourselves occupying the position that the scholar did when he cut the switch to whip himself. But we will have done it at the cost to our own resources of several hundred million dollars, and when done will allow every nation on the earth to reach out for the export trade which we can now enjoy. And the very intensity of the competition in this condition would enable our customers to set such low prices on the products of the farm that it would destroy the possibility of ever making the industry of agriculture prosperous in any part of the world.

"If the canal must be built and will be built, with or without us, let those nations who will be benefited by it build it. In that event, whatever advantage can be secured to us as a result of opening the canal we can secure and enjoy without the necessity of paying for it. We must further remark that the locality of the proposed canal and the whole Central American territory is subject to earthquakes, which, if a disturbance should occur, would destroy in a moment what required years to build and the expenditure of hundreds of millions of dollars. Therefore, under those circumstances, I would most earnestly recommend that we should drop this entire canal matter as an American enterprise, as it would be a great damage to the interests of this nation besides leaving an immense debt on the people of the country for the benefit of other nations who are our competitors."

Q. (By Mr. LITCHMAN.) You spoke in a former paper of combinations among these elevator companies, and the injury thereby coming to the farmer. Have you had any personal experience of this nature yourself?—A. No; my own personal experience is limited on this subject, but it has been taught and discussed in our societies, and while it is hard and impossible for us to condemn those people, it was commonly known that it has existed. Now, the fact of the matter is, it is almost impossible to get such evidence as would convict those fellows, for the evidence against them is such that we can not very well get at it.

Q. Then these statements made by you are the result of conference with the organizations of farmers to which you belong?—A. Yes.

Q. More than of your personal experience?—A. Yes.

Q. (By Mr. PHILLIPS.) Are the railroads or their officers interested in these elevators to any great extent?—A. I think they are not to a very large extent; there are some of them interested, but I think they are not as a general thing interested.

Q. When the price of freight was reduced to which you referred some time ago,

you say also that the spot price of grain followed it down. Now, was it or was it not the knowledge of the shippers that caused them to offer that much less for the grain? Why should you not have had that difference?—A. I believe the shippers at that time, with the small difference that there was at our place, understood that they received a temporary benefit for that small reduction at the time.

Q. It would be very easy, for instance, when the railroads put down the price, for the knowing ones, if they were at all interested, to bid that much less for your grain, and they receive the benefit, the same as if the road had made no reduction?—A. Yes.

Q. Instead of the farmers getting it, would it not?—A. I know the farmers did not get it.

Q. They did not get it?—A. They did not get it.

Q. Somebody must have got it?—A. Somebody must have got it.

Q. That was the purchaser, no doubt?—A. Yes; the purchaser, no doubt.

Q. (By Senator KYLE.) You made some statements quite serious in nature in the paper, the third before the last. I think, in regard to combinations between elevator systems fixing the card price, etc., a uniform card price for the territory in the northwest and rebates to favored shippers, etc. Do you know of these matters of your own knowledge, or is it just a matter of common rumor among the people in that country?—A. I know to my own knowledge of one instance in Browns Valley where a party had received a rebate, but the check was sent to him in the form as labor, whereas he simply got it as a rebate. In other words, the check was for labor rendered when he had done no labor.

Q. What year was that?—A. That was the year before last.

Q. It was since the adoption of the interstate commerce law. How was it paid—in a check or in cash?—A. He got a check for it. He informed me that the party running the elevator had run the elevator for the combine, one of those old line elevators, and he said that he had got the check as a rebate; that is, running an independent elevator of his own, he got a rebate, and it was given him, he says, as a check for labor rendered; whereas, he said, he performed no labor for that, and understood it was simply for a rebate.

Q. (By Mr. A. L. HARRIS.) Is your association erecting any elevators?—A. Yes.

Q. Are they called farmers' elevators?—A. Farmers' elevators.

Q. How many have you along the line of your road?—A. We have quite a few now in my own neighborhood. We have one in Browns Valley; we have in Beardsley one; we have in Chokio one; we have in Graceville one; we have in Ortonville one; and there are a couple more elevators near there.

Q. In round numbers about how many have you?—A. In that vicinity in round numbers we have 10. But they are scattered all through; I do not know exactly the number—probably not over 150.

Q. Are they built on private grounds or on the grounds of the railroad?—A. Usually on the ground of the railroad.

Q. Do the railroads give you opportunities for building?—A. Yes; in some places they do. In some places they refuse.

Q. (By Mr. LITCHMAN.) Does not your law compel them to give you these privileges?—A. I think there is something on the statute books to that effect, but, as I have said, they have many laws on the statute books that are dead letters.

Q. (By Mr. A. L. HARRIS.) After you have your elevator in operation does the railroad give you every facility for shipping your grain that it gives to your competitors?—A. Yes. I take great pleasure in stating that so far they have been generous and kind to us in giving us facilities, such as giving us cars—I think as many as we were entitled to. Sometimes there is a car famine, when all are unable to get cars. Then, of course, while some of our people may think for that instant, not taking this famine business into account, that they may probably not be so favorable to us as they are to the old lines, I have been unable to find anything but kindness and generosity from those people. The fact of the matter is to some extent many of them seem to be in favor of encouraging us.

Q. Are your elevators located on one road only?—A. Oh, no; on several.

Q. Could you name the roads?—A. We have some elevators on the Milwaukee, some on the Great Northern, and some on the Northern Pacific; on several roads we have them.

Q. When you ship your grain to the terminal elevator, how are you treated?—A. We ship our grain from our elevators, so far, to commission men in St. Paul or Minneapolis.

Q. Do you have any trouble?—A. No; not very much. We have been favored enough so far. We have no very reasonable cause to complain.

Q. Do you get the same freight rates that your competitors get?—A. That we are unable to say.

Q. Have you sufficient facts in mind to form a conclusion in regard to it?—A. I think in some instances we do not have.

Q. Do you suppose that difference would make a profit to your competitors?—A. Yes; most undoubtedly.

Q. Do you have the same rules at your elevator that your competitors have in regard to the length of time allowed to load cars and the kind of cars you receive?—A. I think generally about the same.

Q. (By Senator KYLE.) Do you have the same rules in regard to the grading of the grain?—A. I think so.

Q. The buyers at these local elevators, your own system, determine the grades?—A. Yes.

Q. And the price to be paid?—A. Yes.

Q. These elevators are located in Minnesota and North and South Dakota?—A. Yes.

Q. Do they receive the card price each day?—A. They usually receive it oftener—three or four times a day.

Q. Where do they get the card price from?—A. They get it by wire from the commission men and dealers.

Q. Where is the terminal point?—A. We ship principally to Minneapolis and Duluth from our elevators.

Q. And the commission men or commission houses to which you sell are governed in the price to be paid by the general custom throughout the city; is that it?—A. Yes.

Q. In other words, the price paid by the elevators in Minneapolis and St. Paul is the price that is paid down?—A. Yes; I think that is about it.

Q. (By Mr. A. L. HARRIS.) Does your commission man have any trouble in regard to extra switching charges?—A. He of course goes through the same regulation as the rest. He does not have any complaint to make.

Q. Does your competitor ship to the terminal elevator?—A. Yes; as a rule.

Q. You ship now to the commission man?—A. Yes; our competitors have local elevators competing with ours at our local points, and also have terminal elevators. That is the place where they get the biggest advantage.

Q. Do they give your commission man any trouble in handling your grain when it is received at the terminal point?—A. No; we do not have any complaint.

Q. Suppose the future is a bona fide sale of grain. Have you any objection to that?—A. No; we have no objection whatsoever to anything where the stuff itself is delivered. We have no objection whatsoever to a man buying wheat to be delivered three, four, or five months from now provided the wheat is actually delivered. What we object to is the selling of hundreds, thousands, millions of bushels of wheat where never a bushel changes hands.

Q. Does that affect the price?—A. Every bushel of winter wheat that is put on the market has a tendency to depreciate the price, because of the effect upon the other fellow on the other side of the water that buys our wheat, because of the immense volumes of sales that he sees made and the immense volumes of wheat that are supposed to be in the elevators. It has a tendency to make him fear, and say, "Well, there is lots of wheat in America; we can get it; we do not need to bid the wheat up."

Q. The big grain dealers claim that when they have a surplus on hand and are compelled to carry it for a better market, the privilege of dealing in options and futures is to their benefit. What do you know about that?—A. We have no objection to them or anybody else buying or selling the real stuff. The only objection we have is to buying what is known as the winter wheat. A law should be enacted to prevent gambling or option dealing in grain.

Q. Suppose you were a large grain dealer at Duluth and you had a surplus of grain. You can not sell it even in Liverpool, or your man or your agent can not sell it there, and you are compelled to ship it. Would not the selling of a future be an insurance against loss on that shipment of grain?—A. Yes; and provided that that sale took place at the given time the contract called for and the wheat was exchanged, I think that would be all right. The fact of the matter is, I think and I believe that it would be to the interests of the farmers to have both the bucket shops and the boards of trade stop selling options. Gambling in grain is detrimental to the interests of the farmer.

(Testimony closed.)

WASHINGTON, D. C., *January 16, 1901.***TESTIMONY OF MR. A. W. PRATT.**

The commission met at 2.24 p. m., Senator Kyle presiding. At that time Mr. A. W. Pratt was sworn as a witness and testified as follows:

Q. (By Senator KYLE.) You may state your full name and post-office address.—
A. A. W. Pratt, Aberdeen, S. Dak.

Q. What is your avocation now?—A. I suppose you might say I am an agriculturist, since I have retired from the grain business.

Q. What was your former business?—A. I was general agent for the Empire Elevator Company of Minneapolis, but my headquarters were in Aberdeen. The headquarters of the company were in Minneapolis.

Q. You represented the company as a traveling agent?—A. Yes.

Q. So you are thoroughly conversant with the business of that company for a number of years?—A. Yes.

Q. How long have you been engaged in the grain business?—A. More or less for 20 years.

Q. And during all this time in the State of Minnesota and the Dakotas?—A. Yes.

Q. What have you to say in regard to the making up of the card price of wheat?—A. The price is made in Minneapolis, and telegrams are sent to Aberdeen to the representative there, that is, Mr. Jumper, and he sends out the prices on cards on the different grades of wheat. That is done in connection with telegrams. If they can not get the card there in time, they send the telegram. Both are sent sometimes.

Q. Who is it that makes up this card price?—A. It is done by a board in Minneapolis—the Chamber of Commerce—three or four men.

Q. Ordinarily all these parties are engaged in the grain business, are they?—A. I think not; but in grain one way or another; some elevator men and some commission men that handle grain.

Q. One member being a member of the chamber of commerce?—A. Yes.

Q. Is he appointed by the president of the chamber of commerce?—A. I think the appointment is made through the committee. They have an executive committee there and other and different committees, and I think it is done in that way—through a committee.

Q. What have you to say as to the make-up of the chamber of commerce and the character of the men who compose it and its rules and by-laws?—A. It is made up of some of the best men in the business. Some are mill men, some are men that sell grain on samples and some on grade, and all kinds.

Q. What can you say as to their honesty and integrity in dealing with shippers?—A. Their rules are very strict.

Q. Upon what provocation can a man lose his seat in the chamber of commerce?—A. Anything derogatory or anything ungentlemanly in the way of business; violating the rules.

Q. If a man is a grain commission man, and is known to make false bills of lading or misrepresent goods shipped to him?—A. Yes; anything of that kind is subject to criticism, and generally an examination is had, and then it is taken before the whole board.

Q. You are acquainted with the other elevator companies, I presume. Do they expel members for unfair practices?—A. Yes.

Q. In other words, if there is an attempt to deceive shippers in regard to the grading of grain and the inspection of grain, that would be sufficient cause for expulsion from the chamber?—A. Yes. I might say in connection with the chamber of commerce that mill men and commission men—in fact, business men of whatever nature—if they want to become members, are admitted by applying and going through the form of balloting.

Q. (By Mr. FARQUHAR.) Is it an open chamber of commerce, where merchants as well as grain men and millers are initiated? Are the business men proper of the city members of it?—A. Some of them; yes.

Q. (By Senator KYLE.) And the membership of the elevator companies—the men who compose them are, I presume, members of the chamber of commerce, are they?—A. Yes. In order to do any business there they have to be.

Q. You were acquainted during your residence in Minneapolis and St. Paul with the other elevator companies?—A. Yes; to a large extent.

Q. You would have been aware of any combination as to the fixing of prices between these elevator companies had there been such a combination or trust?—
A. Well, I have been pretty close to them and never saw anything of it.

Q. Have you ever heard the accusation made by farmers of the Northwest that there is an elevator trust?—A. I have.

Q. What have you to say in regard to that?—A. I have never seen anything of it. I do not think there is any trust so far as the elevator men are concerned. You would not think there was when you see them go for each other and cut prices.

Q. You think there is a rivalry, then, in a certain sense, between the companies?—A. Yes. Although the card may fix upon a certain price, we break it occasionally.

Q. Wherein does the competition consist? I do not think that has been brought out as fully as it might be.—A. For instance, if we have men doing something or other and getting more than their share of the wheat, our instructions are to get our share of it.

Q. Is not that instruction frequently sent out?—A. It is done very often, and sometimes the market will be disturbed for a month or so, and we will pay a cent to 3 cents more than we are authorized to pay in Minneapolis.

Q. Do some elevator companies take great chances in regard to the grading of grain in order to get the grain?—A. There is no elevator company that can buy wheat in the country and keep its grade up and give inspection on the grain as it is bought.

Q. The purchaser can not keep it up with the grade at which he buys it? Explain that in detail.—A. In other words, we can not buy as close in the country as we have to sell. When we go to ship the grain we do not get the grade we buy it for.

Q. Is that quite the universal custom?—A. It has been so for several years, but not always to the same extent. Sometimes there is a great deal of wheat the character of which it is pretty hard to decide. It is difficult to say whether it shall go as No. 1 or No. 2, and they will take the chances on No. 2, when in Minneapolis the wheat will not grade.

Q. Sometimes you will take the chances and grade No. 3 wheat as No. 2?—A. Yes; and sometimes they grade No. 2 as No. 1.

Q. (By Mr. FARQUHAR.) You do that always with this fact in view—that the final grading is the Minneapolis grade?—A. We do not always pay attention to the Minneapolis grade. With the facilities in Minneapolis, with terminal elevators, they can fix it a little better when they get it down there. You see, we buy the wheat in the dirt; it comes right from the machine, and there is a dockage of whatever in the judgment of the different buyers is proper, and the dirt is docked out. Some buyers, for the sake of getting the wheat, will not charge as much dockage as there is, really, in it; and there are different ways in which to create this feeling between buyers and disturb matters.

Q. (By Senator KYLE.) The criticism is often made that there is a combination between the railroad companies and the elevator companies, and that there is favoritism shown to the elevator companies as against the individual shippers and the farmers' elevators. Do you know anything about that?—A. No; I do not know anything about that at all. When the wheat is coming in lively the railroad companies are anxious to keep their rolling stock out of the way and not get a blockade; and sometimes an elevator that can load the cars right up quick and start it off may get something of that kind, but not as a rule.

Q. (By Mr. FARQUHAR.) That is a matter of accommodation by the railroad company?—A. You take a farmer that wants to load his own wheat, for instance, and wants to be 2 days about it when you can load a car in 20 minutes, that circumstance, of course, would come in.

Q. (By Senator KYLE.) Have the railroad companies, in your opinion, accorded the usual favors to farmers who want to ship their own wheat?—A. The "elevator" men have kicked about the way the railroad companies use them. There is "kicking" both ways, as far as that is concerned.

Q. What would you say as to the farmers coming out better by shipping the grain themselves?—A. That depends on the quality of the wheat; the farmer that ships his wheat when out of condition gets left. There is wheat going into Minneapolis that the elevator men do not want to buy, but we are forced to buy it. It takes a good deal of work and time to get it so that it will lie still in the bin—keep from heating. We have to handle it over a good many times.

Q. Have not the elevator systems means for drying wheat?—A. Some have. Q. They are fixed so they can buy the damp wheat?—A. Yes; they can buy it, but they would rather somebody else should buy it; they let the other fellow take it as a rule. There is a good deal of wheat in Minneapolis that is not sold on grade, but by sample. There is wheat just off No. 1, but when the grade is established there they turn it over and that is the end of it. They have sold the wheat to some milling concern, perhaps, and it goes directly into the mill if the mill has capacity, and if not it is put into the elevator. That wheat is sold by sample, and

sometimes it will bring within a fraction as much as though it passed the grade. It is so with the lower grades of wheat. There are elevators in Minneapolis that do nothing else but buy this low grade of wheat and handle it with dryers. The regular elevator companies turn it over to them; sell it to them rather than put it in their own houses.

Q. The farmer is safe only when he knows that his wheat will pass inspection?—

A. Yes; when it is good No. 2 or No. 1 and perfectly dry. In the early days of shipping we used to ship about 500 bushels in a car. Twenty-four thousand pounds was about the weight; now we put in 800 and 900 bushels of wheat. A cent or 2 cents difference each on a thousand bushels of wheat, you see what that means, and the farmer gets that in case he ships it. That would be \$10 a car. The money in the elevator business is not all made in buying wheat in the country.

Q. Where, in your judgment, is it made, then?—A. For instance, May wheat is 3 cents above the present market. The elevator men buy the wheat and sell it for May and get what we call the clearing charges. They have the house room, storage, and can carry it, and that difference between the price of cash wheat and future wheat makes a little profit over and above the interest on the money.

Q. (By Mr. PHILLIPS.) When they sell wheat in advance they sell subject to elevator charges, do they?—A. They will turn around and sell so much May wheat. It is not the actual wheat. They sell that May wheat and when the time comes around they sell the cash wheat to the other parties.

Q. They have to pay the carrying charge on it just the same as if it was the same wheat?—A. Oh, if it is their own house, I do not know.

Q. (By Senator KYLE.) How does the present method of marketing grain compare with the old custom of 25 or 30 or 40 years ago?—A. It is not changed particularly.

Q. Except that now the elevator companies have their agents in the field?—A. When I was first in the wheat business Milwaukee was our market; we shipped to the commission houses in Milwaukee. Afterwards, for wheat from the South and Southwest, Chicago was the market and Minneapolis was our market. Of late years Minneapolis has become our market, whereas years ago it went to Milwaukee, that being the principal market for the West.

Q. Was it not a custom 25 or 30 years ago for country buyers to buy up grain and ship it on their own responsibility to elevator companies?—A. A good many of them did. They would put up cheap houses along the track, and the merchants themselves would buy the wheat and ship it. The country people did not do very much of that business.

Q. I would like to know something about the system of handling grain then.—A. It was done by sample. Now they take about 57 pounds No. 1, 58 pounds No. 1, and so on down. In the country we buy by sample. A man that is handling wheat all the time can pick it up in his hands and tell, and it is not necessary to make any test whatever.

Q. But complaint is sometimes made under the modern system.—A. Yes; they will test the grain for any farmer that wants his grain tested; but it is very seldom a farmer will ask to have the wheat tested.

Q. I have heard of some cases where parties would have wheat graded No. 3, for instance, and would haul it to another town and have it tested, and it would go a grade higher, and they would get considerably more for it.—A. I think they did not do it by test, but by judgment.

Q. Is it a matter of judgment on the part of the agent of the elevator company?—

A. Yes. As I say, I am not in the elevator business at present, but I have been when the elevator companies have come into contact with mills that have elevators of their own alongside those of the grain men. The Watertown mill and others have elevators right alongside the elevator men buying for the Minneapolis market. They are country millers who did not get enough at their own station, where the mill is.

Q. What about the mixing of grain at terminal points? Do elevator companies get the advantage of the farmer in this way?—A. They help their grain by handling it.

Q. The charge is sometimes made that they take 1 car of No. 1 and mix it with 3 or 4 cars of No. 3 and make good No. 2 wheat. Do you know of that being done?—A. They do to some extent, but they do not do a great deal of it. They have to clean the shrunken wheat out of it to make it.

Q. It is all cleaned?—A. Oh, certainly; it all has to be cleaned, and if there is shrunken wheat in it, they have to take out the shrunken wheat and dirt.

Q. (By Mr. FARQUHAR.) Is the mixing done in the case of home-milling wheat or export wheat?—A. The wheat which the mills will take without mixing they will sell to them, if they will take it in that way. It is mainly export wheat they mix.

Q. (By Senator KYLE.) What can you say about the possibility of shipping wheat direct to Europe?—A. There have been some schemers who thought they could ship the original wheat and keep it separate, car for car, until they got to Liverpool; but it is impossible.

Q. Why is it impossible?—A. On account of the convenience in carrying it.

Q. (By Mr. PHILLIPS.) It is necessary to mix it on shipboard?—A. It is mixed before it gets on the ship. It is generally shipped—the whole cargo—in bulk, and is mixed before it starts.

Q. Is the price of your wheat fixed at Minneapolis now?—A. Yes.

Q. And not at Liverpool?—A. Not at Liverpool.

Q. You do not believe, therefore, that Liverpool fixes the price of wheat for the United States?—A. I am inclined to think it does to a large extent.

Q. (By Senator KYLE.) In other words, the surplus crop fixes the price of the wheat at home?—A. Yes.

Q. (By Mr. PHILLIPS.) You mean to say the small surplus will fix the price of all the wheat in this country? Would the small amount that is shipped abroad, compared with what is consumed at home, fix the price of all our home wheat, do you think?—A. I think that Liverpool is a large factor in the price of wheat in the United States. You take the Argentine Republic and India, and those other wheat-producing countries, and whenever they begin to throw their wheat into Liverpool we have to come into contact with them.

Q. If you were to get, say, 5 or 10 cents a bushel reduction in freight rates from your home market to New York, would you not get the advantage of that when the wheat was sold in Europe?—A. As far as we people are concerned, we rely entirely upon Minneapolis. Now, if Liverpool advances you will find it will affect Chicago and either the Southern or Southwestern cities, and that affects Minneapolis to a certain extent; but at the same time Minneapolis will be above Chicago simply upon the local trade and local demand.

Q. (By Mr. PHILLIPS.) But you believe that a reduction in the freight rates would benefit you in the price at Liverpool, do you not?—A. I think so.

Q. As a reduction does in all commodities shipped across the ocean?—A. Yes.

Q. The price of freight must necessarily be taken from the price of the commodities sold in Liverpool?—A. Yes.

Q. (By Senator KYLE.) At what price can a farmer afford to raise wheat in the Northwest, on an average?—A. He ought not to get less than half a dollar.

Q. You think he can raise wheat at a profit selling at 50 cents a bushel?—A. I think so.

Q. (By Mr. FARQUHAR.) Does not that depend on the number of bushels of wheat to the acre?—A. Of course it does.

Q. (By Senator KYLE.) Fifty cents an average right through?—A. Yes. They would not be getting rich at that price, but they can live out of it.

Q. (By Mr. PHILLIPS.) If that was the average price for the last 10 years, it would make a living rate for the farmer, would it?—A. Yes; it would give him a small margin.

Q. (By Senator KYLE.) Since your retirement from the elevator business you have observed the condition of the farmers throughout our Northwestern country, have you not?—A. Yes; and have been advised to go into diversified farming.

Q. Tell us about what some of your impressions of the conditions of the farming classes are, compared with their former conditions—whether they are better than formerly, and if so, why.—A. I think the farmers are feeling better and getting better and doing better in every way. I think they are feeling better and are in better shape financially than they were.

Q. Why is this?—A. They farm a little differently, a little better, and are diversifying, going into farming in different directions, mixing it up a little more, raising stock of different kinds.

Q. (By Mr. A. L. HARRIS.) Have you any milling in transit rates from your place?—A. We have had, but being out of it at the present time, I could not say.

Q. Minneapolis is really your point of consumption?—A. Yes.

Q. Have freight rates fallen in the last 10 years?—A. Yes; and every time the railroad reduces the rate the reduction goes into the producers' hands; that is, prices are better. The lower the rate, the more the farmer gets for his products.

Q. (By Mr. FARQUHAR.) What terminal points do the buyers that buy wheat in your section reach?—A. Minneapolis, principally. We ship sometimes to Duluth, outside of our terminal. We ship to Minneapolis, and then without unloading forward right on to Duluth.

Q. Have you any Milwaukee and Chicago buyers up there?—A. No.

Q. Then mainly your price is set by Minneapolis people, is it?—A. Yes.

Q. In the case of a small visible supply of grain up in that section, is there any competition at all that comes from Duluth buyers and others that want to make

foreign cargoes:—A. No. If the Duluth market is better than the Minneapolis market, as far as our line is concerned, the wheat goes to Minneapolis, and some cars follow right on to Duluth. It saves their coming down here; the head of the firms at Minneapolis will order it up to Duluth; they can make a deal with the Duluth people any time.

Q. So your farmers do not get any advantage in the competition of terminal points competing for this grain?—A. Well, we have the Great Northern road, local buyers on Mr. Hill's road, that buy for the Duluth market on that line. They very seldom send to Minneapolis, but send to Duluth.

Q. (By Mr. LITCHMAN.) Would you feel the benefit of that competition unless it remained for an appreciable length of time—that is, with the farmers?—A. No; that varies. If they want the wheat for some purpose in Duluth, and raise prices, we let them have it.

Q. But it goes through Minneapolis, and not direct from the farmer, as a rule?—A. No; it doesn't go direct from the farms unless the farmer will ship it up to Duluth, which he can do if he has facilities.

Q. Suppose a farmer is not financially able to hold on to his grain; has he equal facilities for getting that grain to market?—A. Yes; he can load it right into the car. He has not the facilities, because he has to haul it and handle it by hand. He can not do it by machinery, as his elevator can.

Q. You think there are no obstacles placed in the way of the farmer getting his grain to market by reason of his being an independent operator to that extent?—A. No.

Q. In that connection will you state to the commission something about the custom of sorting wheat in the elevators, and the extent of the practice?—A. Well, a man puts in his wheat, and they give him a storage ticket of the cost, or he pays him the cash.

Q. Can you tell something about the storage charges of the elevators?—A. There is no charge for the first 15 days. Some buyers sometimes will forget the day it is put in and let it run a little longer than that, and he will get the storage maybe 30 days for nothing.

Q. Is there an advantage to one person given by that lapse of memory?—A. I presume so; sometimes he gets into trouble.

Q. (By Mr. A. L. HARRIS.) When is the better time of the year to sell wheat?—A. My opinion is that early sales are the best; right from the machine to the market. There are some farmers who lay wheat in, and if they want to carry wheat they will turn around and put in 5,000 bushels of wheat. I myself decline to carry it ahead. Those who pursue that course then have the money to use; there is no shrinkage, no loss.

Q. You think the good business farmer will sell his grain when it is ready for market?—A. Yes. There is no grain man on earth that can tell the future of grain, as far as my experience goes.

Q. (By Senator KYLE.) He is not compelled to sell in the fall?—A. No.

Q. He can store it? Tell about the storage charges.—A. As I say, it is stored 15 days free, but after that I think the storage charge accumulates. It runs up until it accumulates to 4 cents a bushel, and there it stops. That was the old rule.

Q. That is about one-half a cent a month?—A. Somewhere about half a cent a month.

(By Mr. A. L. HARRIS.) Suppose the farmer has his own granary which is the best time to sell?—A. I have tried it both ways, and I think I would sell right from the machine if I could.

Q. What effect does the dealing in futures at option have upon the present prices, the spot price of wheat?—A. I do not think it has very much to do with it. It is guesswork at the best. You can think wheat is going up, and turn around and buy it, and you will make a mistake; but I do not think the practice governs the cash price.

Q. Doesn't it affect the spot-cash price?—A. The elevators, as I said, get a lot of wheat on hand, and if the future wheat is high, they, not wanting to carry that wheat themselves, turn around and sell, to be delivered in January, February, March, down into May, and that gives them a little profit; but as a rule the elevators themselves do not carry any wheat for speculation. It is simply to protect them on their purchases.

Q. What effect does what is called "wind" wheat have on the market?—A. I do not think it has any effect on it.

Q. (By Mr. LITCHMAN.) Did not the Leiter-Armour deal have some effect on the price of wheat?—A. It did, but not to the extent that it might have had, from the fact that our people had been grading so loosely and paying the farmer so liberally on his wheat that we could not ship to Chicago and get a grade on our wheat.

Q. There was some advantage, however, was there not, to the farmer?—A. Yes;

they came up near the margin and paid just what the wheat is worth, without any profit, of course; but they do not propose to pay out any more than that. But, as I tell you, the Western people were hampered on that Leiter deal, because we could not get the grain. It was tried, and the inspection was so rigid in Chicago we dropped down, and we could not get in on the deal that helped Mr. Leiter out.

Q. (By Mr. A. L. HARRIS.) Have your local elevator men money of their own to move your wheat crop?—A. Yes, to a large extent; we have to borrow some.

Q. Do they realize quickly on it?—A. Oh, yes. We get money very reasonably. We do not have to pay but the current rates, generally. Wheat receipts are the best security with money loaners and capitalists. At one time there was any amount of Montreal money in Minneapolis for the wheat business.

Q. (By Mr. FARQUHAR.) How is it now?—A. There is some there.

Q. How is it in Duluth?—A. I presume it is the same way.

Q. What was the reason the banks of Montreal went in there—because the American banks did not have the money?—A. I suppose they had more money than they could handle at home.

Q. But was it not practically an advantage to the farmers to get that cheap money?—A. I do not know—very indirectly.

Q. In other words, when the Canadian banks came in and took up that Western grain and moved it, was it not an advantage to the farmers?—A. Yes; it enabled the elevators, with the vast amount of money that there was at their disposal, to act, and it helped to continue business. Nobody was out of money, but all always had money to pay for everything, while if money was scarce and hard to get, they might have had to knock prices down and to have done something to stop receipts.

Q. (By Mr. C. J. HARRIS.) At a cheap rate of interest the farmer can either sell his wheat in September or he has got his storage receipt and can hold out to June?—A. Oh, yes; he could get rid of his wheat some way, or get either storage certificates or something of that kind; of course he is not hampered altogether.

Q. He would not in that condition of affairs be compelled to sell out his wheat for immediate necessities?—A. No; because he could store the wheat and take receipts and give them to the bank. Our bank is very glad to get these local wheat checks, and they put them in and borrow money to carry the wheat themselves.

(Testimony closed.)

WASHINGTON, D. C., January 17, 1901.

TESTIMONY OF MR. S. H. JUMPER,

Postmaster at Aberdeen, S. Dak.

The commission met at 10.35 a. m., Chairman Kyle presiding. At that time Mr. S. H. Jumper, of Aberdeen, S. Dak., was introduced as a witness and, being duly sworn, testified as follows:

Q. (By Senator KYLE.) Please state your full name and address and occupation?—A. S. H. Jumper, Aberdeen, S. Dak. My present occupation is postmaster and farmer.

I have prepared two tables, one of them relating to the prices that have been paid to farmers for their wheat for the past 8 years, and I have arranged the prices, averaging them monthly. This table might be used for North Dakota, and can be used for Minnesota by raising the figures for North Dakota 2 cents and for Minnesota about 5 cents, because the average price in North Dakota is about 2 cents higher than the average price in South Dakota, on account of being a little nearer the Minneapolis market and still nearer the Duluth market, which is usually about 1 or 2 cents higher than the Minneapolis market.

Q. These are the rates upon wheat at the initial point?—A. At the initial point; yes. The price in Minnesota paid to the farmers will average about 5 cents higher than that paid in South Dakota, according to this table, because Minnesota lies very much nearer the markets and freight is very much less. Before presenting the table, I might tell you something about how the price is made in the three States; the card price I speak of, now, that is paid at the different stations. After the schedule between the different stations is once adjusted—and they are adjusted according to the difference in freight—the price at one station will be lower or higher than at another station, according as the freight is higher or lower. After that the prices are made by an advance or a reduction, never less than 1 cent, although the market at the terminal points might advance or be reduced.

one-half a cent. As I understand it, there is a committee of three at the chamber of commerce in Minneapolis one who represents the chamber of commerce—I think he is one who has no direct dealings with buying of wheat; another one is appointed from the elevator men, and is particularly interested in the buying of wheat, and the third is appointed from the commission men, and, as I understand it, the commission men are rivals of the elevator men. A little after the adjournment of the Board of trade, or whenever trading is over, at 1.15 p. m., these three men get together at once in a little office they have in the chamber of commerce, where they have a clerk, and agree whether the price shall be advanced or reduced throughout Minnesota and the two Dakotas. If the price has advanced on the market that day 1 cent, their clerk immediately wires this advance into the country. The different lines of elevator men do not wire this to their own men; this clerk wires it. Now, I will illustrate how this is done by telling you how it is wired to our district. It is wired to Aberdeen, and Aberdeen is the center of a district about 200 miles east and west, and 125 miles north and south, taking in a large part of South Dakota and a small part of North Dakota; and this price then goes to this territory from Aberdeen, and is sent by a person there that they have employed at Aberdeen. I think that is an explanation of about the way the price is made.

Q. Do you know who the party is that represents the chamber of commerce?—A. No.

Q. Do you know whether he is a grain man or not?—A. I have understood he is not. Probably he is a speculator. There are a great many members of the chamber of commerce who do not have anything to do with the elevator lines and are not commission men.

Q. Is it a speculator in wind wheat that represents the chamber?—A. Yes.

Q. The question arises how much the wind wheat has to do in regulating the card price?—A. The card price is always fixed by the price on track at the close of the market—by the wheat on track.

Q. (By Mr. LITCHMAN.) Is that fixed by the price at which the wheat sells during the day?—A. Yes.

Q. Then, if the wind wheat should carry up the price during the day, the wheat on track would get the benefit of it?—A. Yes; wind wheat has much to do with the actual price of the wheat on track and the price paid to the farmers.

Q. If, during the day, the speculation should carry up the price of wind wheat on the market, what would be the effect on track wheat?—A. I think wheat on track would advance just the same.

Q. You think it would be advanced?—A. I do think it is advanced by the price of wind wheat.

Q. (By Mr. A. L. HARRIS.) The wind wheat is future wheat, is it not?—A. Always.

Q. (By Mr. FARQUHAR.) Is the man that represents the chamber of commerce appointed or elected?—A. I guess he is appointed by the president of the chamber of commerce. I do not think this committee have so very much power, because the grain men wish them to keep the price at just about such a margin between the selling price and the price they pay; that is, they endeavor to have the price paid to the farmers about 3 cents plus the freight less than the cash price on track in Minneapolis; and I have noticed for 10 years that invariably when there is an advance of a cent, and sometimes when there is an advance of half a cent, if the margin is a little too large, they will advance our market a full cent. We will say, if there was a reduction of a half cent and the margin was a little too narrow the day before, they will reduce it a cent.

Q. (By Senator KYLE.) What has been your observation in regard to these margins for a number of years? Are they operating on a smaller margin than formerly?—A. No; the margin will vary from year to year as the grade of the wheat is better. This year the margin is larger than usual, because the wheat is very poor, and the No. 2 wheat will mostly grade No. 3 when it gets into the market this year.

Q. (By Mr. LITCHMAN.) What is that due to?—A. Due to getting wet after being harvested. It was a wet fall, and the wheat was badly damaged.

Q. (By Senator KYLE.) Is it true that the wheat was spoiled and dumped into the elevators, so that the elevator men do not want to take the chance?—A. No; if the crop is first-class, good wheat, the margin is sometimes a good deal less.

Q. (By Mr. LITCHMAN.) What is the amount of that margin?—A. It will average about 3 cents, and it is the endeavor of the elevator men to keep the margin at about 3 cents.

I have prepared this table from records that I have in my office at Aberdeen, commencing with the first of August, 1893, and running down by years. I have commenced with the first of August because that is the commencement of our

crop season. The new wheat commences to move in August, and if you average it through that year you have the average of the price of that crop. It runs into part of two years.

The price paid August, 1893, was 39 cents. September, 1893, the average was 46 cents. October, 1893, 44 cents. November, 1893, 43 cents. December, 1893, 44 cents.

January, 1894, 44 cents. February, 1894, 42 cents. March, 1894, 44 cents. April, 1894, 47 cents. May, 1894, 45 cents. June, 1894, 44 cents. July, 1894, 42 cents. I would like right now to add a little something here to my remarks I made before. I have prepared this table on the price of No. 2 Northern, as our crop will average about No. 2, taking the No. 1 and the No. 3 and the rejected and bringing them together. It will average about No. 2. The average for the year was 43½ cents. The average for 6 months, that is, from August to February 1, as nearly all the crop is sold by that time, is 43 cents. Commencing with August 1, 1894: August, 40 cents. September, 1894, 40 cents. October, 1894, 41 cents. November, 1894, 44 cents. December, 1894, 43 cents.

1895.—January, 1895, 43 cents. February, 1895, 42 cents. March, 1895, 44 cents. April, 1895, 44 cents. May, 1895, 50 cents. June, 1895, 61 cents. July, 1895, 56 cents. The total average for the year is 46 cents and for the first 6 months, 42 cents. The principal part of the crop, of course, is sold in the first 6 months.

1895-96.—August, 1895, 46 cents. September, 1895, 38 cents. October, 1895, 40 cents. November, 1895, 38 cents. December, 1895, 39 cents. January, 1896, 40 cents. February, 1896, 46 cents. March, 1896, 45 cents. April, 1896, 46 cents. May, 1896, 44 cents. June, 1896, 45 cents. July, 1896, 40 cents; making the average for the year 42½ cents and for the first 6 months 40 cents.

1896-97.—August, 1896, 39 cents. September, 1896, 43 cents. October, 1896, 51 cents. November, 1896, 62 cents. December, 1896, 63 cents. January, 1897, 61 cents. February, 1897, 57 cents. March, 1897, 56 cents. April, 1897, 55 cents. May, 1897, 57 cents. June, 1897, 55 cents. July, 1897, 59 cents; making an average for the year of 55 cents and for the first 6 months of 53 cents.

1897-98.—August, 1897, 73 cents. September, 1897, 72 cents. October, 1897, 73 cents. November, 1897, 72 cents. December, 1897, 76 cents. January, 1898, 76 cents. February, 1898, 81 cents. March, 1898, 79 cents. April, 1898, 88 cents. May, 1898, \$1.21. June, 1898, 86 cents. July, 1898, 70 cents; making the average for the year 80½ cents and for the first 6 months 74 cents.

1898-99.—August, 1898, 55 cents. September, 1898, 47 cents. October, 1898, 48 cents. November, 1898, 48 cents. December, 1898, 49 cents. January, 1899, 55 cents. February, 1899, 55 cents. March, 1899, 53 cents. April, 1899, 55 cents. May, 1899, 56 cents. June, 1899, 58 cents. July, 1899, 54 cents. Average for the year 53 cents and for the first 6 months 50 cents.

1899-1900.—August, 1899, 54 cents. September, 1899, 53 cents. October, 1899, 53 cents. November, 1899, 49 cents. December, 1899, 48 cents. January, 1900, 49 cents. February, 1900, 50 cents. March, 1900, 50 cents. April, 1900, 51 cents. May, 1900, 51 cents. June, 1900, 60 cents. July, 1900, 62 cents; making the average for the year 52½ cents and for the first 6 months 51 cents.

1900.—August, 1900, 59 cents. September, 1900, 52 cents. October, 1900, 59 cents. November, 1900, 57 cents. December, 1900, 53 cents; making an average for the 5 months of 58 cents.

Q. (By Senator KYLE.) Now read the yearly averages right through from 1893.—A. The crop of 1893 was sold for 43½ cents; of 1894, for 46 cents; of 1895, for 42½ cents; of 1896, for 55 cents; of 1897, for 80½ cents; of 1898, for 53 cents; of 1899, for 52½ cents, and of 1900, for 58 cents.

Q. (By Mr. LITCHMAN.) How do those prices compare with the futures or speculative prices on the wheat exchange or chamber of commerce?—A. The price of wheat on track in Minneapolis is usually from 1 to 3 cents less than the distant future. At the present time the price of wheat on the track is 1½ cents less than the May price in Minneapolis. Sometimes, when there is a good market, what you call a scarcity of wheat, the cash price in Minneapolis will be higher at this time of the year than the May price.

Q. The reason why I asked the question was to see whether the speculative price in any way benefited the farmer by indirectly raising the price paid for track wheat. A. The cash price on track keeps about the same distance from the futures during the season.

Q. (By Senator KYLE.) Have you material bearing upon the cost of production of this wheat?—A. Yes. The second table that I have prepared, and it is from actual records that I have in my office, relates to the cost per acre to raise wheat and market the same; and I wish to say that these prices will vary quite a little and they will be quite a little less than the prices given by Mr. Moran, of Minnesota, as we base our prices on wheat headed and put in the stack, while he based

his prices on wheat cut by the binder, then shocked, and then stacked, and thrashed from the stack, which is quite a little more expensive, possibly \$1.25 an acre more. Then in his average he has figured interest on the value of the farm, which I have not. I have made mine up commencing with the preparing of the ground and ending with the wheat at the elevator, figuring nothing for interest on the value of the property.

Q. (By Senator KYLE) Allowing the ordinary cost of help?—A. Ordinary good wages: such wages as I actually paid during those years and the average that was paid. In 1898 the average cost of wheat production was \$3.45 per acre. The average yield per acre was 8.5 bushels. The amount per bushel the crop sold for—that is, the average, according to the table—was 41 cents. The value of the wheat per acre was, therefore, \$3.66. The profit was 21 cents that year per acre. The total production in bushels was 21,530,000. The value in dollars was \$8,823,600. The margin taken by elevators buying wheat, with Minneapolis or Duluth as the market, was 3.2 cents. That is the margin less the freight.

1894.—The cost of production was \$1.25. The average yield per acre was 6.6 bushels. The amount per bushel the crop sold for was 43 cents. The value of the wheat per acre was \$2.76. A loss of 49 cents. The total production that year was 15,930,000 bushels. Value in dollars, \$6,690,600. The margin taken by the elevators was 3.4 cents. The crop was very poor that year, and that accounts for the large margin that the elevators took.

1895.—Cost per acre, \$3.80. Average yield per acre, 12 bushels. Sold for 40 cents. Value of wheat per acre, \$4.80. Profit of \$1 per acre. Total production in bushels, 29,260,000. Value in dollars, \$11,704,000. Margin taken by elevators, 3 cents.

1896.—Cost per acre, \$3.90. Average yield per acre, 11.2 bushels. Price the wheat sold for, 53 cents. Value of wheat per acre, \$5.93. Profit of \$2.03. The crop was 27,580,000 bushels. Value in dollars, \$14,617,000. Margin taken by the elevators, 3.3 cents. That was a very good crop. The amount taken by the elevators will average more than the year before.

1897.—Cost per acre, \$3.95. Average yield per acre, 8 bushels. Sold for 74 cents. Value of the wheat per acre, \$5.92. A profit of \$1.97. Total production, 21,440,000 bushels. Value in dollars, \$15,865,000. Margin taken by elevators, 3 cents.

1898.—Cost per acre, \$4.25. Average yield per acre, 12.4 bushels. Amount per bushel sold for, 50 cents. Value per acre, \$6.20. Profit of \$1.95. Total production in bushels, 42,040,000. Value in dollars, \$21,020,000. Margin taken by elevators, 3.1 cents.

1899.—Cost per acre, \$3.90. Average yield per acre, 10.7 bushels. Sold for 51 cents. Value per acre, \$5.45. Profit, \$1.45. Total production, 37,720,000. Value in dollars, \$19,241,000. Three cents margin taken by the elevators.

1900.—Cost per acre, \$3.70. Average yield per acre, 6.9 bushels. Sold for 58 cents. Value per acre, \$4. Profit, 30 cents. Total production, 20,140,000 bushels. Value in dollars, \$11,681,000. Margin taken by elevators, 3.4 cents.

The average cost of production was \$3.77. Average yield per acre, 9.5 bushels. Average amount per bushel crop sold for, 52 cents. Average value of wheat per acre, \$4.84. Average profit for eight years, \$1.05. Average production in bushels, 26,830,000.

Q. (By Senator KYLE.) On 160 acres what is the average amount raised by the farmers through our section of the country?—A. I should think it would be 1,200 or 1,250 bushels through our section.

Q. About \$275 clear profit on the wheat, allowing good wages for hands and teams?—A. Yes; these are figured on good wages, what you would have to pay in our section. The principal difference in these amounts is in the yield per acre. Of course, 12 bushels would cost more for threshing, but, on the average, the cost of putting it in and harvesting it is about the same. The prices are a little more the last 2 or 3 years, because wages were higher.

Q. You have allowed nothing for the wear and tear for machinery?—A. No; I have allowed 16 cents for taxes. That is the only thing I allowed, except just what you have to pay out.

Q. I would like to know something about the condition of the farmer who actually grows his wheat. This represents in the annual wheat crop alone a profit of \$250 a year clear of all expenses, not allowing anything for wear and tear of machinery, loss of horseflesh, and interest upon his land, or anything of that kind. Have you made allowance for the help rendered him by his family?—A. Oh, no. It is giving good wages for working the farm and putting in the crop; just what you would pay if you were hiring it done.

Q. Exactly. What besides the wheat crop does the farmer raise?—A. He raises oats and barley for his own use, and corn to sell. In the southern part of the State

they raise a great deal of corn to sell, and they have poultry and cows and raise some few cattle; but I am speaking now of the little farmer who lives on a small wheat farm.

Q. (By Mr. LITCHMAN.) Do you notice any tendency to a diversification of crops?—A. Yes; there has been much for the last ten years.

Q. Growing more and more so?—A. Yes; I do not know but what they are growing just as much wheat, but they are getting more cattle and growing more corn.

Q. (By Senator KYLE.) Is it your observation that the more wheat a man grows the poorer he gets, as is testified by two or three witnesses?—A. No, no. I can cite many farmers in Brown County, who have attended strictly to their farm and are what we call thrifty men, who have added to their farms more land, and have done it by raising wheat; but these men that I speak of have grown a great deal more wheat than the average. They are the ones who do good farming and raise large crops, while the average is brought down by the shiftless farmer.

Q. In other words, there are a great many farmers throughout your section who almost every year produce 20 bushels to the acre?—A. Yes; or at least this average.

Q. And some of them get as high as even 25 or 35 bushels?—A. Yes.

Q. What do you mean by shiftless farming?—A. The shiftless farmer is one who will put in his crop on the stubble, without even pulverizing it, and not plowing it once in 5 or 6 years.

Q. Simply dragging it in?—A. Dragging it in or scratching it in on the old stubble. Then the field will grow up partly to weeds, and in the fall he will perhaps harvest half of the acreage, and perhaps not any of it. That kind of farming is what cuts down the average.

Q. What percentage of the farming in the Dakotas is carried on in that manner?—A. Ten years ago 20 or 30 per cent, but those farmers have gone now.

Q. (By Mr. LITCHMAN.) The land has passed into the hands of the more thrifty class?—A. Yes; and there is less of it every year. In fact, those same persons are farming better every year; they have more experience.

Q. (By Senator KYLE.) That kind of farming still has a very material effect in depreciating the average?—A. Yes; and another thing that has a great deal to do with reducing the average is that a great deal of the land is owned by mortgage companies, and this is rented on shares, and the man who puts in a crop on another man's land never does it half as well as on his own land.

Q. (By Mr. LITCHMAN.) You say "owned by mortgage companies." How does the land get into their possession?—A. By foreclosure of mortgages.

Q. Do you know of instances where the original farmers have become tenant farmers by that process?—A. Many of them.

Q. (By Mr. FARQUHAR.) Are these native Americans—these shiftless and thriftless farmers?—A. As many Americans as foreigners.

Q. Were they raised as farmers?—A. No; they are men who have come in from other States and taken up the farm land; some of them never were farmers.

Q. (By Senator KYLE.) Used to be designated by the term "stiff-hat" farmers?—A. Yes; or "sidewalk" farmers.

Q. (By Mr. LITCHMAN.) How large a proportion of this land has gone into the hands of mortgage companies?—A. I should think a third of the land in our section of the country.

Q. Will that estimate apply generally to South Dakota, or only to your immediate section?—A. It will apply to the north half of South Dakota.

Q. Is one-sixth of the land of South Dakota owned by mortgage companies?—A. Yes.

Q. (By Senator KYLE.) You might go a little more into detail, and state how a man settling first on his claim mortgaged it and then abandoned it.—A. I will illustrate by saying that a good many farmers who had filed on a quarter section of land and then possibly had taken up a preemption, and of course got the title to this from the Government, undertook to extend their farms and purchased other lands by giving a mortgage on all they had, and during the time of the droughts and the low prices of wheat they had to lose some of their farms and so let one or two of them go on the mortgage. A good many of them still rent these farms.

Q. (By Mr. LITCHMAN.) Now, is there any opportunity for a person to purchase from these mortgage companies?—A. Yes; they are all on the market. They are all listed with real estate men in Aberdeen and other towns and for sale at reasonable prices, and are being purchased sometimes, and quite often, by those who lost them.

Q. Is there any particular section of the country at large represented by these mortgage companies?—A. I think they are largely in New England, New York, and New Jersey.

Q. Then there is no disposition on the part of those companies to hold these lands?—A. No; they are all for sale.

Q. (By Senator KYLE.) Is it not true, also, that a great many settlers come in and prove up on land, make a mortgage to help prove up, and then desert the country?—A. Yes; they get as large a mortgage as possible and immediately desert and leave the land.

Q. (By Mr. FARQUHAR.) Did not a great many preempt and prove up so as to make a mortgage and get as much as they could out of the preemption?—A. Yes.

Q. What is the proportion, should you say?—A. I do not think I could guess.

Q. Was not the practice quite universal a few years ago?—A. It was, from 1883 to 1886, the time of the early settling of that part of the country. Many young men and many young ladies, not of course under age, came there and lived the 6 months, or pretended to live on the claims, and got mortgages on them, and left and never came back. They never intended to live on them or own them.

Q. (By Mr. LITCHMAN.) Did the Lombard Investment Company have any investments in your country?—A. The Lombard Company had millions there in the eighties.

Q. (By Senator KYLE.) Is it not also a fact that in the earlier days the farmers did not know how to handle their soil and therefore frequently made a failure?—A. Yes; they have learned by experience and understand the soil a good deal better.

Q. (By Mr. FARQUHAR.) Is there an advance in the condition of the farmer, an enlargement of his property, and increased satisfaction with farming?—A. The condition of the farmer has advanced every year for 4 or 5 or, I might say, 6 years, and is advancing now. The condition of the farmer is very good.

Q. (By Senator KYLE.) Is it not true that 10 years ago it was quite the custom for the farmer to put all his eggs into one basket, so to speak?—A. Yes.

Q. And devote all his time simply to grain raising?—A. Yes; and, I might say, 5 or 6 years ago many farmers packed up bag and baggage, as you might say, and went into the Province of Winnipeg and the northwestern Canadian possessions; but I think nearly all of them have come back again; they are satisfied with the country, and perfectly satisfied to remain where they are.

Q. (By Mr. LITCHMAN.) What do you say as to the grain-inspection laws of your State?—A. We have no inspection laws in South Dakota. The grain is inspected according to the laws of Minnesota, and that State has an inspection board. The chief inspector is appointed by the governor.

Q. How do these laws protect the farmers?—A. Well, the grading of No. 1 wheat is according to its weight and the amount of hard wheat.

Q. Perhaps you might specify now about No. 2 and No. 3—the manner in which the grain is separated into those grades.—A. No. 1 must weigh 57 pounds to the bushel and contain a good portion of hard wheat in it. No. 2 must weigh 53 pounds—between 56 and 57 pounds. No. 3 must weigh 54 pounds. This is spring wheat. We have no winter wheat. Then the other grades are according to conditions.

Q. Who inspects the farmers' grain at the initial point?—A. The buyer.

Q. How long has this custom of inspection existed?—A. Since I have had any record of it; 10 or 12 years.

Q. The farmer is compelled to accept the grading made by that inspection?—A. You might say yes.

Q. What recourse has he got if he is dissatisfied?—A. He can go to the other elevators.

Q. Is there a combine among the elevators?—A. No.

Q. You say, "the other elevators;" what are the other elevators, please?—A. In Brown County we have operating 12, what you might call elevator companies, whose terminals and headquarters are in Minneapolis.

Q. Can you give the names of the leading ones?—A. Yes. They are the Empire Elevator Company, the George C. Bagley Elevator Company, the Crown Elevator Company, the J. F. Whalen Elevator Company, the Victoria Elevator Company, the G. W. Van Dusen Elevator Company, the Marfield Elevator Company, the Atlas Elevator Company, etc.

Q. Do these elevator companies operate throughout all this section of the country, so far as you are aware?—A. Yes.

Q. Do they substantially cover the whole of the northern part of South Dakota?—A. Yes.

Q. If these elevators have an understanding, and the price is fixed at one elevator, that price governs for the whole number, does it not?—A. Yes.

Q. In case the farmer ships his own grain, who grades at the terminal point?—A. The inspector at Minneapolis—the State inspector.

Q. And he is not in any way connected with the elevator people?—A. No; he is appointed by the governor.

Q. (By Senator KYLE.) Explain that point more in detail; tell how he inspects.—A. On the arrival of the wheat the agents of the inspector go along the train,

break the seal, and open the doors, and they have a long stick that has six or eight little tin boxes on it, or little holes in the stick and little tin covers, and they run this down into the grain clear to the bottom of the wheat, and then they turn a little knob and these little boxes in the stick fill. They then draw it up and open the little boxes, and by looking at them they can tell whether the shippers have put a lot of bad wheat at the bottom or in the middle. If the wheat looks all alike as it passes under their eye they throw it into a box or bag. Then they have a weight test, a little copper kettle, as it is called, and they put the wheat in that and weigh it, marking on the card if it is No. 1 or No. 2, and if it is dirty. Of course they can tell that with their eye. If it is very dirty they take a pound off for dirt; if not very dirty, half a pound.

Q. (By Mr. LITCHMAN.) You say the State inspector makes the grade at the terminal point in case of shipment by the farmer. If the farmer is not satisfied with that grade, what recourse has he?—A. His commission man can call for a reinspection. Then the inspectors go and perhaps take a little more pains with it. That is final.

Q. Are the grains ever mixed at the terminal points in order to raise the grade of the poorest quality?—A. I do not know personally, but I think that is a way the elevator men have of making their money, because from personal observation, and knowing the expenses of the elevators and of operating one, I do not see how they can make very much money in the actual buying of wheat at the initial points.

Q. Do you know if they are thus mixed at the initial point by the buyer?—A. Not very much; there is no chance of mixing at the initial point.

Q. Can you tell what latitude is given to the grader? Is it left to his own personal discretion?—A. No; I do not know anything about that.

Q. Does it not really come down to a matter of judgment on the part of the employee?—A. Entirely.

Q. Now, if he is desiring to please his employer, would he not rather side with him against the farmer?—A. Yes; I think he would.

Q. If the elevator employee desires to please the owners of the elevator, the grading would be apt to be in their favor rather than in favor of the original seller of the grain, would it not?—A. Yes, it would naturally seem so; but it is not true—it may be strange—but the buyers try to please the farmers, because they want to get the most of the wheat. It is invariably the case that they try to please the farmer, and I have known of buyers being discharged by the elevator company because they favored the farmer too much.

Q. Perhaps it may be proper there to ask whether these thrifty farmers, to whom you referred a while ago, acquire a reputation by reason of their thrift for raising better grain than the usual grain, or does that come out in the inspection as to the grade of the grain?—A. They get a better price at the initial station. No elevator company and no buyer is bound to these prices. They invariably pay a cent more and sometimes a cent and a half more for a good quality of wheat than they will perhaps pay to a man who has a poorer quality.

Q. You say you think there is no such thing as an elevator combine in your section?—A. I know there is not.

Q. Is there any consultation as to the fixing of the prices outside of this consultation or arrangement that you have referred to already at Minneapolis?—A. Only that the elevator people agree that they will buy on about a 3 cent margin.

Q. What railroad systems operate through that section of the country?—A. The Chicago, Milwaukee and St. Paul, the Chicago and Northwestern, the Great Northern, the Northern Pacific, and the "Soo" Line.

Q. Do these elevator companies operate over all these lines, or does each elevator company select a different line of transportation?—A. You might say the Empire, the Bagley, the Crown, the Whalen, and the Victoria all operate on the Milwaukee system, with the exception that the Bagley and the Empire operate on the Soo Road. The Van Dusen and the Marfield and the Atlas operate entirely on the Northwestern.

Q. Is there any farming-out of territory among these elevators, so far as you know?—A. No. On the Milwaukee system, at every station there are from 3 to 5 elevators owned by different companies.

Q. Are the farmers compelled to patronize one or the other of these elevator companies?—A. No; they can have a car and ship as they wish.

Q. Do they always get the same consideration from the railroad company that the elevator companies receive?—A. Yes. I do not think you can find a farmer in Brown County who for 5 or 8 years has complained that he could not get a car as promptly as the elevator could.

Q. Do all these companies pay the card price that is fixed at Minneapolis, to which you have already referred?—A. Sometimes they vary from it. I know that

at 5 important stations, one of them Aberdeen, during the whole of the last year, 2 cents above the card price for the entire crop was paid.

Q. Was that due to some special reason?—A. It was due to the fact that the quality of the wheat around those stations was very much better than that at other stations, and they all wanted it.

Q. The farmers have independent elevators in some cases?—A. At nearly every station in Brown County is an independent elevator or flat house owned and operated by independent buyers.

Q. So far as you know, you think there is no obstruction placed in the way of the successful operation and management of these independent elevators?—A. No.

Q. You said that this price card was sent from Minneapolis to some one person. Have you any objection to telling who that person is in your locality?—A. No; I am the person and have been for the last 10 years, and I furnish the prices to the independents and the mills and the line companies all alike. Nobody is prohibited from having the price furnished.

Q. When you have received that price, what is the process of distributing the information?—A. If the advice I get from Minneapolis is to distribute the price by wire, I immediately send by telegraph and telephone to the different stations or elevators. These messages are followed on the evening mails by the card. Of course the telegram is either to reduce or to advance the price 1 cent, or more, as the case may be.

Q. Are there any individual shippers or grain men independent of the elevators?—A. The arrangement is that I shall send this information to one of the buyers at each station, and that one is agreed upon by all the others at the station. That is done to save the expense of many telegrams. That buyer immediately notifies all the others.

Q. Outside of these are there any individual shippers of grain that are not owners or controllers of elevators?—A. Yes.

Q. What is their means of obtaining the card price?—A. They get it in just the same way. They can obtain it by paying their share of expense at that station.

Q. So far as you know, is there any disposition on the part of the elevator companies to "bear" the price at certain seasons of the year? Have you seen any evidence of that tendency?—A. No.

Q. Do you think that is controlled at the terminal point, at Minneapolis?—A. I think it is controlled by this committee, and I think that the understanding of the committee is that the margin shall be just about the same the year round.

Q. What percentage of the farmers are compelled to sell the grain within 3 or 4 months of the threshing time?—A. A large percentage.

Q. Sixty per cent?—A. Yes, I should think so. Not more than that. There are a good many farmers who do not have facilities for storing it to amount to anything, and they haul directly to the elevators.

Q. Is this speedy disposal due to the lack of storage room or to their pecuniary circumstances?—A. Both.

Q. Then the card price, as a matter of course, would be lower generally during that 3 or 4 months, would it not?—A. I presume it might be; I think the average shows that.

Q. Will you go, now, into the privileges given to the farmers' elevators in your section?—A. If a number of farmers wish to erect an elevator, they apply to the railroad company. They pay \$5 ground rent, just the same as the line elevators do, and they put up their elevator, and to all appearances operate it just the same as the line companies operate their elevators.

Q. So far as you know, is there any obstruction placed in the way of these independent companies by the railroads?—A. I do not know of any.

Q. Is there a law in your State compelling railroads to give these facilities to the independent elevators?—A. Yes.

Q. Have you any idea how long that law has been in existence?—A. I think it has been 6 or 8 years.

Q. Was not that law the result of the indisposition on the part of the railroads to give these facilities?—A. Yes.

Q. Then it is fair to presume there was at one time opposition on the part of the railroads?—A. Yes.

Q. If the railroads had the disposition to favor the line elevators as against the independents, the inclination still exists if the opportunity does not?—A. Yes; I should think so.

Q. And that could be accomplished by discriminations and rebates on freights as well as by a famine of cars and other devices known to the internal machinery of railroad management?—A. There is a good deal of talk that some of the line

break the seal, and open the doors, and they have a long stick that has six or eight little tin boxes on it, or little holes in the stick and little tin covers, and they run this down into the grain clear to the bottom of the wheat, and then they turn a little knob and these little boxes in the stick fill. They then draw it up and open the little boxes, and by looking at them they can tell whether the shippers have put a lot of bad wheat at the bottom or in the middle. If the wheat looks all alike as it passes under their eye they throw it into a box or bag. Then they have a weight test, a little copper kettle, as it is called, and they put the wheat in that and weigh it, marking on the card if it is No. 1 or No. 2, and if it is dirty. Of course they can tell that with their eye. If it is very dirty they take a pound off for dirt; if not very dirty, half a pound.

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will investigate some of these shipments you will find that the shipment happened to be made on a rising market. Perhaps during the three days while the car was in transit the market advanced 2 or 3 cents. The shipper, of course, also got the margin which the elevators take, and got 5 or 6 cents more than the card price, and if he had a particularly good grade of wheat and all of one kind he would get a cent higher, or possibly a cent and a half more, because some of them might want it for mixing purposes. But these instances are always reported in the papers. If somebody else shipped, or the same person, and happened to strike a falling market that incident would not get into the papers."

Q. (By Mr. FARQUHAR.) Is the percentage of your high-grade wheat large enough to make a difference to these independent shippers, or does the average of your wheat run into the ordinary grades?—A. The ordinary grades.

Q. (By Mr. A. L. HARRIS.) Have you any further statement to make?—A. I had prepared some figures on the cost of running elevators. Some of the questions, of course, have already been asked and answered, but I will give the statement about as I had intended to do.

Brown County, S. Dak., is 36 miles wide and 48 miles long. The railway system in Brown County and the number of elevators at the stations is just about the same as throughout the three States of South Dakota, North Dakota, and Minnesota. I presume it is an average for the three States. There are in this county 20 railway stations where wheat is bought and shipped. At these stations are 45 elevators, having a capacity of 12,000 to 15,000 bushels each, and 12 flat houses with a capacity of 3,000 to 5,000 each, and there are 3 flouring mills with large elevators attached. At two or three of the stations are special loading platforms. These platforms are erected for the farmers, and to them you drive up just as you drive to an elevator and unload into the car. At other stations they must load from the regular depot platform, or if the ground is level they drive right up to the side of the grain door. Thirty of these houses are owned and operated by what is called the line companies, and there are 12 different elevator companies operating in the county having headquarters at Minneapolis.

Q. What do you mean by line companies?—A. I speak of a line company as the regular elevator companies who have headquarters outside of the State. We call them line companies. Twenty of the houses are owned and operated by independent parties. If the crop is large, nearly all of these houses are opened; if the crop is only fair, not so many of them are opened, and if the crop is poor, as it is this year, only about half of the houses are opened. In 1899 nearly all were opened, while in 1900 only a little over one-half of them were opened. The elevators each will handle in a good season about 50,000 bushels of wheat during the 12 months. In talking with several of the elevator men about this estimate I had made, they all said it was too much; they said that several years ago, when there were not so many elevators, they would average that much, but not now. Handling this amount during 12 months, the labor and expense attached to the station will amount to 1½ cents a bushel. This is figuring the pay of the man who operates the elevator and buys the wheat, the expense of elevating, and in a busy season a helper that he has to have.

If an elevator company has a line of houses there should be added to the expense account the cost of maintaining an office at the terminal point, traveling expenses, insurance and taxes on the elevator, and interest on a certain amount of money needed to operate such an elevator. This is without making allowance for depreciation and insurance on grain that is necessarily on hand and can not be shipped out, which will add three-fourths of a cent per bushel to the elevator expense, making a total cost per bushel of 2½ cents. By grain necessarily on hand I mean that an elevator must have quite a little grain on hand all the time, because he may have 400 bushels of No. 1 wheat, 400 bushels of No. 2, and 400 of No. 3—not enough of either one for a car, as a car carries about 700 bushels. If the same elevator handles 65,000 bushels, the expense should be figured a quarter of a cent less, or at the rate of 2 cents a bushel. If it handles 80,000 bushels the expense would be about 1½ cents; if 100,000 bushels, about 1¼ cents. If, as in a poor year, the house only handles 35,000 bushels, the expense will be increased a quarter of a cent. Very few houses handle 100,000 bushels. When a crop is light, and the amount to be handled is consequently small, the expenses can not be reduced in proportion, because they have to pay just as much for a man, and if they elevate with a horse they have to keep the horse just the same.

Q. (By Mr. C. J. HARRIS.) Do these elevators clean wheat?—A. There are only two elevators among all these in Brown County that have cleaners. They are at Aberdeen.

"I do not know that this is important, but elevator companies always keep on hand wheat to cover storage tickets outstanding; if not at the same elevator where the tickets were issued, at some other near-by point. A good many think that all the

stored wheat is shipped to the terminal points, but this is not the fact with elevator companies; they aim to keep it somewhere on their line.

Q. (By Mr. A. L. HARRIS.) Do your elevators accept wheat on storage?—A. Yes; it is quite a considerable source of profit to the elevator.

Q. What are the storage rates?—A. Storage rates for the first 15 days are free. They make a storage rate for 3 months and 15 days of 3 cents; after that the rate is one half cent per month for the next 3 months, which would make the rate for 6 months and 15 days 4½ cents. For 9 months and 15 days it would be 6 cents. They store wheat all the year round, and sometimes for 2 or 3 years.

Q. There is no selling point in the year?—A. Not necessarily; I know of wheat in some of the elevators on which tickets are out that are 2 or 3 years old.

Q. (By Mr. FARQUHAR.) You do not have to store wheat in a year of poor crop and low grade?—A. No.

Q. Your low grade of wheat seeks a market as soon as possible?—A. Yes.

Q. (By Mr. A. L. HARRIS.) What is the advantage of shipping a low grade of wheat?—A. The farmer has got to take his chances with the inspectors at Minneapolis. I do not know as I know of any instances where farmers have attempted to ship their low-grade wheat; they put that right on the market. While there is a card price for No. 3 wheat at the present time—it is 10 cents below No. 2—some farmers will get 5 or 6 cents higher than the card price, because while it grades No. 3 it is a pretty good quality of wheat. That is true this year. Ordinarily the prices of Nos. 1, 2, and 3 are not far apart.

Q. From the standpoint of a business man and as a farmer, what is the best time, in your experience, to sell wheat?—A. Immediately after threshing; and I think the experience of every farmer will be that he gets the best price immediately if he can get to the market first.

Q. What price should he receive 6 or 8 months thereafter if he keeps his wheat?—A. He ought to get 3 or 4 cen's advance. There is a loss by mice and rats, and then there is the shrinkage in the warehouse or farm granary.

Q. There is some expense in putting it away and taking it out?—A. Yes. When I speak of rats, I refer to the rats in his own elevator. Of course, he gets a ticket when the grain is stored in another elevator, and there is then no loss of wheat to him.

Q. (By Mr. RIPLEY.) Does the fact that he gets a ticket from the elevator mean that his particular grain is held, or its equivalent?—A. The equivalent.

Q. So it is at the option of the elevator man to hold that particular wheat or simply substitute other wheat for it?—A. It is very seldom that a farmer asks for his wheat. The elevator companies charge 2½ cents if the owner calls for his wheat. That is what they call delivery.

Q. You say it costs the farmer 2½ cents to get the wheat out in any other way except for shipment along the line of the road?—A. Yes; they call that a storage fee. If you take it out you pay 2½ cents.

Q. Can a farmer draw against that storage ticket? Will the local banks accept a storage ticket?—A. Yes; they will loan within 5 or 10 cents of the price of the wheat. If wheat is 50 cents, they will loan 40 cents if there is a steady market.

Q. (By Mr. A. L. HARRIS.) What are the wages for farm hands?—A. Farm wages in the country by the year, with board and lodging, are from \$200 to \$310. They are about 20 per cent higher than they were 4 years ago. By the month they are about \$20 for the 8 summer months, and from \$8 to \$10 for the 4 winter months. They are about \$3 to \$3.50 for harvest and about \$1.50 for the haying season by the day. All these wages include board, and the hours, like all farm hours, are long.

Q. Have you anything that you desire to state on your own motion?—A. There is one thing that the farmers complain of, and I think it is a just complaint, and that is that the freight rates between points in South Dakota to Minneapolis are a little too high in proportion to the rates for greater distances. For instance, from Aberdeen the rate to Minneapolis is 10.2 cents per bushel, while to Chicago it is 16.2; from Aberdeen to Minneapolis the distance is 280 miles, and from Aberdeen to Chicago it is 700 miles. The rate for the last 400 miles is 6 cents, and for the first 300 miles is 10.2.

Q. (By Mr. FARQUHAR.) Does the car from Aberdeen go to Chicago without elevator or change?—A. Never.

Q. Where is your change of cars?—A. Our wheat is nearly all unloaded and sold at Minneapolis, because the price there is about equal to the Chicago price. A farmer never ships through to Chicago, because he would lose 2 or 3 cents per bushel.

Q. What is the advantage to the railroad company in making the discrimination in favor of Chicago and against Minneapolis?—A. The rate on wheat is 2

cents per hundred between Minneapolis and Chicago; the rate on flour, I think, is 15 cents per hundred.

Q. (By Mr. RIPLEY.) What is the rate on wheat from Aberdeen to Duluth?—A. The rate to Chicago is 27 cents per hundred weight, or 16½ cents a bushel; to Duluth it is 20 cents a hundred, or 12 cents a bushel; to Minneapolis it is 17 cents per hundred, or 10½ cents per bushel. It is 1.8 cents to Duluth more than to Minneapolis.

Q. Does any of the wheat from your section go to Duluth direct?—A. Yes.

Q. Not for milling, as at Minneapolis, but usually for transshipment by the lakes?—A. Yes.

Q. And for export?—A. And for export; yes.

Q. Is it possible to bill through to either a foreign port or to New York from Aberdeen, or must your bill of lading read to Duluth?—A. I think I could ship a car of wheat to New York.

Q. By way of Duluth?—A. I guess the charges would eat it all up. I do not know of any instance of the kind, because the difference in price between Minneapolis and New York is very much less than the freight.

Q. Is not that true of Chicago?—A. It is true of Chicago. The price in Minneapolis is more than the price in Chicago, taking the freight into consideration.

Q. Is that due to local consumption by the mills in Minneapolis?—A. Yes. We never ship wheat to Chicago or Milwaukee, because Minneapolis and Duluth are much better markets, and we would lose 2 or 3 cents by shipping to Chicago.

Q. (By Mr. FARQUHAR.) What have been the rates of interest on mortgages within the last 10 years in your section?—A. Ten years ago it was easy to get a 10 per cent farm mortgage; now it is hard work to get a 6 per cent farm mortgage.

Q. Have there been many transfers from these loan companies and land associations of lapsed farms that were foreclosed?—A. Mr. Lincoln, of the firm of Lincoln & Boyd, of Aberdeen, told me a few days ago, after he got out his January statement, that he had sold 600 farms during the past year. And he told me that his foreclosure account, while several years ago it would run \$3,000 or \$4,000, this year was less than \$300—that is, profit on foreclosures. They are practically foreclosing none now.

Q. What does that land sell for now? What is the average price of that class of farms?—A. They will sell for from \$600 to \$1,000, while some that have been well farmed and well taken care of will sell for twice as much.

Q. Are many of your good farms changing hands now?—A. Yes. I sold a farm last September, 4 miles north of Aberdeen, of 320 acres, with very poor buildings, for \$3,500, that 2 years ago I tried to sell for \$2,000. That is a fair illustration.

Q. So farm lands have appreciated in your section?—A. In the last 3 years they have, considerably.

Q. How great is the appreciation?—A. It has been 60 per cent.

Q. What class of men are buying there now? Are they practical farmers or young men of your section?—A. Mostly farmers buying for their sons. Now and then a farmer comes in from another State and buys a farm.

Q. In your section are you able to mature Indian corn?—A. We mature a small grade of corn. It is smaller than the corn in Iowa, and we mature it nearly every year.

Q. Are you successful with it?—A. Farmers are increasing their acreage every year.

Q. What is the reason you can not go into winter-wheat raising?—A. It has been tried several times, but it kills out in the winter.

Q. Is the killing due to the seasonal changes, to your damp and frost?—A. Our ground dries out. Unless it has a good deal of rain in the fall it will freeze out dry on the top. I know of several farmers who have tried the winter wheat, but it is not a success. It does not come up in the spring.

(Testimony closed.)

WASHINGTON, D. C., January 22, 1901.

TESTIMONY OF DR. D. E. SALMON,

Chief of the Bureau of Animal Industry, United States Department of Agriculture.

The commission met at 10.45 a. m., Mr. Farquhar presiding. At that time Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, United States Department of Agriculture, appeared as a witness, and, being duly sworn, testified as follows:

Q. (By Mr. FARQUHAR.) Give your name and address and official position in the Agricultural Department.—A. D. E. Salmon, Chief of the Bureau of Animal Industry, Department of Agriculture.

Q. (By Mr. A. L. HARRIS.) You may state how long you have been connected with the Bureau of Animal Industry.—A. I have been connected with it since its formation, in 1884. I was appointed chief at that time.

Q. Have you a paper which you desire to present to the commission?—A. Yes; I have prepared a statement covering the work in which I am engaged. I have first given a tabular statement to give an idea as to the work dividing it according to the objects of the Bureau of Animal Industry. I will put that in first, in order to give the plan of what I have to say, because I have made the statement as brief as possible. It is as follows:

THE WORK OF THE BUREAU OF ANIMAL INDUSTRY.

- A.—Control of contagious diseases of animals in the United States.
 - 1. Eradication of pleuropneumonia (completed).
 - 2. Control of Texas fever.
 - 3. Control of sheep scab.
- B.—To prevent importation of contagion.
 - 1. Quarantine of Atlantic ports.
 - 2. Inspection and quarantine along Mexican and Canadian borders.
 - 3. Tuberculin tests of cattle in Great Britain and Canada.
- C.—To prevent exportation of contagion.
 - 1. Inspection of exported live stock.
- D.—Meat inspection.
 - 1. Ante and post mortem inspection of interstate and export meat.
 - 2. Trichinæ inspection.
- E.—Investigation of diseases and remedies.
 - 1. Texas fever.
 - 2. Hog cholera.
 - 3. Sheep-scab dips.
 - 4. Tuberculosis.
 - 5. Rabies.
 - 6. Other contagious and noncontagious diseases, so far as facilities permit.
- F.—Cooperation to prevent disease.
 - 1. Supplying tuberculin to State authorities.
 - 2. Supplying mallein to State authorities and to War Department.
 - 3. Blackleg vaccine.
 - 4. Enforcing Texas-fever quarantine line.
- G.—To aid exports:
 - 1. Trichinæ inspection.
 - 2. Inspection of live animals for export.
 - 3. General inspection of meat for export.
 - 4. Inspection and control of cattle fittings on steamers carrying animals for export.
 - 5. Experimental shipments of butter, cheese, and eggs.
- H.—Collection of information:
 - 1. As to diseases.
 - 2. As to breeds, breeding, and feeding.
 - 3. As to the dairy industry.
 - 4. As to the condition of the animal industry.

SUGGESTIONS AS TO FEDERAL LEGISLATION.

- 1. Requiring cleaning and disinfection of stock cars and stock yards when necessary.
- 2. Authorizing Department of Agriculture to require proper disposition of condemned meat.
- 3. More comprehensive penalty clause for shipping condemned meat.
- 4. To make regulations prohibiting shipment of uninspected meat from State to State and to foreign countries.
- 5. Authorizing inspection and certification of pure, high-grade dairy products for export.
- 6. Making transportation companies liable for violation of law when in hands of receiver.

SUGGESTIONS AS TO WHAT IS NEEDED IN THE WAY OF STATE WORK.

- 1. The thorough control of glanders, tuberculosis, and rabies, and the eradication of trichinæ.
- 2. The destruction of the Texas fever tick.

3. Measures to insure the wholesomeness of the milk supply.
 4. Measures to guard the public against impure, adulterated, or renovated butter and filled or adulterated cheese.
 5. Better local inspection of meats and the proper disposition of diseased meats.
- The witness continued to read as follows:
- "It appears that I can best present the facts within my knowledge by a statement of the work of the Bureau of Animal Industry, in which I have been engaged for the past 16 years. I present herewith a summary in tabular form of this work. It is naturally divided into eight sections.

A.

"The first section has reference to the control of contagious diseases of animals in the United States.

"1. The disease more particularly in view at the time the Bureau was established was contagious pleuropneumonia of cattle, which was causing much anxiety among the stock raisers of the United States and had also interfered with our exports of live cattle. This disease was stamped out by cooperation between the Bureau of Animal Industry and the authorities of the various interested States. The work was completed several years ago.

"2. The disease next in importance, and to which attention was early directed, is Texas fever. The accompanying map shows the quarantine line which has been established to prevent the spread of this disease."

"The portion of the country south of this line is permanently infected with the Texas fever contagion. While the cattle in this area do not suffer to any considerable extent from the disease, they carry the contagion with them when they are taken to other sections of the country, and in that manner produce fatal outbreaks. The quarantine does not prevent the shipment of cattle for slaughter at any season of the year providing this is by rail and that proper precautions are taken when the animals are unloaded. The result of this inspection has been to almost entirely prevent outbreaks of Texas fever in the noninfected territory (that is, the territory north of that line), and also to prevent its development among cattle en route to European markets. Cattle to be sold for grazing are allowed to be shipped from the infected district during the months of November and December without restriction.

"3. The third disease which the Bureau has undertaken to control is sheep scab. This disease, which is easily cured, has not been understood by sheep owners, and has been allowed to spread until it has become one of the greatest obstacles to the prosperity of the sheep industry. Inspectors have been recently stationed in the Western States and Territories to prevent the shipment of diseased animals, and where disease is found, to supervise the dipping of the sheep, so that they may be safely sent to market. Inspection for this disease is also maintained in the principal stock yards, and dipping plants have been established so that diseased sheep may be treated before they are forwarded to other States.

"To indicate the amount of work done in this line I would state that during the quarantine season of 1899 the employees of this Bureau inspected and supervised the movement of 1,058,494 cattle, and also supervised the disinfection of 39,663 cars in which such infected cattle had been carried. For the control of sheep scab these inspectors examined 1,801,379 sheep and supervised the dipping of 636,838.

B.

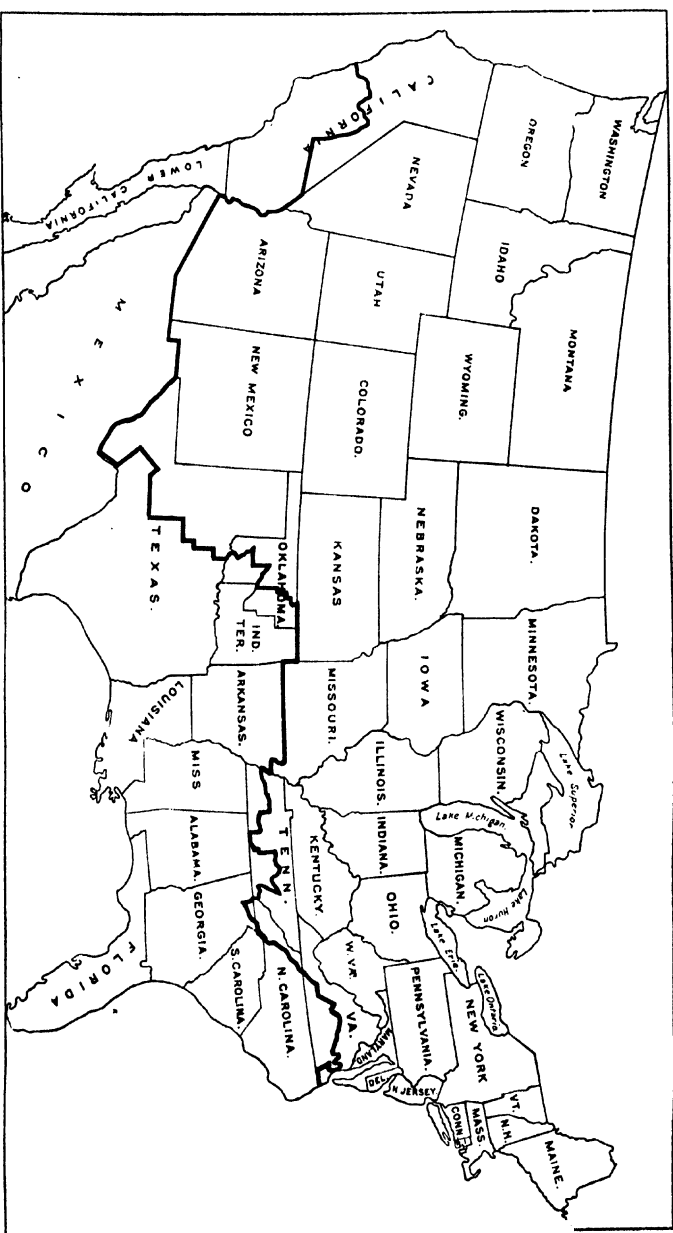
"1. In order to prevent the importation of contagion, animal quarantine stations have been established on the Atlantic coast, one for the port of Boston, one for the port of New York, and one for the port of Baltimore. Cattle from countries where pleuropneumonia has existed are held in quarantine 90 days. Other ruminants and swine are quarantined for 15 days.

"2. Inspection and quarantine stations have also been established along the Mexican and Canadian borders. Animals are only quarantined a sufficient time for inspection, except in cases where they are found diseased.

"3. Tuberculin tests are also required in order to guard against the importation of animals affected with tuberculosis. An inspector has recently been sent to Great Britain to make tuberculin tests there, so that diseased animals may be rejected before shipment. The same action has been taken in regard to Canada."

I would say we do this because unless the animals are tested on the other side or before they come from Canada, we find so many diseased cattle that it is embarrassing to dispose of them. The law under which we are working prohibits the importation of diseased animals, and we are making tests on the other side, very much to the satisfaction of our stock raisers.

BOUNDARY LINE OF THE DISTRICT INFECTED WITH SPLENETIC OR SOUTHERN CATTLE FEVER.
 Reduced from map published by United States Bureau of Animal Industry.



"The animals from Mexico which were inspected during the last fiscal year were 80,329 head of cattle, 9,976 sheep, 44 swine, 4,132 goats, and 3 horses, making a total of 94,484. Those from Canada were 77,693 cattle, 209,373 sheep, 1,886 horses, 1,092 swine, 6 goats, and 1 deer, making a total of 290,051. The animals imported from Europe were 379 cattle, 370 sheep, 2 swine, making a total of 751.

C.

"To prevent the exportation of contagion, horses, cattle, and sheep are inspected before shipment. The cattle are marked in the ear with a numbered tag and a record made of their origin. Horses are also marked with a tag, and certificates are issued as to the healthfulness of cattle and horses. On account of the existence of sheep scab and the general infection of stock yards and cars, it has been impossible up to this time to issue certificates for sheep. During the fiscal year ending June 30, 1900, 305,182 exported cattle were thus inspected, 73,426 sheep, and 37,080 horses.

B.

"Meat inspection has been established at the principal packing houses to guard against the interstate and foreign shipment of diseased meat.

"1. An inspection is made before the animals are slaughtered and again upon the carcasses at the time they are being dressed. The meat which is sound and wholesome is marked for identification and certified to in accordance with the law. In this line of work there were inspected in the last fiscal year 31,737,613 carcasses.

"2. There is also maintained a microscopic inspection of pork for trichinae. This is applied only to pork for export to certain countries which require such an inspection. The greater part of such products goes to Germany and France. The number of pounds of pork microscopically inspected which was exported last year was 55,809,626, the trade last year having greatly declined. In previous years as much as 120,000,000 pounds of such pork have been exported in one year.

E.

"Investigations of contagious diseases and remedies for the same have been conducted since the formation of the Bureau.

"1. One of the principal lines of investigation was with reference to Texas fever, the nature of which was not at all understood at the time these investigations began. All of the mysteries in regard to Texas fever have been cleared up, and we are now able to control it very effectually. Not only is the dissemination of the contagion prevented by the regulations governing the shipment of cattle from the infected district, but by suitable measures the particular species of ticks which cause the disease is being eradicated in many sections and the contagion thus stamped out. It is also possible now to inoculate cattle needed in the Texas fever belt for breeding purposes before they are shipped from the Northern States so that they will resist the fever when exposed to it. There is one other line of experimentation in regard to this disease which has been carried on quite hopefully, but so far without success: that is, the application to the infected cattle of remedies for the destruction of the tick. If these parasites could be destroyed before the cattle leave the infected area, there would be no need of restrictions when such animals go to northern markets. Unfortunately, this tick has been very resistant, and remedies so far discovered which kill it injure the cattle so severely that their use is not practical.

"2. Hog cholera has also been investigated for many years, being one of the most serious animal plagues which exist in the country. While much has been learned in regard to it, and certain measures have been recommended which lessen its ravages somewhat, a practical and successful method of prevention for general use has not been discovered. It is a problem upon which our experts are still working.

"3. In the control of sheep scab it very early became necessary to recommend dips which could be relied upon for curing the disease without injuring the animals or those who performed the dipping. Various investigations were therefore made in this direction, and two standard dips have been adopted for use under the supervision of Bureau inspectors.

"4. A number of investigations have also been made of tuberculosis. This disease has become quite common among dairy and breeding cattle and in swine. In Europe tuberculosis is considered the most serious disease affecting the domesticated animals, and the one which causes the greatest losses. The bureau investigations have been made with the idea of determining, first, the prevalence of the

disease; secondly, the effect of tuberculin when used for its diagnosis, and thirdly, the infectiousness of dairy products, particularly milk and butter.

"5. The occurrence of an outbreak of rabies in the District of Columbia has led to some investigations to determine the extent of this disease in other parts of the country. These investigations show that rabies has become very common in the United States, and that it not only affects dogs, but a large number of horses, cattle, sheep, and swine are bitten and die of it. Many persons are also bitten in the course of a year, a considerable number of whom contract the disease.

"6. Various other diseases which are of importance from time to time have been reported to the Bureau and have been investigated. These investigations are continually in progress and are pressed forward as rapidly as the equipment and force of the Bureau will permit.

F.

"The Bureau is also working to prevent disease by cooperation with State authorities and individual stock owners.

"1. One means of doing this is to supply State authorities with tuberculin to be used in testing animals for tuberculosis. The tuberculin is manufactured in the laboratory of the Bureau and supplied free of expense for official use. It is a great aid to the State authorities in this work.

"2. Mallein, for the detection of glanders in horses, is supplied in the same manner both to State authorities and to the Federal War Department.

"During the past year 33,400 doses of tuberculin were thus supplied, and 10,722 doses of mallein.

"3. The Bureau has also been making vaccine for the disease known as blackleg of cattle. This is supplied directly to cattle owners in the districts affected with this malady. During the past fiscal year 1,076,150 doses of this vaccine were thus made and supplied. The loss of cattle from blackleg in infected herds averages over 10 per cent of the young stock. The vaccine saves all of such losses with the exception of about one-half of 1 per cent. Consequently, if a million doses of this vaccine were actually used by the stock owners, the saving would amount to about 100,000 head.

"4. Where the Texas-fever quarantine line crosses a State or Territory, as in the case of Virginia, North Carolina, Georgia, Tennessee, Oklahoma, Texas, and California, this line is maintained by cooperation between the State authorities and the Bureau of Animal Industry. As the law establishing the Bureau makes the penalty apply to the shipment of animals from one State or Territory to another, the Federal authorities could only make a quarantine line corresponding with the boundary lines of States. This would cause a considerable hardship in many cases where a large section of a State is free from infection, and consequently an effort has been made to place the quarantine line on the boundary of the infected district and to have this line, where it crosses the territory of a State, enforced by the authorities of that State.

G.

"The work of the Bureau to aid exportation of American animals and products may be divided into—

"1. The trichine inspection;

"2. The inspection of live animals for export;

"3. The general inspection of meat for export; to all of which reference has been made.

"4. In addition to this work there is maintained an inspection and control of cattle fittings on steamers carrying animals for European markets. The strength, space, ventilation, width of aisles, etc., are prescribed, also the number of attendants which must be taken to care for the animals en route. The effect of these regulations has been very marked, and has reduced the losses in the ocean carrying trade tremendously. At the time the regulations went into effect the insurance on exported cattle was about 8 per cent of their value. It is now considerably less than 1 per cent; and this difference represents about what has been saved to the exporters by properly controlling this trade.

"5. Experimental shipments of butter, cheese, and eggs have also been made to markets where it was thought desirable to bring these products to the attention of consumers. Much has been done to create a demand for these American products, especially in Great Britain. Experimental shipments are, however, being made to other sections of the world.

H.

"In order to stimulate the various branches of animal industry and to improve prevailing methods, information is collected and distributed, in accordance with the law, in regard to various subjects, the most prominent topics being—

- "1. The nature and treatment of prevailing diseases;
- "2. The characteristics of various breeds of animals, and methods of breeding and feeding;
- "3. The condition of the dairy industry, and information as to improved methods;
- "4. Information as to the general condition of the animal industry.

SUGGESTIONS AS TO FEDERAL LEGISLATION.

"It will be seen from this outline of the work of the Bureau that the Federal Government has gone into this field quite largely, and that what is now needed is not so much an extension of the work to new subjects, as the improvement and perfection of the work already undertaken.

"What I would suggest in the way of Federal legislation is—

"1. Authority for the Secretary of Agriculture to cause the cleaning and disinfection of stock cars and stock yards whenever he considers such action necessary. Owing to the extension of our railroad system, the shipment of animals long distances, both to and from the farms, is common, and the routes of transportation become contaminated with contagion of various kinds, which affects the store stock that is purchased in the stock yards to be taken back to the farms and ranges for grazing and feeding. Hog cholera, sheep scab, glanders, and other diseases are spread in this manner. The authority to cause the cleaning and disinfection of cars and stock yards is not clear, and it is only with considerable difficulty and delay that this is in many cases secured. Such authority would go far toward preventing the dissemination of contagion from one State or Territory to another.

"2. The Department of Agriculture should be given specific authority to require the proper disposition of diseased meat. At present the law authorizes the inspection of meat that is to be shipped from one State to another or to foreign countries and the marking of that which is sound and wholesome, leaving the diseased meat to be disposed of locally as the abattoir managers may desire. If such diseased meat is allowed to pass beyond the authority of the Department inspectors it is impossible to prevent its being shipped to other States or being put upon the market for sale wherever it can be disposed of. It appears to me that if the Federal Government has authority to inspect meat it has also the authority to require the proper disposition of that which is condemned."

I ought to say in further explanation that at present we make an agreement with the abattoir managers that they will dispose of this meat according to our regulations. We have no law which authorizes us to do that, but so far we have not been able to cover the whole country with the inspection, and we simply say, "We will not put an inspector in your abattoir unless you agree to do this." I think there should be some law which would absolutely prevent the selling of condemned meat, for when it gets on the market we have no way of knowing whether it stays in the State where the slaughtering is done or is shipped out. The fact is a short time ago we had a little conflict of authority with the Illinois State people about a steer that was killed that had tuberculosis. Our inspector condemned it and their inspector passed it, and the State commission demanded that we should turn over the carcass to them to be used locally. We asked for some definite evidence that the meat was to be used locally in the State of Illinois, and when they investigated the matter they found it had been sold to a large canning establishment in Chicago, and of course they could not say it was to be used in Illinois. It might be used outside of the State, but that is the way those things go. When you once let loose of diseased meat and it gets out of the inspector's hands it is liable to go anywhere. There is no way of keeping track of it.

(Witness continues to read)

"3. I would also suggest a more comprehensive penalty clause for shipping condemned meat. The following sections were drawn in accordance with this idea:

"SEC. —. That any person, company or corporation, owner or shipper of such products mentioned in section —, failing to so mark such products, or who marks such products falsely, or who falsely marks such products as inspected in accordance with the law, or who falsely brands, claims, or publishes that such products have received inspection according to law, or who stamps, brands, or marks such products with the stamps, brands, or marks of the Bureau of Animal Industry, obtained or used in a fraudulent manner, or otherwise than according

to the rules and regulations of said Bureau, or who shall forge, counterfeit, simulate, imitate, falsely represent, or use without authority, or knowingly and wrongfully alter, deface, or destroy any of the marks, stamps, or other devices provided for in the regulations of the Secretary of Agriculture, of any such carcasses or their products, or who shall forge, counterfeit, simulate, imitate, falsely represent, or use without authority, or knowingly and wrongfully alter, deface, or destroy any certificate or stamp provided in said regulations, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not exceeding one thousand dollars, or imprisonment not exceeding one year, or by both said punishments, in the discretion of the court."

That is a little more comprehensive than our present penalty clause, and it was drawn up after several years' experience through which we found that some of these slaughterers are very ingenious in evading the law, and a great many of these points were put in after the ways in which they succeeded in getting meat out had been noted.

(Witness continued to read:)

"SEC. —. That it shall be unlawful to transport from one State or Territory or the District of Columbia into any other State or Territory or the District of Columbia, or to deliver for transportation from one State or Territory or the District of Columbia into another State or Territory or the District of Columbia, the carcasses of any cattle, sheep, swine, or other animals, or the food products thereof, which have been examined in accordance with the rules and regulations of the Bureau of Animal Industry, and which on said examination have been condemned by the inspector making the same as unsound or diseased, and so marked. Any violation of the provisions of this section shall be deemed a misdemeanor and punishable by fine not to exceed one thousand dollars.

"SEC. —. That upon an examination of animals, carcasses, or parts of carcasses by the inspectors of the Bureau of Animal Industry, said inspectors shall be authorized to condemn such as are found diseased or unfit for human food according to the rules and regulations of said Bureau, and, if necessary, to destroy same or subject same to such treatment as will prevent the sale or use thereof for human food, and same shall be marked or tagged as condemned, and it shall be unlawful to remove the condemnation tag from condemned carcasses or parts of carcasses and offer said condemned meats as sound and wholesome, or to refuse to tank or properly dispose of condemned carcasses or parts of carcasses, or to remove same from tanks or other places in any manner not permitted, or otherwise fail or refuse to comply with the rules and regulations of said Bureau, and punishable by fine not to exceed one thousand dollars."

These I think are necessary to properly guard against the use of unwholesome and condemned meat.

(Reading:)

"4. In order to insure the inspection of all meat shipped in the interstate traffic, the Secretary of Agriculture should be authorized to make regulations prohibiting the shipment of uninspected meat from State to State or to foreign countries, in so far as he considers necessary to guard against the shipment of diseased products.

"5. It is desirable that the Secretary of Agriculture should be authorized to inspect and certify pure, high-grade dairy products for export. Our butter and cheese trade has been greatly damaged by the shipment of adulterated or low-grade butter and filled cheese branded as pure, high-grade products.

"6. Another point which is of some importance is that railroad companies, in the hands of receivers, are not held liable for violation of the law prohibiting the shipment of diseased animals from one State to another. This is a point which needs correction."

The present law says "owner or manager of any railroad company," and the Supreme Court held that that clause does not cover a receiver.

(Witness continued to read:)

"With these suggested changes, which are not very extensive, the Federal work for the assistance of the animal industry would be in excellent condition.

WHAT IS NEEDED IN STATE WORK.

"I thought of making an examination of the laws of the various States with regard to the control of diseases, but I find these exist in such number and are so voluminous that it is impossible for me to make an abstract of them. What I state, therefore, is my impression from what I have observed of the condition of affairs in various parts of the country.

"1. It appears to me that what is most needed in the way of State work is the thorough control and eradication of such diseases as glanders, tuberculosis, and

rabies. These diseases affect not only animals, but are communicable to man, causing in most cases fatal results. Trichinæ are found in American pork in a larger proportion than in most other countries. It appears to be due to the practice of allowing hogs to consume dead animals, such as rats, mice, and particularly hogs which have died of cholera. There is an impression in the hog-raising districts that the feeding of meat lessens the losses from cholera, and consequently if cholera outbreaks it is quite common to encourage the hogs to consume the carcasses of the animals which die. If there is only 1 in a bunch infected with trichinæ, this 1 is sufficient to infect the whole herd. The hogs which come to our markets are infected in the proportion of 2 per cent or more, and in some large lots of hogs we have found from 25 to 30 per cent with trichinæ. This matter is so important that there should be State laws prohibiting the feeding of the carcasses of dead animals to swine.

"2. The destruction of the Texas fever tick in the district permanently infected with that disease is of great importance. When this tick is killed out the infection disappears. It may be destroyed either by keeping cattle from any particular area for a year or two or by keeping the ticks all picked off the cattle or destroyed by various applications to the skin. It appears that the ticks must mature every year on cattle in order to perpetuate the species. In several counties of Virginia the ticks have disappeared through the effect of a law requiring cattle to be fenced in upon the premises where they are owned and prohibiting them from running at large. This matter is of great importance to the Southern States.

"3. Measures to insure the wholesomeness of the milk supply are also a matter of great importance. In cities and towns this matter usually comes under the health authorities, but it is seldom they have the money or the authority to inspect the stables and the cows from which the milk comes. As the contagion of numerous diseases may be carried in milk, and still other diseases and digestive derangements may result from contamination with filth and with various putrefactive bacteria, there should be some system which will insure clean stables, healthy cattle, and the proper handling of the milk. The increase of tuberculosis among dairy cows and the danger of conveying this disease to the consumer, and especially to children, emphasizes the importance of looking after the milk supply. This, it appears to me, could be most effectually done by a State board which applies uniform regulations to the dairies of the whole State. All measures enforced in this way should be well considered, conservative, and so formulated as not to be unduly burdensome to the cattle owners. Where it is necessary to eradicate a disease like tuberculosis, the owners of the cattle should be compensated for the animals condemned and destroyed.

"4. There should also be more efficient measures to guard the public from being imposed upon by impure, adulterated, or renovated butter and filled cheese. While these articles are not particularly dangerous to health, their sale as pure and high-grade goods injures the dairy industry and defrauds the consumer.

"5. There should also be a better local inspection of meats and more efficient measures to secure the proper disposition of the meat from diseased animals. While the Federal inspection is applied to all meats slaughtered in the abattoirs where it is established, the law permits the local sale of the condemned meat. The Department of Agriculture has endeavored to guard against this by making an agreement with the operators of the abattoirs that they will abide by the regulations of the Department which require the condemned meat to be made into products unfit for food. While this agreement is, so far as we know, carried out, with possibly a few rare exceptions, it nevertheless remains true that if such meat is removed from the packing house and sold locally there is no penalty in the Federal law for the punishment of those who are guilty. The natural effect of the Federal inspection is to drive the diseased animals to abattoirs which slaughter for local consumption, and consequently much more diseased meat is put upon the market in cities where the Federal inspection is in operation than was the case before this inspection was commenced. There are very few, if any, cities which have a sufficient force of competent meat inspectors to protect their citizens from diseased and unwholesome products.

"The vast influence of animal diseases upon the welfare of those engaged in agriculture, and, indeed, upon the country in general, is shown by the restrictions and prohibitions to which our foreign trade has been subjected on account of them. In 1879 our cattle were prohibited from going inland in Great Britain for sale, and were confined to a few docks called "foreign animal wharves," to be killed within 10 days, on account of the existence of contagious pleuro-pneumonia in this country at that time. This order is thought to have reduced the value of every American steer exported not less than \$5. As our exports have been from 100,000 to 400,000 head per annum since that time, the enormous aggregate loss is apparent.

"In 1881, or soon thereafter, nearly every country on the continent of Europe prohibited American pork for the alleged reason that it contained trichinae. This regulation was kept in force 10 years, ruining a great and growing trade and one which, despite our efforts, we have been able to only partially regain.

"Still later our sheep have been required to be slaughtered at the foreign animal wharves of Great Britain on account of the scab, which was continually breaking out among export animals because of their being exposed in the stock yards and cars of this country. Our live cattle and fresh beef have been excluded from Germany, Denmark, and Belgium, and our cattle from France, because of Texas fever in this country, which in rare instances was found in cattle landed on the other side. Our entire live animal trade with Great Britain was menaced because of the sufferings of animals in transit which shocked the humane people of that country. The legislation antagonistic to this trade appears to have been abandoned because of our action in establishing regulations for the humane treatment of animals during the ocean voyage. Our live swine are excluded from most European countries on account of cholera. Our canned beef has been excluded from Germany because of the detrimental statements, it is said, which were made during or soon after the war with Spain.

"In addition to these prohibitions and restrictions on the ground of disease, our export trade in butter and cheese with England has been greatly injured by the shipment of adulterated and renovated butter and filled cheese under representations that these were first-class dairy products. Canada, by supervising the manufacture and indorsing these goods, has established a great trade and won the markets away from our own exporters. Some of our best dairy products are now finding their way to Great Britain by way of Canada and branded as Canadian goods.

"Our farmers have suffered terrible ravages from disease, particularly hog cholera, sheep scab, and Texas fever, but as compared with European stock raisers they have little idea of the devastation on which animal plagues may cause. Such exotic and destructive plagues as rinderpest, foot-and-mouth disease, and pleuropneumonia have never spread over any considerable extent of this continent. Pleuro-pneumonia was introduced here, but never fairly reached the channels of commerce, and was fortunately stamped out before it did much direct damage. Foot-and-mouth disease has been introduced several times, but on every occasion was eradicated before it covered much territory. Rinderpest has never reached our shores. In other countries rinderpest has at times almost exterminated the bovine population, leaving but a few animals out of each thousand. Since the animal quarantines were placed under the Bureau of Animal Industry all of these exotic contagious diseases have been excluded.

"We have in our herds, however, tuberculosis, a disease which affects all warm-blooded animals, and which is also the most fatal of human diseases. While it at present affects but a small percentage of our animals, it is undoubtedly spreading and becoming more common, except in States where proper regulations are in force. Herds are frequently found containing 80 to 90 per cent of tuberculous animals, though the general average among dairy and breeding cattle is probably not over 5 per cent, and among beef cattle it is still less. There are more beef carcasses condemned for tuberculosis than for any other cause, the number being 4,194 for the last fiscal year. There were also 4,379 hog carcasses and 1,061 parts of carcasses condemned for the same disease. In some European countries nearly or quite half of the cattle are tuberculous."

Q. (By Mr. A. L. HARRIS.) How often or how many of these suggestions for Federal legislation have heretofore been made public, or gone to Congress in the way of suggestion for legislation?—A. Those penalty clauses were in the bill introduced 2 or 3 years ago, but I do not know if it got to the public further than the announcement that it was introduced and ordered printed. Those things do not usually go very far. The other points, I think, have not been given to the public. I intended to draft a bill and have it introduced at this session, but had so many other things to do that I have not done so.

Q. Have you any suggestions to make as to a better way to secure the enforcement of the State laws?—A. I do not know that I have. There are two difficulties in the States; one is to get money enough to do such things, and the other is to enforce the laws. While this is a Government by the people and for the benefit of the people, it is a fact that the nearer you get to the people the harder it is to enforce laws which bear upon the people in any section. Under the Federal law I can go into a State and do things easily which State authorities can not do at all, because the people in the State feel that the State authorities are subject to them more than the Federal authorities are, and if it is a case, for instance, of killing a glandered horse, the owner often will be ugly about it and will say, "I will not allow it to be killed," and very often the authorities are obliged to go

into court, or have trouble with the man. The same is true in enforcing other laws. We have an example of it in most cities in regard to rabies—mad dogs. When the city authorities adopt an ordinance requiring dogs to be muzzled and kept up a sufficient time to get rid of the disease, you always find a large number of citizens who object to the ordinance and say it is not necessary; that it is cruelty to the dogs, and so on, and it can not be enforced. We had the same thing in this city last winter. Although our Commissioners are not so much subject to the people as the officers of other cities are, yet the public clamor here prevented the enforcement of regulations requiring dogs to be muzzled, and as a result of that we have had rabies here since November a year ago. There has not been a month without rabies, and there has been—I forget just how many—but about thirty or forty people bitten in that time, most of them children, and they have been obliged to go off to other cities and take the Pasteur treatment, with an expense of a hundred or a hundred and fifty dollars for the treatment, board, and other expenses while away from home, which is a very serious matter to the people who are so unfortunate as to be bitten by a mad dog. The same principle holds good in the eradication of all diseases.

New York, which is one of our strongest States, undertook to eradicate pleuropneumonia. General Patrick at that time was business manager. They spent probably \$100,000, and then stopped because the work was not popular; they could not finish it. That was in 1879 and 1880. The work was dropped and the disease spread again, and when I took it up under the Bureau of Animal Industry, in about 1885 or 1886, there was just as much pleuro pneumonia in the State of New York as there was before they began. The same was true in New Jersey. The State authorities undertook to stamp out pleuro pneumonia there and failed. It is only in instances where the disease is not very widespread in the State, and where it can be done without very much expenditure of time or money, and without much hardship or inconvenience to the citizens, that the State authorities appear to be able to work efficiently in such matters.

Q. Have the States, as a rule, provided any compensation for destroyed animals?—A. Some of them have, and some have not. There is a great difference of procedure in the States, but the tendency is against compensation. The precedents among lawyers appear to be opposed to giving compensation for diseased animals. In the veterinary profession the tendency is to give compensation, because it has been found in all countries where they have tried to eradicate diseases that it was cheaper to give compensation, and have the stock owners with the authorities, than not to give compensation, and have it to the interest of everybody to conceal the contagious diseases.

Q. But could not the State authorities, for local diseases, such as glanders in horses, prevent the spread of disease more cheaply than to wait for Federal interference?—A. The Federal Government has not done anything in the way of stamping out any disease except pleuropneumonia and sheep scab. We never have gone into States, except in the pleuropneumonia work, and undertaken to condemn animals and kill them. It was then only in a great emergency, and we had the cooperation of the States to this extent: They made our men, in most cases, State inspectors as well as Federal inspectors, the expenses being borne by the Federal Government. Quite a number of States passed special acts making the Bureau of Animal Inspectors State inspectors, and giving them power to enter on premises, to inspect and condemn animals; but in those cases the States especially stipulated that it should be without expense to the State.

Q. Have you ever tabulated the figures giving the loss annually from the death of animals on account of infectious disease?—A. No. It is impossible to do it, because no one knows what animals die of. Our statistical division sometimes attempts to give a statement of the loss of animals from disease, but they are unable to discriminate between diseases.

Q. Would it be possible for the State authorities to provide some means for gathering that information?—A. It would probably be pretty expensive. In fact, I think it is impossible to get the information with any accuracy.

Q. (By Mr. FARQUHAR.) What State has the best regulation in respect to inspection of cattle and prevention of disease?—A. I think Pennsylvania, probably.

Q. They have a State board in Pennsylvania?—A. They have a State veterinarian there, who works under the Department of Agriculture.

Q. How much assistance has the State veterinarian in the practical work of the detection of disease?—A. I understand he has deputy inspectors who examine the cattle.

Q. In the State of Pennsylvania, for instance, how many?—A. Well, I could not say; but quite a number. They have spent a considerable amount of money—I am sorry I can't say exactly how much, but probably over \$30,000 annually—on tuberculosis work in the last few years.

Q. Do you know of any State where the inspection is so general and so well maintained that it is practically a remedy for the spread of disease?—A. For some diseases. There is no State, for instance, so far as I know, which has a sufficient inspection to prevent the spread of glanders in horses. It is a disease not looked after very thoroughly, and I suppose in every city of the country there is more or less of it. On the other hand, Texas fever is almost entirely prevented by cooperation between the Bureau of Animal Industry and the State authorities.

Q. Do you not depend a good deal on local help which comes entirely independent of the State veterinarian?—A. To a certain extent. We try and cooperate with the State inspectors, but usually meat inspection in the cities does not amount to very much, because the cities have not enough inspectors to control the local slaughterhouses. Almost every city has a large number of slaughterhouses in the suburbs, to which diseased stock goes for slaughter, and in order to inspect it thoroughly it would take as many inspectors as there are slaughterhouses, which, in a city like Philadelphia, would mean 75 or 100 inspectors. It costs a great deal of money to keep up such a force, and the only way in which to have practical inspection of an animal slaughtered for local consumption is to have the killing concentrated. Then they could have enough inspectors to cover it.

Q. How far does your national regulation covering the entire export trade affect local consumption?—A. It is impossible to say, because we inspect at all those large abattoirs which pretend to do interstate business, but a good many smaller places that do an interstate business we have not been able to cover. You can see from my statement we inspected 34,000,000 animals last year at the time of slaughter. That means about 5,000,000 cattle, 6,000,000 sheep, and the balance mostly hogs—23,000,000 to 24,000,000 hogs—and that, of course, covers by far the largest part of the meat. There are a great many small places where they kill 50 to 100 hogs a day, and 10 or 15 cows, where, so far, we have not been able to inspect, and I hardly see my way clear to include these. We have not so far been able to get enough inspectors.

Q. Has Congress been liberal with you?—A. Yes; very liberal.

Q. Any recommendation that the Department would make, would it readily meet with the cooperation of the Agricultural Committee?—A. I think it would, as far as furnishing money is concerned. They have given us all we could use to advantage, and sometimes I have turned back considerable into the Treasury. The number of cattle inspected at time of slaughter was 5,027,000. That is the great bulk of cattle slaughtered in the country. I suppose the entire slaughtering might be placed at 6,000,000 or 7,000,000 head in a year. The number of other animals inspected are as follows: Sheep, 6,125,095; hogs, 23,336,881; horses, 5,559. Congress put a clause in our appropriation bill 2 or 3 years ago to the effect that horses should be entitled to the same inspection as other animals. The reason for that provision was the low price of horses in the range country. In fact, there were some parties there who believed that they could slaughter horses to advantage for export, but I do not think they have done very well at it. They slaughtered the first year about 3,200, and the last year 5,559.

Q. (By Mr. A. L. HARRIS.) At how many points are horses slaughtered for export?—A. We have inspected at only one place, that is in Oregon. They have been slaughtering at several other points without Federal inspection. There was a place in Chicago, and there was a place in Brooklyn where they slaughtered.

Q. To what country does the horse meat go?—A. They sent some of it to Norway and some of it to Holland, but we are unable to follow beyond the ports where it lands. It is pretty hard to say where it is consumed. There have been some rumors that it had been made up in bologna and sent back here.

Q. (By Mr. FARQUHAR.) Do you find, in the establishment of these zones for the prevention of disease, that there is any conflict with the State authorities, or of late years have you met with cooperation with the local boards of health?—A. We have had pretty general cooperation. Of course, the State authorities do not always agree with us as to what ought to be done, but we generally get along harmoniously. The Texas-fever matter is one in which we need most cooperation now; Texas fever and sheep scab; both. The Texas-fever work is where there are more chances for difference of opinion, for always in States crossed by a quarantine line people below the quarantine line think they ought to be above it. It is more apt to be the case with Texas fever than with anything else, because the cattle below the quarantine line do not show the disease. It is only when they get out and mingle with northern cattle that they spread it.

Q. About your uniform procedure. Do you establish quarantine on State lines, or divide the State, if necessary?—A. We always make our quarantine line in the general regulations on State lines. Then in those States which are partly free from infection and which cooperate with us we put it across the territory of the State. Of course that is a great inducement for cooperation, because there is a

large part of the territory of these States which would be above the line, and which, without cooperation, would be below the line. I think probably that is the principal reason why we have so little disagreement with these State authorities.

Q. On account of the greater perfection in the rules of inspection and their administration, has the United States, your department especially, bettered the export trade or put it on a more sure footing?—A. We have saved the export trade in cattle. We would not have any export trade in live stock if it had not been for our regulations, because after the first step in confining American animals to the foreign animal wharves on the other side the agitation was very strong to entirely prohibit the trade in live animals. At the time our regulations for inspection of vessels were made there was a bill in Parliament, which appeared likely to pass, prohibiting carrying live animals. It was put on the grounds of cruelty to animals in transit and their arrival there in bad shape for slaughter; but when our regulations were made specifying how ships should be fitted up and how the cattle should be carried that legislation was dropped, and I have not heard anything about it since. The bill was being pushed by Mr. Plimsoll.

Q. Does the United States inspection stand equally with the foreign inspection in respect to meats, or, in other words, is it generally accepted by the foreign inspectors?—A. I can not say that it is. There has been no question in regard to it in Great Britain, where our largest market is; but in Germany they have not accepted our inspection, and most of our meat is inspected after it gets there. We did get our meat reentered in Germany by establishing our inspection and certifying to our meats, but still they continue to reinspect it.

Q. Was that really as a matter of conserving the public health, or was it a political matter on the agrarian line?—A. My own opinion is that it came from the agrarian agitation there.

Q. Have you inspectors on the other side?—A. We simply have three inspectors in Great Britain, two of them for the live animals—cattle and sheep—and one is now going to inspect the cattle coming from there.

Q. In the Department of Agriculture, especially in your department, have you the cooperation of similar bodies in the European governments, an understanding or a correspondence as to remedies and beneficial legislation?—A. No; we have none. We have, of course, more or less correspondence with the scientific investigators abroad; we hear of everything they do, and we cooperate by exchanging material for investigation more or less; but we have no cooperation in executive work.

Q. To what is the position of the agricultural societies of Europe in respect to American inspection and the importation of American cattle and American meats due? Is it to selfishness, or what?—A. It is mostly selfishness. It all comes from the agrarian agitation to keep out our products. We never have sent any diseases to Europe which appeared there among their stock. They know the nature of Texas fever, for instance, very well, because they have read our reports and they have confirmed our investigations by going over the same ground in their own laboratories; and yet they shut out not only our live cattle from Germany but our dressed beef, alleging it is from fear of this disease. There has never been a case of the disease there. In the same way in France they shut out our live cattle, following Germany, and Denmark and Belgium did the same thing. The two last-mentioned countries practically admit that they are unable to change unless Germany does, because if they let in our meat and cattle Germany would shut out theirs. So that Germany has been the leader in these provisions ever since the prohibition of our pork in 1881.

Q. Would you say that in the case of renovated butter, filled cheese, and imitations of standard butter Europe was justified in shutting them out by law or otherwise? In other words, do you think that our people here were at fault?—A. I think our people are at fault in shipping dairy products under false brands; but I do not know that they would be justified in shutting out the products entirely. I do not think they would; still I think they would be justified in making an inspection or in asking that we should make it.

Q. Would it not be fair for any foreign government to make the American article pay the cost of inspection when they detect fraud?—A. I should think it would. They make our meat exporters pay the meat inspection anyway in Germany and France. I believe that the Agricultural Committee is going to put a provision in the appropriation bill this year authorizing the inspection of dairy products and marking those which are pure and of high grade. Of course, we are not undertaking to mark everything or even to detect the spurious articles, but we will mark what we know to be first-class products.

Q. Would you advise that, in the case of milk inspection in cities and the local inspection of meats and all that, the penalties and the fines should be large enough to support a large force of inspectors; that is, that the violators of law should

pay for the inspection instead of the citizens out of the general treasury?—A. I doubt if they would get enough money in that way. It might be more practical to put a tax on all the meat that is inspected. Of course it is only occasionally that they are going to get a case of violation of the law which they can make hold in the courts. A man inspecting meats is morally certain of a great many cases where the handlers of meat violate the law for every one where he can get evidence to convict them of doing it.

Q. But in cases of local inspection where the fines are heavy the infractions of law are less, are they not?—A. They are where they enforce the fines. Usually when a fine is very heavy the tendency is to let a man off and not fine him at all rather than put a very severe penalty on him. I think where the fine is moderate the law is more apt to be enforced than where it is very heavy.

Q. We have in the Eastern States local laws providing that after the first conviction the fine shall be quadrupled. Is not that the way to reach the remedy?—A. I should think that would be a good plan.

Q. (By Mr. KENNEDY.) Have you ever had any knowledge or suspicion of your inspectors being tampered with by those interested in the work that they are inspecting?—A. Yes; we have. We brought a suit in one case; we brought an action against the manager of an abattoir in the West, and the judge decided on the constitutionality of the law, that we had no business to be inspecting. He decided the law to be unconstitutional, and as it was a criminal case it could not be appealed, so it rested. The point was this, that under the law, under the authority given to Congress to regulate commerce between the States, we could not go into a State and inspect this meat; that it did not become a subject of interstate commerce until it was actually in shipment from one State to another. It was one of those technical constitutional points which are raised sometimes. At any rate, the court refused to apply any penalties to those parties. There was good evidence that they had tried to bribe the inspector. We had changed inspectors three times. They had tried it first on one and then on another and then on a third one. They offered money to pass the meat, and then we thought we would bring an action against them.

Q. Did the money pass? Money was offered, you say?—A. Money was offered.

Q. And rejected and refused?—A. Yes.

Q. Why did you change the inspectors, then?—A. We wanted to make sure; we wanted to get more evidence. They might say in the case of one man, "We never offered that man anything; he was mistaken about what we meant; we did not intend to give him any money." But where three men come up and swear to the same thing the case would be much stronger.

Q. Have you a suspicion that that is pretty general in the abattoirs?—A. No; I do not think so. I think our inspectors are pretty honest and report any improper advances on the part of the abattoir managers. The only thing is, of course, it is human nature for a man after he has been in a place and gets acquainted with the abattoir authorities to try to draw the line so that he is lenient with them, and naturally if he is friendly with them he does not like to offend them by going further than they think he should go. That is the tendency; it is inevitable, and the only way we can counteract it is by changing the inspectors so that we can get new men there.

Q. You do that considerably, I suppose?—A. We do that whenever we think it is necessary.

Q. (By Mr. FARQUHAR.) Are all your employees under civil-service rules?—A. Practically all, yes; all of our inspectors and assistant inspectors, microscopists, stock examiners, and taggers.

Q. Are these microscopists and others subject to examination in Washington here, or are their qualifications passed upon in the State examinations?—A. They are examined in other States. The Civil Service Commission has an examination in all the large cities. They are appointed in Washington.

Q. Are they certified from the local list or from the national list?—A. The inspectors and assistant inspectors are certified from the national list, but the others are certified from the local lists. They are certified from different districts in the country so as to bring them closer to their homes.

Q. Is it a stable employment?—A. All of it except that of the microscopists. They do not have steady work; the work varies with the export trade. For instance, during the past year more than half the persons in the microscopical work have been on leave without pay simply because there was nothing for them to do.

Q. Has the establishment of your national bureau been an advantage to the science of veterinary surgery?—A. Yes; it has been an advantage to it by the investigation of quite a number of diseases that were not understood before. It

has been an advantage to it by furnishing employment for quite a number of men All the inspectors and assistant inspectors are veterinarians.

Q. And has it not also entered a good deal into the education in the agricultural colleges in the country, in the advancement of veterinary knowledge?—A. The demand for veterinarians, of course, has led to an effort to supply the demand by establishing veterinary departments in a good many of the colleges.

Q. Nearly all your inspectors or subinspectors or assistant inspectors are quite young men, are they not?—A. A majority of them are, because we appoint men at \$1,200 a year, and a man who is established in business could hardly afford to take it. Another thing, a young man fresh from college can pass an examination where a man who has been in practice for a while could not do as well.

Q. Is it free from political changes—a change in administration does not affect it?—A. No; men are not changed for political reasons.

Q. (By Mr. A. L. HARRIS.) Do I understand that the State experiment stations experiment on diseases and suggest remedies for live stock?—A. There are quite a number of stations that have veterinarians permanently and a staff of investigators. I could not say just how many of them, but the principal stations have.

Q. Is there a greater disposition now to investigate diseases of animals than a few years ago?—A. I think it is increasing all the time.

Q. Is the per centum of loss now so great as heretofore?—A. I think the loss from some diseases is as great; in others it is not. For instance, the loss from hog cholera, I suppose, is as great as it ever was; that is, I do not know that the percentage is quite as great, but the number lost is as great, because there are more swine. I think that by following the hygienic regulations which have been recommended by the experiment stations and by the Department of Agriculture they have probably lessened the percentage of loss somewhat, but there has never been very much impression made on that disease, which causes the greatest loss, perhaps, of any disease attacking our animals in this country. Of the other diseases, glanders is probably just as prevalent as it was 10 years ago; tuberculosis is more prevalent, and, taking the country over, it is increasing all the time.

Testimony closed.

WASHINGTON, D. C., January 24, 1901.

TESTIMONY OF DR. L. O. HOWARD,

Chief Entomologist of the United States Department of Agriculture.

The commission met at 10.50 a. m., Mr. Farquhar presiding. At that time Dr. L. O. Howard, of Washington, D. C., chief entomologist of the Department of Agriculture, was introduced as a witness, and, being duly sworn, testified as follows:

Q. (By Mr. FARQUHAR.) Give your name and address and official position.—A. L. O. Howard, chief entomologist of the United States Department of Agriculture, Washington, D. C.

Q. (By Mr. A. L. HARRIS.) You may state how long you have been connected with the Department of Agriculture.—A. Since the fall of 1878.

Q. And what is your general field of inquiry?—A. Entirely relating to the economic aspects of the work of insects, especially in relation to agricultural products.

Q. What progress has been made in economic entomology since you have been connected with the Department?—A. Do you mean as to practical results?

Q. As to practical results.—A. That is a big question, and it would require volumes to show it as it ought to be shown: it would require several hours to tell it.

Q. You might in a very brief way state the progress that has been made.—A. The whole subject of the injuries of insects is more important than is generally realized. We have an annual loss to crops by the ravages of insects of something like \$300,000,000, and live stock suffers severely. When economic work really began in this country—that is to say, with the foundation of the Department of Agriculture—we did not know of a single good reliable remedy for any injurious insects, not even with the great pests like the Hessian fly and the chinch bug, not even for the fruit pests like the codling moth—that is, the apple worm—and the plum curculio. At the present time I think it is safe to say we have a fairly good remedy for every insect of economic importance. When I say fairly good remedy, I do not mean a remedy which can be put into effect without some trouble and without some cost on the part of the farmer. When we consider the question of remedies we must consider the ease of application and the cost of application, as

well as the efficacy of the remedy itself against the insect. The General Government now expends \$30,000 a year in support of my branch of the service in the Department of Agriculture. Out of the 45 States 30 of them have State entomologists, who are investigating insects in their particular localities, and publishing bulletins on the results of their work and the remedies which they have found out and which other men have found out. There have been some estimates as to the amount of money which is actually saved by the work which has been done in the way of remedies. Dr. James Fletcher, the Dominion entomologist of Canada, speaking before the Royal Society of Canada, made the statement that the United States led the world in the subject of economic entomology, and that in all probability the damage to agricultural products by insects, were it not for the practical results of the labors of economic entomologists, would be twice as great as it is. A criticism of estimates of the loss in dollars and cents is that when there is a widespread outbreak of insects it reduces the sum total of the crop to a very great extent, but the farming class as a whole does not lose so much on account of the enhanced price of the remainder. When you come to estimate the loss of the wheat crop, and then get the market price and reduce it down to dollars and cents, you will find when the price goes up the loss to the whole country is not so great; but nevertheless that increase in price means an economic loss to the country at large, and it was on that basis that the estimate of \$300,000,000 was made.

Q. From what insect does the agriculturist sustain the greatest loss—what character of insect?—A. I think that lies between three distinct species—the codling moth or apple grub, the Hessian fly, and the chinch bug. I think the annual loss by these insects together would amount to \$60,000,000.

Q. Can you give the sections of the country that sustain the greatest loss, say from the codling moth?—A. The great apple-growing regions: the greatest apple-growing regions suffer the greatest loss. Of course that depends also on the general use of remedies. Certain sections of the country, like Michigan, used to suffer great loss. Now they have introduced remedies very generally. They first took up the banding of trees, and then they took up spraying, and Michigan does not suffer such great losses as it did before that time. Other regions also suffer, which are not successful, and have not taken up the question of remedies as thoroughly as have Michigan and western New York, some portions of Virginia, and other regions.

Q. It is thought by some localities that suffer most that the other localities that suffer less are protected in some way by climate or soil or something of that sort. Is that so?—A. That is so to some extent. Insects have a certain range, governed largely by temperature, elevation, and so on. For example, the San Jose scale, a very important insect, which has been the basis of nearly all the State legislation within the last 10 years on the subject of insects, will not go above a certain point—north of certain points—and will not flourish in regions where there is less than a certain total amount of summer heat. That insect, which is one of the worst enemies to orchards that we have, in many cases killing large orchards of peaches and plums and young peach, plum, apple, and pear trees, is at its worst in Maryland and Virginia. Up in central New York it does not get so numerous, because there is less summer heat. In northern Michigan it does not flourish, but in a strip along the southern part it does, and in Ohio it is quite bad.

Q. You think spraying is a very important remedy against the codling moth?—A. And against many other insects it is a most important remedy, as against the plum curculio and against all scale insects, different substances, however, being used on crops and against different insects.

Q. Does the black knot come under your investigation?—A. It is a fungous disease, and is not caused by insects.

Q. How far has the San Jose scale spread east?—A. It is present, I think, in most of the fruit-growing States at the present time. It is found in Massachusetts, it is found abundantly in Connecticut, and recently made its appearance in Rhode Island. It is found in all the other Eastern and Central States. In the West it is found in California, Washington, Oregon, and Idaho. It is not found in that group running from Kansas and Iowa west to California, and is not known in Colorado and in Nebraska.

Q. Does it continue to spread?—A. Yes; largely for the reason that while certain States—there are now 21 of them—have passed rigid inspection laws which provide that no nursery stock shall come into their States without the certificate of an official inspector or entomologist that it has been examined and found free from scale, there are still many States that have not passed such laws, and the result is that these States have become dumping grounds for all sorts of infested nursery stock. Here is an advertisement from the Cumberland Nurseries, of Nashville, Tenn., of a trustee's sale of nursery stock by the Nashville Trust Com-

pany. One paragraph in this says, "It is proper to state that the 'scale' has been detected in the nurseries." And this letter which accompanies this circular came to me yesterday from an entomologist connected with the Kansas Agricultural College: "My attention has just been called by a Kansas nursery company to the inclosed circular. This firm is much exercised concerning the possible circulation of such stock upon the open market. I have written them that since Kansas is without quarantine laws the State has no means of preventing the importation of such goods. It has occurred to me, however, that you might care to know of the possible exchange of such infested stock." This is just an instance of how scale-infested stock may be thrown into Kansas and similar unprotected States.

Q. What is thought to be the medium by which the San Jose scale spreads?—A. Almost entirely on nursery stock. We do not know exactly where it first came from, but it was first discovered near San Jose, Cal., on the grounds of Mr. James Lick. He was importing plants from all parts of the world at that time. It is suspected to have come from Japan, and then spread all over California, and was considered to be the most destructive scale in existence. About 1889 some Japanese plum stock was imported into New Jersey. The scale was carried East on that stock, but it was not recognized, and that stock and others which had become infested from it were sold all over the Eastern States. The fruit growers did not notice it, and entomologists did not have it called to their attention until the fall of 1893, when some of the stock was sent up from Charlottesville, Va., and then we found for the first time that this serious pest was in the East. Since then we have found that it was generally distributed by New Jersey nurseries, and other nurseries bought their stock from them and continued the spread of the scale. As soon as we found it out we began to send circulars and publish widely the fact that the scale was being distributed. Then the States began to take it up, and began to pass these inspection laws preventing the entrance into the State of any nursery stock unless it was inspected and found to be free from scale.

Q. (By Mr. FARQUHAR.) What insecticide is used in this nursery stock?—A. It is exposed to the fumes of hydrocyanic gas, and in some States a certificate that it has been fumigated by this gas is required. The best remedy depends on the part of the country. In California it is found that a wash of lime, sulphur, and salt works admirably. But the success of that remedy depends on the weather; it works well particularly in a long dry spell. In wet weather it is found inefficacious because the rains wash it off. In the East we have two remedies; one is whale-oil soap and water, a very strong solution; that is efficacious in some cases; and in others, in places where that is not efficacious, they are now advocating crude petroleum, put on the trees with great care only on sunny days, and washed on very lightly indeed or sprayed on.

Q. (By Mr. A. L. HARRIS.) What time is that applied?—A. Applied in the winter time. That remedy is now advocated very strenuously by the State entomologists of New Jersey and West Virginia.

Q. Is there any law that will compel the nurseryman to so prepare his trees before sending them out?—A. There are laws to compel them to submit them to the action of the gas, but not to treat them in other ways.

Q. What is the condition at the present time in regard to the gipsy moth; what territory does that cover?—A. It has spread to some slight extent since the State of Massachusetts stopped its appropriations. The State was appropriating \$150,000 to \$200,000 annually for the work of the so-called gipsy-moth committee. Last winter the legislature refused to make any more appropriations, and, although the insect had been reduced to almost harmless numbers by the work of previous years, it is now beginning again to spread. New colonies are being found. It has not as yet gone far outside of the old limits around Boston, and has not yet crossed over into New Hampshire, although it is very close to the New Hampshire line near Manchester.

Q. Has any effort been made to have the Federal Government assist in the expense of destroying the gipsy moth?—A. Several years ago a committee from Massachusetts came down, and Senator Lodge introduced a measure in the Senate to appropriate \$40,000 to assist in the work. It was in the form of an amendment to the agricultural appropriation bill. The House did not concur in the amendment, and it was thrown out in the conference committee, and so nothing has ever been done by the General Government.

Q. Do you look upon it as of sufficient importance for the Federal Government to interfere?—A. I think it would be well to wait for a year or two so as to judge something of the rapidity of its spread. It is not an insect that spreads very rapidly.

Q. (By Mr. FARQUHAR.) Have we any national law in the line of quarantine against insects?—A. There is no such law.

Q. Have you ever studied out whether it is possible for the National Govern-

ment to make a law of that kind?—A. There are a number of foreign governments which have made such laws which have quarantined against the United States. There has been a quarantine bill in Congress for the last 3 years, which came near passing last session, having been reported favorably by the House Committee on Agriculture. There is an admirable State quarantine in California against insects brought from abroad. They have a quarantine officer at San Francisco who boards every vessel that comes in and looks it over for anything which may possibly carry injurious insects on nursery stock, and everything in the vegetable line; and if insects are found the stock is fumigated or destroyed. The authority of the law and the officers is conceded in the highest court of California. It has been sustained. That law protects California for objects that are intended for ultimate delivery in the State of California. It does not protect the rest of the country. When the inspector finds a large box of plants from Japan, which is consigned to New Jersey or Kentucky, he notifies me and I immediately notify the State officers in those States and they cause an inspection on its arrival, if they have the authority to do so. But in certain States, as in Massachusetts, they have not authority to do so. In Massachusetts, for example, they are large importers of ornamental plants from Japan. I am notified, I notify the State board of agriculture, and they notify the importers, and if they feel like it they cause the stock to be fumigated, but if they do not feel like it they are not obliged to fumigate. This quarantine bill has been before Congress in one form or another for 3 years. A new one, just introduced by Senator Perkins, provides that the Secretary of Agriculture shall have power to quarantine against any other country absolutely if he feels that there is reason to believe that some injurious insects are likely to come in, and he has also power to designate certain ports where nursery stock must be imported and where they will be subject to inspection provided they are not accompanied by a certificate from some competent official of the government from which they are sent. It seems a very desirable thing that such a regulation should be made by the General Government. We have now perhaps 75 kinds of insects which everybody knows and which everybody fears, insects I would call of first-class importance, and more than half of these have been imported from abroad; less than half of them are indigenous to this country, and they have come in very largely through this unrestricted commerce in plants and are still coming in every year. The hop-plant louse, an insect which annihilated the hop-growing industry in the State of Wisconsin, and which occasionally destroys the crop in the great hop-growing regions in New York, came over in just that way. The Hessian fly we were just talking about came over in the straw bedding of the Hessian soldiers in the Revolutionary war.

Q. Is it a historical fact that the Hessian fly came over with the Hessian troops or is it an expression of opprobrium against the Hessian troops?—A. It is disputed. That explanation has been made by some, but it is disputed by others. It is one of those things which we can not possibly decide at this late date. It is a way in which they might have come; there is no question about that. That term of opprobrium is rather a common thing with other insects. For instance, the harlequin cabbage bug in Texas is known as the third-party bug. In Georgia, after the war, the same bug was known as the Abe Lincoln bug. That is really aside; it does not belong in the testimony.

Q. (By Mr. A. L. HARRIS.) What objections are urged to the passage of the pending bill?—A. It was opposed by the nurserymen at first, because they thought—some of them thought—that as most of their stock arrives in the cold months of the year it might be injured by being opened for inspection. I do not know of any other good argument against it. The quarantine features of the bill are being specially urged by California interests, which are united and greatly in fear of a maggot which infests the oranges in Mexico, which has not been introduced yet in California. Passing through Mexico you pick up an orange on the table and you find maggots in it. That thing occurs in most parts of Mexico. Now, there is great danger that this insect may be established in California before the California oranges come on the market, say in early October and early November. The oranges you find then are Mexican oranges, brought from Mexico. Now, suppose those oranges are thrown aside, the maggots transform to flies, and they come out and sting the California oranges; see what an injurious thing it would be? They want this bill passed so that the Secretary of Agriculture can quarantine against Mexican oranges. Of course the Mexicans say the whole thing is overrated, that the insect is not so widespread, and it is simply an effort of the Californians to avoid the competition of Mexican oranges.

Q. What effect is the worm having on the Mexican crop?—A. I do not know that we have any figures on the Mexican crop, but I have on two occasions sent two men all over Mexico just to find out whether the Mexicans were right and to see what it amounted to, and we found that it occurs in oranges all over Mexico

except in the State of Sonora west of the Sierra Madre Mountains; that State seems to be exempt. Elsewhere any orange you pick up is liable to contain these maggots.

Q. Does it destroy the orange or destroy its value?—A. Both.

Q. Or injure its value?—A. Both. The early oranges drop, a great many of them, as a result of that worm; they decay and drop from the trees. The insect has several generations; at first they attack the younger oranges; later they do not make their presence in the fruit evident before the orange is picked and put on the market.

Q. You feel it is important that the American orange grower should have some protection?—A. I do; it is very important. I remember in the Florida freeze in 1896, when so many orange trees in Florida were killed, people in the hotels who went down there for the winter found Mexican oranges on the table with maggots in them. The majority of Mexican oranges, however, do not come to the orange-growing regions. Many of them are shipped straight through to Kansas City or Chicago. Of course, there is no danger then, but when they go to California, as they do, it is decidedly dangerous.

Q. Is the orange worm affected by the climate—that is, does a colder climate than the Mexican climate have any effect on it?—A. I think it will thrive wherever oranges grow.

Q. What have you to say in regard to the present condition of what is known as the cotton-boll weevil?—A. That is an insect that is alarming Texas cotton growers very much. It has spread now until it has got into some of the best cotton land in Texas; but we are not quite sure yet, whether it will spread north of the region of early heavy frosts or not. Under the present bill a small sum is appropriated for an investigation of that insect from my office. The State of Texas has appointed a State entomologist to investigate it the present year. I have the manuscript of his report at the present time. It is a Mexican insect which for a long time inhabited the low tip of Texas around Brownsville, and later was carried north to Alice and San Diego. In that region they have no heavy frosts at all and some of the cotton grows through the winter. You will find large volunteer stalks of cotton all green in the early spring; and those volunteer stalks are cultivated by people down there because the Board of Trade in Galveston offers a largesum of money for the first bale of cotton. Now, that is just the thing needed to perpetuate this weevil, and it is spreading gradually up north. When it reached San Antonio, I happened to be down there at the time of the first winter freeze, which happened about the 1st of December. I found that the insect was killed out absolutely by that frost—a frost of 21° Fahrenheit. For that reason I felt relieved and felt pretty sure that the insect would not spread farther north in the cotton and spread to other States. Recently, developments seem to show that it migrates every year from farther south, north of frost lines, and perhaps it manages then to exist in small numbers through the winter so as to start an increasing series of generations in the spring, and it may become much more serious than at first anticipated. At all events it is damaging some of the best cotton-growing regions in Texas now.

Q. Is that the only insect which the cotton grower has to contend with?—A. He has the old cotton caterpillar or army worm which feeds on the leaves of the cotton plant, but he has a very good remedy for that now. He uses paris green in a very simple way. He takes a bag of coarse cloth, fills it with pure paris green and puts it on one end of a pole and another bag on the other end of the pole. Then he puts a negro on a mule and he trots down the rows, and the jarring of the mule sifts this paris green down on the leaves, putting just enough on the cotton. It makes a very simple, inexpensive, and efficacious way of poisoning the crop. The cotton-boll worm is a very serious evil in some parts of the South, and they get rid of that by diversified crops and by using corn and cowpeas as trap crops.

Q. Will you briefly state what insects the tobacco raiser has to contend with in raising and growing his crop?—A. He has the big horn worm, as they call it, a very large green caterpillar with a horn on the end of his abdomen, and then they have a little beetle which eats holes in the leaves, and this same boll worm of the cotton also attacks tobacco; and there is a new enemy which just became known a year or so ago, which they call the split worm, an extremely small caterpillar, which mines between the upper and the lower surface of the leaf. They get rid of all the leaf-feeding caterpillars now by spraying with paris green. It sounds a little bit dangerous, but experiments have shown that paris green does not stay on the leaf. The idea is now being adopted that it is desirable to allow a certain number of solanaceous weeds to grow, belonging to the same family with the tobacco plant, and these weeds come up, if they are allowed to grow there, before the tobacco comes up, and all the tobacco insects concentrate on these weeds and are easily destroyed. That is what we call using weeds as a trap crop, just as with the

Hessian fly sometimes an early strip of wheat is sowed so as to allow the Hessian flies to concentrate, and the bulk of the wheat is planted later.

Q. Is poison ever put into the bloom of the jimson weed?—A. Yes; that is to catch the moth which lays the egg. They put a little fly poison in the bloom and the moths come along and inserting their beaks for nectar, are killed in that way. That is done in some parts of Louisiana.

Q. What remedy has been found to relieve the loss sustained from what is known as the Hessian fly?—A. I think the remedy which I have just mentioned, together with the study—a study must be made of each individual locality—of the weather conditions and the probability of early or late falls. The trap strip, I think, is the best thing to be found yet, and several of the State entomologists are working on the trap crop at this time. Stimulated by the losses from the Hessian fly last year, the Michigan men and the Ohio men and the Indiana men are working on that problem. One of my men is working on it, devoting his entire time to the Hessian-fly problem, and hopes to publish a bulletin giving the results of his investigations. No extermination of the Hessian fly is to be expected. There must be in bad years some alteration in the method of cropping. A very important point in economic entomology is the study of the crop conditions and the possibility of variation in the method of cropping. There is an insect which they call the clover-seed midge which does great damage to the clover crop. You know we cut clover in most of the Northern States twice, once for hay and once for seed. Now, this insect has two generations, and we find that the adults of the first generation issue just about the time when it is the custom to cut the first crop for hay, so that they are able to lay their eggs and destroy the seed crop when it comes up. Now, if we advance the time of cutting for hay a week or two, we absolutely destroy the insect which causes the damage. This is the custom in Ohio now very generally—they have changed the time of cutting the crop.

Q. Is the wheat weevil an insect which comes from the condition of the grain?—A. Not at all.

Q. Please state whether or not the insect has been studied and whether any remedy can be suggested for the protection of wheat in the bin?—A. The insect has been studied very carefully indeed. That is another of the European insects. In fact all the insects that are injurious to stored grain are cosmopolitan, because grain goes everywhere all over the world. In fact, there are several species of grain weevils. The one known as the fly weevil in this country is not strictly a weevil at all. It is a little moth which lays its eggs in the grain. Now, where grain is stored in bulk we find there is a very satisfactory remedy in the evaporation of bisulphide of carbon on the top of the grain. If it is put in open vessels on the top of a mass of grain in a comparatively open bin in a very tightly closed room, it evaporates rapidly and the vapor is heavier than the air and sinks down to the bottom and destroys the insects. They are now adopting hydrocyanic acid gas against a new grain moth which is becoming prevalent in this country and is known as the Mediterranean flour moth. The building is closed and the cracks all stopped up, and then by the action of sulphuric acid on cyanide of potassium this gas is liberated. The same remedy is used against the cigarette weevil which does great damage to tobacco. In a large tobacco warehouse in Baltimore only this last fall it was found that hundreds of cases of tobacco were affected by this weevil. The tops of the cases were all taken off and the building was fumigated with this gas under police inspection because it is extremely poisonous. The police were stationed on the outside near by to keep the people away, and in the morning the building was opened and it was found that not only had the weevils been killed, but also the mice and rats which infested the building.

Q. There is another insect besides the weevil, known as the chinch bug, which I suppose your department has investigated?—A. We have published a bulletin on that subject which was prepared by the Ohio entomologist, Professor Webster. It is a difficult insect to get rid of. Almost the only thing we can do is to attack it when it migrates. It migrates en masse from the wheat fields to the neighboring corn fields, along about the 1st of July. A great deal of interesting experimental work has been done in Kansas with the diseases of the chinch bug. Fungus diseases were propagated in the laboratory, and it was found that under certain conditions when these laboratory cultures were put out into the fields the disease was communicated to the healthy bugs and they died in great numbers. That is not of much practical importance because it has to be done under certain weather conditions. It had to be done in very damp weather, and the bugs became diseased after the introduction of the laboratory cultures. We are, however, experimenting with a fungus disease brought up from South Africa which is used down there against migratory grasshoppers. Cultures of it were imported last year, and in one locality in Colorado and one in Mississippi it was found that it was readily communicated to healthy grasshoppers and they died in great numbers.

Q. (By Mr. KENNEDY.) Is there danger that if the progress of the vegetable-destroying insects is not stayed by science, the fruit and vegetable foods of the world will be destroyed?—A. It will have to be stayed by practical work as well as by science.

Q. Well, I mean both.—A. By the application of remedies which are the result of scientific study. I do not know. There is a certain balance in nature which has always been preserved, and in a state of nature each species seems to take care of itself pretty well. But our whole difficulty seems to be that man by his extensive cropping has disturbed this balance of nature and in a philosophical way you may say that this enormous multiplication of injurious insects is the effort of nature to restore the original balance. That seems to be the great law as far as I can see.

Q. I would like to ask you then what knowledge you have of these pests in ancient times, if you have any? Were people bothered with them then as they are now?—A. If you will read the Prophet Joel in the Bible, you will find that he was a man who might be called an agricultural pessimist, a man who lamented a great many things. He had something to say about several insects. He is the man who said that the grasshopper had become a burden in the land, and he talked about the palmer worm; and there is no question that injurious insects were noticed as soon as man began to grow crops. As agriculture has become more extensive, the insects have found conditions more favorable for rapid multiplication. Our methods of cultivating crops in enormous fields are particularly favorable to the increase of insects. In Europe, where the agricultural holdings are smaller, where the farms are small and agriculture more intensive, they do not begin to have the same trouble as we have in this country. In the older methods of agriculture in the South, in cotton fields of from 500 to 1,000 acres, the caterpillar and boll worm were extremely injurious, and the planters could not spray with ease. Now, with much smaller fields and a more diversified system of crops, the conditions for multiplication are not nearly so good.

Q. (By Mr. KENNEDY.) Thirty years ago we used to have an invasion of the grasshoppers in Kansas so they would block railroad trains and destroy all vegetation. What is the cause of the disappearance of these grasshoppers for so long a period?—A. Very largely the settling of a great portion of the arid country which was the permanent breeding ground of the grasshoppers. It was a migratory grasshopper; it bred up in the foothills of the Rocky Mountains in arid places, and when it had devoured the vegetation near those places, and had multiplied so excessively that there was no longer anything to feed upon, it migrated to the fertile portions of Kansas and Colorado; but they have brought the conditions of cultivation into those permanent breeding grounds. But I must premise first by saying that the grasshoppers only succeeded in living one generation down in this lower country. Conditions were not favorable to their increase, and the young died. The only place they could live successfully and breed in these enormous quantities was in the permanent breeding grounds. The conditions of cultivation brought by the settling of these arid regions made these regions unfavorable for their unrestricted multiplication. That accounts for the fact that we have not had a recurrence of the Rocky Mountain locust since 1876.

Q. So that pest is practically extinct?—A. Practically so. Once in awhile a swarm will come down from the north, from the Assinaboine country, and settle in North Dakota or Minnesota, but it is stamped out promptly. A large swarm came down and settled in Ottertail County, Minn., about 7 or 8 years ago. The legislature was not in session. The governor of the State took it upon himself to authorize the purchase of several carloads of kerosene and certain destructive apparatus, and the State authorities went up there and with the aid of the county officials went to work and wiped the thing out quickly.

Q. Was that remedy crude petroleum?—A. Yes. After the eggs hatch and the young are hopping around in great masses, they drag over the ground by means of a horse a low sledge with kerosene on it, and as they go forward the hoppers jump up and light on the kerosene and are killed. Another remedy is late fall plowing. The insects hibernate in the soil and early plowing breaks up the eggs and throws them out where the birds can reach them, and so on. They have migratory grasshoppers in South America and South Africa, conditions being about the same, and they come down from the arid breeding ground to the cultivated land; and the same methods are used that are used in this country. The damage about which we hear nowadays from grasshoppers in the West is from the local nonmigratory species.

Q. (By Mr. FARQUHAR.) I would like to know something about the destruction of the foliage on shade trees in cities.—A. There are 3 or 4 species of caterpillars that defoliate shade trees all over the country, and there is the imported elm-leaf beetle. Nearly all the caterpillars, with the exception of one, are strong fliers in the adult stage; the moths are strong fliers, and the remedy of banding

the trees that we see generally adopted in cities is absolutely of no use whatever, because the adult insect flies like a bird and will alight in the top of a tree, and if the band has any effect, it will simply prevent the caterpillars from coming down and will keep them on the tree.

The elm-leaf beetle larva, however, descends to the ground to transform, and the result is that a great many of them are caught on the sticky bands of printer's ink, and so on. But the best remedy against the elm-leaf beetle is the combination of spraying the trees with some arsenical mixture and pouring hot water around the trees after the larva come down to transform.

For the caterpillars that defoliate the leaves of shade trees generally, there is no good remedy except spraying with an arsenical mixture. It should be the duty of every park commissioner of every large city to have a motor-spraying apparatus, that can be carted around the city, and spray the trees at the proper time of the year. It is a very inexpensive matter. The thing has been done by the city of New Haven in attempt to save the large elms there and it has been done in other places—in Central Park, New York, and Prospect Park, Brooklyn. It is a thing which could be done by every city, and which could be done here perfectly well, although sometimes our trees lose their entire foliage through neglect.

Q. What care is there over the trees in Washington by the municipal authorities?—A. There is a park commission appointed by the District Commissioners, who take care of the shade trees along the street; then the superintendent of public gardens and grounds has the care of the trees on the Government reservations. Now the parking commission does nothing against insects except to cut off the limbs infested with the web worm at certain times of the year and cart them away. The way they do that is to go leisurely along the street and cut off the limbs and put them on the cart; and they do it so slowly that the caterpillars can all crawl off and get on the trees again before they get to the dumps. Their work is practically worth very little.

The Superintendent of gardens and grounds sometimes sprays the trees in the parks, but he always sprays too late—after the insects have about disappeared. But even if he did spray at the proper time, it would be of very little use, because the park commission does not spray. Take the case at Lafayette Park, where you have the sidewalk here [indicating] and the trees over here; the trees on this side are sprayed and these over here are not. As soon as he sprays the trees in the park and gets rid of the insects new ones fly across 20 feet of space from the sidewalk trees and reinfest the park trees. The superintendent of public buildings and grounds has nothing to do with the street trees and is not allowed to touch them.

That same difficulty occurs in certain other cities. The trees in the parks and the trees along the streets ought to be under the control of the same man or board.

There is a great difference in the kind of shade trees from the standpoint of insect damage. The tree known as the silver maple, which is a very favorite tree with those having charge of planting shade trees, on account of its rapid growth, is one of the trees which is most badly affected by insects. It is the favorite food of 2 or 3 of the most prominent of our shade tree caterpillars. The ginkgo tree, of which we have a great many in this city and in Brooklyn, is the best shade tree from the standpoint of freedom from insect attack. The oaks are very free from insects. The Norway maple is much better than the silver maple. The box elder is one of the worst that can be planted. I could talk much more on this topic if you wished me to, but I do not suppose it is necessary.

Q. You would say it is possible with care and the expenditure of a little money in a city like Washington, to exterminate these insects?—A. To keep them in check.

Q. Keep them in check and ultimately suppress them entirely?—A. Yes.

Q. In many of the Northern cities is it some seasonal conditions that bring these pests on the trees? Is it the dampness or anything of that kind, or a dry season, that induces the amount of caterpillars to be raised?—A. Yes; the character of the season has a great deal to do with it. In dry seasons the caterpillars are apt to be rather less injurious than they are in damp seasons. Now the reason of that is a curious one. These insects are held in check under favorable conditions by certain parasitic insects—little gauzy winged insects. In damp weather these things can not fly; their wings become clogged by dampness; but in dry weather they attack the caterpillars, lay their eggs on them, and the caterpillars are destroyed. Three years ago 98 per cent of the caterpillars on our shade trees were destroyed by these parasitic flies. It was during a dry season.

Q. To check them or partially exterminate them, it is not a very expensive matter for a Government like this to take hold of?—A. Comparatively inexpensive. The park commission has an appropriation of about \$16,000 a year, I think, and that is almost entirely expended in the planting of new shade trees, and an insig.

nificant portion of it in the care of the old trees, and that insignificant portion is not wisely expended; and that is the case in almost every city that I know of.

Q. The administrative remedy in the matter would be for the cities to demand of the commissioners the proper care of the shade trees?—A. Yes; that is true.

Q. And you would say there are plenty of remedies cheaply applied that could correct these losses?—A. Yes; if applied on a large scale. The householder can not be expected to take care of the shade trees in front of his house.

Q. (By Mr. A. L. HARRIS.) Have you discovered any insects that prey on some of the insects that you have mentioned that are injurious to fruits and grain?—A. Oh, yes; nearly every injurious insect has a certain number of parasites, but the practical encouragement of these parasites is a very complicated thing and generally impracticable. In the case of some of our imported insects, we have done good work by importing their natural enemies from the country of their origin. That was the case with the so-called white scale of California, an insect which threatened the extinction of the citrus-fruit industry in California. We discovered this insect was originally from Australia, and through correspondence we found it was not a very abundant insect, although it multiplied most extraordinarily in California and killed out whole orchards. The inference was that it had some parasitic insect in Australia that kept it in check. We sent out there and found the insect and imported it into California, and it bred so rapidly that inside of a single year the white scale was practically wiped out of existence.

Now, we have passed that insect around. We have sent him over to Portugal, where the same insect was wiping out the orange industry on the banks of the river Tagus. We sent it to Egypt, where the same insect was in the gardens of Cairo and Alexandria; and it was equally efficacious there. That is the most strikingly successful incident of that kind of work that we have done, but we have done others that have been efficacious. For example, there were brought over from Australia some little beetles that preyed on the so-called black scale of the olive, and which have proved very efficacious in certain portions of California in killing off this scale. In certain other portions they have not bred so rapidly. This last year we brought over a parasite from South Africa for this same black scale on the olive, which we think will take the place of the other in the drier portions where the other is not so effective.

We brought over a number of years ago a parasite for the common imported cabbage worm, which in certain parts of the country has multiplied and is doing good work. We imported some years ago a parasite of the Hessian fly, which took hold for a while in one point in Maryland, but it has disappeared.

Q. (By Mr. FARQUHAR.) What help do the birds give you?—A. Birds are very important indeed; and it is so well an understood fact that it would be almost trite to say the shooting of birds is increasing the chances for the multiplication of injurious insects. There are a great many interesting facts on record as to the amount of insect food which our insectivorous birds eat in the course of a month. A good many of the publications of one branch of our Department are on that subject—Dr. Merriam's division. A very extensive series of examinations of the stomach contents of birds show what birds are injurious and what are beneficial.

Q. You might name some of those if you have them in mind?—A. That is hardly my work, and I am afraid I could not.

Q. Would the sparrow be included?—A. The English sparrow is an unmitigated pest from every standpoint.

Q. Is it insectivorous?—A. It will eat insects when it can not get anything else. Because it eats insects, a bird is not necessarily a beneficial bird. It may have a predilection for beneficial insects. There are probably almost as many insects that are parasitic, or that prey on injurious insects, as there are injurious insects; but unfortunately the injurious kinds seem to multiply more rapidly and to be more prolific.

Q. You spoke of the possibility of a famine that might come to the world through these insects destroying the production?—A. That was Mr. Kennedy's suggestion.

Q. Haven't you to take into account the cooperation of men with nature in the multiplying of all these products over and above the natural production?—A. Of course.

Q. Man's cooperation is likely to overcome a destructive feature of that kind?—A. I think so.

Q. (By Mr. A. L. HARRIS.) To what extent is your bureau assisted by the States in the work you are doing?—A. We assist one another; we do a certain amount of cooperative work. For example, there happens to be in West Virginia a man who has paid special attention to the insects injurious to forest trees—Dr. A. D. Hopkins. He has devoted his entire time to that subject. A year ago last Spring I employed Dr. Hopkins to take a trip to Washington, Oregon, and Idaho to study damage done by insects to the forests in that part of the country.

Last year I sent him to Maine to study damage done to spruce forests. I have not a man on the force who has the same specialized knowledge as Dr. Hopkins. His State is largely a forest State, and the experience which he gains on these trips, undertaken at the expense of the Department of Agriculture, is of value to him, and his experience is of value to us. In the same way we have employed the assistance of certain other State officials. This is important when it comes to the broad question of the insects which extend all over the country. We have an association of all these entomologists. The work is divided up, and each man studies conditions in his locality. These conditions are all brought together, and we thus have a summary and survey we could not get in any other way.

Q. (By Mr. FARQUHAR.) Are there other departments in the Department of Agriculture that cooperate with your bureau?—A. In a way. For example, the subject of the chemical constituents of chemical insecticides; the amount of adulteration that is being done in insecticides—it is almost impossible to get a pure paris green. Dr. Wiley is analyzing a large quantity of these things for us. In the same way other divisions would be constantly treading on each other's toes without a certain amount of cooperation. For example, Mr. Wood's division is studying the diseases of plants. Here we find that insects are responsible for the spread of certain diseases among plants, as with human beings. There is a wilt of the melon leaf, a bacterial disease which causes the leaves of the melon to wilt. It is found this disease is carried by insects. A beetle comes along and gnaws a hole in the leaf. The hole is insignificant, but it introduces the bacteria which causes the disease. In that way the different divisions cooperate. Also, the Bureau of Animal Industry takes the whole question of live stock, and of course there are many insects which are injurious to animals—the horse bot, ox warble or grub, and the sheep bot, and so on.

Q. (By Mr. A. L. HARRIS.) How many of the States have established a bureau of entomology?—A. There are 30 States now which employ an official entomologist under the agricultural experiment stations.

Q. Can you speak as to the thoroughness of their investigations from the contact that you have had with them?—A. Their relative thoroughness?

Q. Yes.—A. I should hardly like to go on record in that regard; they are nearly all personal friends of mine.

Q. I did not know but what you had a word of praise for them.—A. Some of them are doing excellent work. You see, this experiment-station movement is a comparatively recent one. The entomologists had no collections; no libraries; nothing but individual experience. There was a sudden demand for a class that did not exist. Most of them were young men just out of college, and they had no libraries or collections, and they had, moreover, to educate the farmers of the State. They had to go around and talk at farmers' conventions, and had to publish bulletins which were simply compilations of what had been learned by others; and it is only recently that some few of them have got into the position where, by collections and libraries and apparatus, they have been able to get down to original investigation. The State of Ohio stands near the top. The State of New York has a very efficient service; the State of Illinois also, and a number of the others.

Q. The interest is growing, I suppose?—A. Very largely—growing enormously. In my early experience in appearing before farmers' conventions the farmers listened to me with, I will not say incredulity, but certainly with indifference. They looked upon any man who talked about the application of science to agriculture as a theoretical fellow who had not the practical experience which was necessary before practical ideas could be gained. The results which have been achieved, not only by my branch of the work but by other branches of the Department of Agriculture, have been so great that the farmers have changed their attitude entirely. One of us goes out and he finds that he is listened to with respect; and not only that, but he is kept on his feet to answer questions for an hour after he gets through with his talk; and the State agricultural experiment station men say the same thing. There is a very rapidly growing appreciation by the farmer in regard to the work of science as applied to agriculture.

Q. How is this knowledge distributed to the people, in bulletins?—A. In bulletins and in circulars and in larger reports.

Q. You have a mailing list, have you?—A. Yes. Owing to recent Congressional legislation, however, there is only one class of bulletins of our Department which can be freely distributed to every applicant. These are the so-called Farmers' Bulletins. We have a series of about 150 of them. But the circulars, of which we have published 40 or 50 in our branch of the work, and which are concise directions about specific insects, these are used in our correspondence, and they answer the purpose perfectly well. In the larger bulletins we have a restricted mailing list, but they can be purchased from the superintendent of documents for about 5

cents or 10 cents each. In the several experiment stations in the States the bulletins are published in large editions of 20,000 copies and distributed very widely.

Q. You have the advantage of free mailing facilities?—A. Yes.

Q. What is the condition in regard to the States in issuing their bulletins?—A. They are issued under frank also.

Q. (By Mr. KENNEDY.) Under frank of what, your Department?—A. It seems to me there has been some special legislation.

Q. (By Mr. A. L. HARRIS.) Have you any suggestions to make as to future legislation, that would strengthen your bureau, by the National Government? Of course you act through the Department of Agriculture, but have you any suggestions to make wherein you feel that your work could be made more efficient?—A. My own work?

Q. Yes; your bureau first.—A. Nothing, except larger appropriations. I imagine we can spend a good deal more money than we are getting to the advantage of the agricultural classes—I feel sure. We had a lump fund of \$22,500 last year; about 75 per cent of that was expended in salaries of investigators who could be put on anything that happened to come up. We investigated a good many particular topics; for instance, insects attacking garden crops, and generally speaking, insects attacking citrus crops, and the general subject of beneficial insects from abroad, and a number of other topics of that kind. We could do the work more expeditiously, perhaps—not more thoroughly, but more expeditiously—with larger means. I do not wish here to mention a specific sum.

Q. (By Mr. KENNEDY.) Congress is not as liberal with your bureau as with Dr. Salmon's?—A. By no means.

Q. He said they gave him all the money he could expend.—A. His is a bureau; mine is a so-called division.

Q. (By Mr. A. L. HARRIS.) The importance of your bureau is growing, I suppose, from year to year, as manifested by the size of your appropriation?—A. That would indicate not so much the growing importance of the bureau as a growing appreciation of its importance. I do not think its importance is growing, but the appreciation of its importance is growing. When I first came to Washington the only appropriation was for the salary of the entomologist and one assistant; now they give not only the lump sum I mentioned, but also about \$10,000 more in statutory salaries, so called.

Q. (By Mr. KENNEDY.) Do you have much assistance in your work from the agricultural press of the country?—A. The agricultural press have done a great deal of good in this line of work; yes. Certain of them have started entomological investigations in the way of soliciting information from certain parts of the country on certain aspects. The information they have gathered has been largely statistical.

Q. Also, they assist you in disseminating.—A. (Interrupting.) They disseminate our results very rapidly. They are anxious to get hold of anything in the way of results. The agricultural newspapers are especially good in one way—they send their newspapers to most of the working officials of the Department without charge. For instance, in my own office 75 or 80 come in every week, and we clip the insect portions and keep a general oversight in that way of everything going on in the local agricultural societies and so on that bears on our work. Before we finish, I want to say a word or two more on the subject of State legislation.

Q. (By Mr. A. L. HARRIS.) That is what we would like to have.—A. Out of the 45 States only 21 have inspection laws or laws which enable them to do any organized work against insects. As I said before, those States which have no law are constantly in danger, not only of the San Jose scale, but other insects which they do not have at all. This bill now before Congress would act as a quarantine bill against injurious insects from abroad, and it would also act in the regulation of interstate traffic in nursery stock and things of that kind—living plants of any kind—leaving, then, for the States simply the question of the extermination of the insects within their own borders. Either that national bill must pass, leaving the question of inspection of plants intended for interstate commerce to the General Government, or the States must pass uniform laws. It is very confusing now, even with the 21 that have laws, since one form of certificate is required by one State and another by another, and it is necessary for a nurseryman dealing in plants at the present time to have before him in condensed form 21 sets of laws and forms of inspection and consult them in about every shipment of stock that he makes. I think that would be a good point to bring out in your report, if you agree with me. There should be some uniformity in State laws.

Q. Under the police regulations, I suppose the States could prevent the entrance into the State of foreign nursery stock unless it was properly certified to?—A. Yes, that could be done.

Q. And the State could not be required to wait for the Federal Government under the interstate commerce provision of the Constitution before they could put that on their own statute books?—A. That is true; the State of California protects herself admirably in just that way at the present time.

Q. Have any of the States attempted anything along that line?—A. Yes; as I say, California has done it; Oregon has done it; the Maryland State law has something of that bearing, although not as explicit as it should be. The new New York State law is a very curious one. Up to this last session—I do not know what measures they passed then—but up to this last session it prevented the sending of infected nursery stock outside of the State, but it did not prevent the admission of infected nursery stock from other States—a very curious anomaly. California, for example, whose law has been the longest in effect, prevents the admission of anything but does not prevent the sending out of anything. A man who exhibits for sale in the market in Los Angeles a tray of apples infected by the San Jose scale is arrested and fined; but if he puts a top on that tray and ships it to Chicago it is all right.

Q. Which State, in your opinion, has the best law?—A. It is a subject upon which I would not like to express an opinion at the present moment, because the regulations of the New York State law and the Illinois law have not been tried sufficiently. In the course of a few years of use we will be able to say which is the ideal law, and it will be easy for those which have laws to modify them in accordance with that experience, and for those States which have no laws to adopt the one found to be best. The Illinois law seems to work very well indeed. The Maryland people are rather well pleased with their law, although some of the nurserymen in outside States object to the stringency of the Maryland law. It is my opinion that Maryland is very well protected by her law.

Q. You would advise uniform legislation on the subject as nearly as possible?—A. Yes; either in the shape of a national law or the unification of State laws.

Q. To what extent are the State legislatures supporting the bureaus of entomology in the way of appropriations?—A. In the different States?

Q. In the different States; is it sufficient?—A. They are supporting it in some States and in others they are not. Very few States are making specific appropriations for insects, but many of the States give to the experiment stations in addition to funds given by the General Government. That fund appropriated by the State is distributed among the different branches of the work by the director of the station or by the board of control. There is, however, in the State of Illinois a State entomologist, who is supported by State appropriations; there is also in New York; the same thing has recently been done in Texas.

Q. If more liberal appropriations could have been made the work could have been done more efficiently?—A. I think so; yes.

Q. You think the work is of sufficient importance for the legislatures to take an interest in the matter in the way of protection?—A. I think so, decidedly. Conditions vary in different States. We have so many different kinds of climate in the United States that an insect might be locally of enormous importance in one section of the country and comparatively of no importance in the rest of the country. Take the cotton boll weevil in the State of Texas, for example. Now, in these cases, don't you think the State ought to do the work rather than the General Government? It seems so to me, except in cases where a spread of the insect over large territory comprising a number of States is reasonably to be expected. The argument made in the case of the gipsy moth was that it would spread to other States in case the Massachusetts people did not handle it by themselves. But there are insects which are restricted climatically to certain portions. In southern California there are some insects which are peculiar to that part of the country, for instance.

Q. I would like to know by what means the gipsy moth spreads.—A. It spreads only by the traveling of the caterpillar and by the carriage of the caterpillar by wagons and other vehicles which it may crawl upon. It spins down from trees to a limited extent, and persons walking through the region get the caterpillars upon them and carry them, and getting on a trolley car, perhaps, may carry them a good many miles in that way. They may drop on carriages or crawl on railroad cars that are side tracked and be carried hundreds of miles in that way.

Q. No State is then protected at the present time?—A. No. If the State of Massachusetts does not take up the work I confidently expect the gipsy moth will be found in a few years in New Hampshire, Connecticut, Rhode Island, and New York.

Q. (By Mr. A. L. HARRIS.) Your bureau is a very important one, and it is one of growing interest, and you seem to have some notes there; if there is anything that we have omitted that is important, I wish you would on your own

motion state it.—A. I merely brought along, not in the way of notes, some data and facts, most of which I have just given you.

This quotation is taken from the memorial prepared by a committee of the American Association of Nurserymen to Congress, praying for the passage of the bill I mentioned, and a copy of which I will submit: [Reading.]

"The chief danger to the nursery interests of the country is that the different States have passed diverse laws, many of them very drastic in character, practically prohibitory, so that an honest nurseryman is unable to send clean nursery stock into many of the States, while a dishonest man, or a careless one, may freely send infested stock to other States which have not yet protected themselves by State laws. These difficulties can only be reached by a law governing interstate commerce, such as is now proposed. Moreover, aside from the actual damage which the insect (the San Jose scale) has done in nurseries, the fact becoming known that a nursery has become infested with the scale has, in many cases, operated so severely as to entirely destroy the reputation and credit of the firm. From what has just been said the necessity for a uniform national law becomes apparent. The different requirements of State laws, and the entire lack of any law in certain States, has produced a condition intolerable to the nurserymen and of great danger to the orchardist. For example, a man shipping trees into Maryland requires one form of certificate: shipping into Virginia he requires yet another form under present regulations; while into other States, as Ohio, no form of certificate is required, thus making it the dumping ground for infested stock from all districts. Moreover, in New York the law prohibits sending infested stock outside the State, but does not prohibit its entrance. Such incongruities as these in State laws indicate most strongly the necessity for a uniform national law.

The bill above mentioned was favorably reported, with amendments, by the Committee on Agriculture of the House of Representatives. The following is an extract from that report: (Reading)

* * * * *

"The necessity of such legislation is of grave importance for the protection of our agricultural and horticultural interests. Scientific men and nurserymen have recommended it for years, and the demand for it upon the part of the people has become so strong that it should be deferred no longer. The pending bill has been indorsed by representatives of entomologists and vegetable pathologists, as well as by nurserymen and fruit growers. The committee is not advised of any opposition to this bill from any quarter.

"It is an acknowledged fact that fully one-half of the principal injurious insects now in the United States have been introduced from foreign countries. No effort on the part of the General Government has ever been made to prohibit the entrance of such pests.

"The State of California has alone established a horticultural quarantine at the port of San Francisco, but this is the only one of our great ports which is so protected. At San Francisco during the past year 123 steamships and sailing vessels arrived carrying trees, plants, and fruits from Japan, Ceylon, Australia, New Zealand, South Sea Islands, Central America, Mexico, and British Columbia. The quarantine officer destroyed over 3,000 trees and plants infested with insects new to California. Other stock was thoroughly fumigated with hydrocyanic acid gas.

"The estimated annual damage to agricultural and horticultural interests of this country from the attacks of injurious insects amounts to \$300,000,000; and it is safe to say that, at a low estimate, at least one-half of this damage is done by imported insects.

"As indicated in a later paragraph, a number of foreign countries have quarantined against American plants and fruits, but no such quarantine exists in this country, although the necessity of it, from the facts just mentioned, is obvious.

"There exist in Europe, especially in south Europe, and in the countries beyond the Pacific, with which we are just entering into greatly enlarged commercial relations, many insects noted as pests which are liable at any time to make their appearance in this country under existing conditions.

"It has been so general an experience as to make it practically a hard-and-fast rule that foreign insects introduced into this country thrive in a much greater degree than in their native homes.

"From the West Indies and from Mexico we are also in danger. For example, there exists in Mexico a maggot which infests oranges and lemons, known as Morelos fruit worm, which has not yet become established in this country. It occurs in all parts of Mexico and Central America, except possibly the State of Sonora in Mexico, and Mexican oranges for the United States have come across our borders

and taken their place in our markets during the months of November and December. Most of these oranges have previously been shipped to Northern markets where there is no danger of an orange pest establishing itself. Of late, however, they have been carried into California, and the extensive citrus industry of that State is in danger. Within the past 2 months a cargo of Mexican oranges, riddled with this maggot, was stopped at the port of San Francisco, and the oranges were burned under the operation of the State quarantine law.

"Louisiana and Florida are not protected in the same way, however, and the danger is a real one. Even in the case of the Mexican oranges shipped to the Northern and Middle States, the empty cars are frequently carried back to California, and perhaps to other orange-growing regions, and thus becoming an additional source of danger.

"The success of the State quarantine at the port of San Francisco indicates what may be done and what should be done at other ports of entry of the country by national legislation. It should be said, however, that while the quarantine at San Francisco protects California, it does not protect the rest of the country because the State officers have jurisdiction over shipments intended for California.

"It is safe to say that had such a quarantine service been in operation at all the principal ports of the United States during the past 30 years, the cost of its operation would have compared with the actual saving to the agricultural and horticultural interests of this country as one to one hundred; and it is equally safe to say that such a service in the future would result with equal, and probably, on account of the increased foreign trade, with greater relative benefit to this country.

"A seriously destructive insect known as the San Jose scale, introduced a number of years ago into California, possibly from Japan, has been and is being scattered over our country in interstate commerce.

"This scale is the worst insect enemy to orchard trees which this country has ever known. Since its accidental introduction into the Eastern States, it has spread or has been carried into almost every State in which the orchard industry is a feature. It has done its greatest damage in the States of Maryland, Virginia, New Jersey, Ohio, Georgia, Indiana, and Illinois. It also occurs in Canada, and has been the cause of an absolute prohibition against the introduction of American trees and plants on the part of Canada, Germany, Austria-Hungary, France, Switzerland, Turkey, and Cape Colony, and of fruits as well on the part of Germany.

"The worst aspect of this danger is that the insect itself is so extremely minute that it is carried in shipments of trees and plants, and obtains a foothold in many places, and entirely escapes the attention of the uninstructed eye until after it may have done irreparable damage and become thoroughly established and escaped from this as a center of destruction to the regions around about.

"In spite of its minute size, it multiplies with such rapidity as to cover the bark of young trees and sap their vitality to such an extent that the trees are killed in the course of 2 or 3 years.

"For example, in Maryland a peach orchard of 20,000 trees was completely destroyed in 2 years.

"An outbreak occurred on Catawba Island, Ohio, which necessitated the destruction of over 3,000 bearing peach trees and the expensive treatment of an additional area of 1,000 acres.

"The peach and plum interests of Georgia are very great. In one county alone the orchards are estimated to be worth over \$5,000,000. In certain portions of the State the trees have become infested by the scale to such an extent that within the past few weeks one orchard of 3,000 trees has been condemned and the trees burned. In another orchard 1,000 trees have been condemned and burned the present winter. Thus the orchard interests of this State are threatened, perhaps, with extinction.

"In North Carolina a valuable orchard of 80,000 large peach trees was cut down and the trees were burned the past autumn.

"Instances similar to these might be multiplied.

"The danger from this insect is greater in this country than in any other country on account of the custom among nurserymen and orchardists of very extended interstate commerce. Nursery stock is bought in small and large quantities in different States, and is shipped by freight, express, or by mail to other States, thus spreading the infestation.

* * * * *

"In the opinion of the committee this bill is a step in the right direction, and is worthy of early and favorable consideration."

(The following is a copy of the bill (as amended) submitted and referred to above by the witness:

[H. R. 96, Fifty-sixth Congress, first session. Report No. 304.]

IN THE HOUSE OF REPRESENTATIVES.

DECEMBER 4, 1899.—Mr. Wadsworth introduced the following bill; which was referred to the Committee on Agriculture and ordered to be printed.

FEBRUARY 12, 1900.—Reported with amendments, committed to the Committee of the Whole House on the state of the Union, and ordered to be printed.

A BILL to provide rules and regulations governing the importation of trees, plants, shrubs, vines, grafts, cuttings, and buds, commonly known as nursery stock, and fruits into the United States, and rules and regulations for the inspection of trees, plants, shrubs, vines, grafts, cuttings, and buds, commonly known as nursery stock, grown within the United States, which become subjects of interstate commerce or exportation.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be unlawful for any transportation company, after July first, nineteen hundred, to offer for entry at any port in the United States any trees, plants, shrubs, vines, grafts, cuttings, and buds, commonly known as nursery stock, unless accompanied by a certificate of inspection by an official expert of the country from which the exportation was made, which certificate shall be made in the manner and form prescribed by the Secretary of Agriculture, certifying that the contents have been examined and found apparently free from all insect and fungous or other diseases dangerously injurious to nursery stock. In case any nursery goods are offered for entry without said certificate, it shall be the duty of the collector immediately to notify the Secretary of Agriculture, who shall arrange for inspection, to be made at the expense of the importer, who shall pay therefor a fee to be fixed by the Secretary of Agriculture, and said collector shall not allow them to pass within the jurisdiction of the United States until proper certificate of inspection has been received. And after the aforesaid date, July first, nineteen hundred, all nursery stock imported in accordance with the aforesaid regulations shall be free from all further inspection, quarantine, or restrictions in interstate commerce: *Provided, however,* That nothing herein contained shall prevent the inspection of such nursery stock by the authorized inspectors of any State or Territory at the final point of destination in accordance with the laws of said State or Territory; but the Secretary of Agriculture may at any time relieve such articles from inspection by a specific order. All trees, plants, shrubs, vines, grafts, cuttings, and buds, commonly known as nursery stock, shall be subject to inspection by official experts at such ports of entry as shall from time to time be designated by the Secretary of Agriculture, with the approval of the Secretary of the Treasury, and published in the regulations provided for in this act.

SEC. 2. That whenever it shall appear to the Secretary of Agriculture that any nursery stock or variety of fruit grown in an infested district outside of the United States is being, or is about to be, imported into the United States or the District of Columbia, and such variety of fruit is infested by any seriously injurious insect or disease, and which insect or disease is liable to become established in the United States and seriously affect any such nursery stock or variety of fruit grown therein, he shall have authority to quarantine against any such importations and prevent the same until such time as it may appear to him that any such insect or disease has become exterminated in the country or district from which such fruit is being, or is about to be, imported, when he may withdraw the quarantine; and this shall operate to relieve all such nursery stock or fruit from further quarantine or restrictions so long as the conditions of freedom from seriously injurious insect or disease shall continue.

SEC. 3. That any trees, plants, shrubs, vines, and buds, commonly known as nursery stock, grown within the United States, may, upon complaint or reasonable ground on the part of the Secretary of Agriculture to believe that the same are infested with disease, become subjects of interstate commerce under the rules and regulations as hereinafter provided. The Secretary of Agriculture shall cause to be inspected by a qualified entomologist and vegetable pathologist all trees, plants, shrubs, vines, and buds, known as nursery stock, which are subjects of interstate commerce, and which are about to be transported from one State or Territory or the District of Columbia into another State or Territory or the District of Columbia. This examination shall be made, so far as possible, prior to September first

of each year, in the manner provided for and prescribed by the Secretary of Agriculture; and if such nursery stock is found to be apparently free from dangerously injurious insects or diseases, the certificate of the officer making such examination and finding shall be issued to the owner or owners of such nursery stock, a copy of which certificate shall be attached to and accompany each carload, box, bale, or package, and when so attached and accompanying shall operate to release all such nursery stock from further inspection, quarantine, or restriction in interstate commerce: *Provided, however*, That nothing herein contained shall prevent the inspection of such nursery stock by the authorized inspectors of any State or Territory at the final point of destination in accordance with the laws of said State or Territory.

SEC. 4. That it shall be unlawful for any person, persons, or corporation to deliver to any other person, persons, or corporation, or to the postal service of the United States (except for scientific purposes or by permission of the Secretary of Agriculture), for transportation from one State or Territory or the District of Columbia to any other State or Territory or the District of Columbia, or for exportation to any foreign country, any trees, plants, shrubs, vines, or other nursery stock which have not been examined in accordance with the provision of section three of this act, or which on said examination have been declared by the inspector to be infested with dangerously injurious insects or diseases. Any person, persons, firm, or corporation who shall forge, counterfeit, or knowingly alter, deface, or destroy any certificate or copy thereof as provided for in this act and in the regulations of the Secretary of Agriculture, or shall in any way violate the provisions of this act, shall be deemed guilty of a misdemeanor, and on a conviction thereof shall be punished by a fine not to exceed five hundred dollars nor less than two hundred dollars, or by imprisonment not to exceed one year, or both, at the discretion of the court.

SEC. 5. That the rules and regulations herein provided for shall be promulgated on or before the first day of July of each year.

SEC. 6. That the sum of one hundred thousand dollars, to be available on the first day of May, nineteen hundred, or so much thereof as may be necessary, is hereby appropriated, out of any moneys in the Treasury of the United States not otherwise appropriated, to carry into effect the provisions of this act.

SEC. 7. That this act shall take effect on and after the thirtieth day of June, nineteen hundred.

SEC. 8. That the provisions of this act shall not apply in interstate commerce to florists' greenhouse trees, shrubs, plants, bulbs, and commonly known as florists' stock.

This same bill, word for word, with the exception that the date when the law is to take effect is changed to July 1, 1901, was introduced in the Senate January 17, 1901, by Senator Perkins, of California, and is printed as S. 5615, Fifty-sixth Congress, second session.

As I stated, and as indicated in the texts of these bills, such part of these proposed laws as apply to interstate commerce in nursery stock, etc., are not intended to conflict with existing State laws concerning especially the enforced treatment against and attempt to eradicate injurious insects and plant diseases. In other words, when this law comes into effect it will still in many cases be necessary to supplement it by the operation of State laws. Nearly all of the State laws provide for the inspection of orchards as well as nurseries and for the enforced treatment of such as are found to be infested with dangerous insects, and especially the San Jose scale. Others wisely provide for the establishment of county or district boards of commissioners upon the complaint of a certain number of citizens that certain premises are affected by dangerously injurious insects, thus placing the State in position to handle any emergency that might arise in the future. In other words, the national bill handles only one aspect of the question as it appeals to State organizations. Even in the event of the passage of the national law, it will be necessary for most States and desirable for all to keep in operation a good crop pest law. Of such laws already in existence, that which has stood the test for the longest period of time is the California law, and it is desirable that all States should enact legislation of a very similar character. The greatest reason for uniformity in State laws on these topics, however, would be obviated by the passage of the national act. Should this national legislation fail, and even in the interim of its consideration uniformity in State legislation is highly desirable. A few of the State laws are of too recent enactment to judge of the full effect of their operation and for this reason it would be practically impossible to select any one law and announce it as a model for other States. The laws of the State of California, just referred to, have been very effective as to the handling of insect outbreaks

within the boundaries of that State. They have also been effective as to the prevention of the introduction of injurious insects, but they lack, as already pointed out, the important provision which is found in the New York State law and which prevents the shipment of infested material from within the State to points outside. The California law also has no provision which will permit the acceptance of inspection certificates from properly qualified officials of other States or countries and, in the event of the passage of a national law, the California law will need modification.

In the four years which have elapsed since the "National Convention for the Suppression of Insect Pests and Plant Diseases by Legislation" was held in Washington, a number of new laws have come into existence and very widespread experience in the operation of these laws has been gained. The subject of uniformity in State legislation, it seems to me, could very properly and authoritatively be discussed by another national convention composed, as was the first, of representatives of State horticultural and agricultural societies, of the National Association of Nurserymen, of the Association of Economic Entomologists, and of the Divisions of Entomology, Pomology, and Vegetable Pathology of the United States Department of Agriculture, with, perhaps, a representative of the office of the attorney-general of each State. It should be the duty of this convention to unite upon the details of such a uniform State law as is undoubtedly needed.

(Testimony closed.)

WASHINGTON, D. C., January 29, 1901.

TESTIMONY OF WILLIAM CARTER STUBBS, PH. D.

Director Louisiana Experiment Stations.

The commission met at 10.55 a. m., Mr. Farquhar presiding; at that time Mr. William Carter Stubbs was introduced as a witness, and, being first duly sworn, testified as follows:

Q. (By Mr. FARQUHAR.) Please give your name, post-office address, and official position.—A. William Carter Stubbs, Audubon Park, New Orleans; director Louisiana experiment stations.

Q. (By Mr. A. L. HARRIS.) How long have you been engaged in experiment-station work?—A. Since 1872.

Q. Where did you have your first experience?—A. In the agricultural and mechanical college of Alabama. I began there in 1872, and have been connected with agricultural colleges ever since.

Q. Are you a farmer also?—A. I am a farmer, I assume; yes. I am a planter. We call them farmers in Virginia and planters in Louisiana—in the South. I own my old homestead in Virginia, which was, if you will allow me, settled by my ancestors in 1652, and has never been out of the family.

Q. You still have an interest in farming in Virginia?—A. I still own that old homestead; there is about 900 acres in it.

Q. Have you any land interests in Alabama?—A. I have a large plantation in the northern portion of the State, on the Tennessee River, which I am running. I married in Alabama, and I lived there 16 years, and hence I have some accumulations I made during that time, and still own them.

Q. You are conversant with agricultural conditions in Alabama?—A. Yes; I have been in every county of the State of Alabama on an agricultural mission. We held farmers' institutes everywhere over the State—agricultural meetings; and further, I might say, I was State chemist at the same time for Alabama for a number of years and quite familiar with the scientific side of the agricultural question.

Q. Are you thoroughly conversant with conditions in the State of Louisiana?—A. I think I ought to be. I have been there 16 years, and I suppose I can shake hands with almost every farmer in the State and he will recognize me. I have been a very active agent for agriculture for the 16 years that I have been there.

Q. Please state, in your own way, the condition of labor in your State particularly and over the South generally, as you are acquainted?—A. In the past 10 years Louisiana has increased in agricultural products, in the area that has been cultivated, and of course there has been a natural increase in the number engaged in agricultural labor; but there is, I suppose, comparatively a decrease in numbers. I mean by that, not all the natural increase remains with us. They have

left us to go to towns, villages, cities, to go on railroads, to go on the levees. A few months ago I was in Cairo, Ill., a city like New Orleans in that it has a levee around it to protect it from the floods. I was there over a day and took a walk around on the levees, and found 2,500 colored men engaged in the work. I naturally sought to know where they came from, and found to my great surprise that a great number were from Louisiana. That will give you an idea where they are drifting. We are losing them in considerable numbers, particularly along the lines of railroad and steamboat travel.

Q. Please state the comparative condition of your labor now with former years.—A. I do not think the laborers have accumulated much. I do not think there is as much owned per capita as there was 10 years ago. I do not think they are as effective as they were 10 years ago. There is among the younger generation an indisposition to be taught. We have still a number of negroes that are, like myself, remnants of antebellum days, and while they are in great demand and sought for, yet the younger generation has never been taught or trained, and, with no disposition to learn, they are not as effective.

Q. How are their habits?—A. Their habits are bad. As all of you know who have been familiar with our newspapers, every now and then the game of craps, as they call it, is a source of disturbance and disagreement, and sometimes results in very serious trouble down there with us. There is a religious enthusiasm that prevails among our negroes—you can not call it a Christian enthusiasm, because they have their churches entirely separate from the whites and under nobody's control. That is perhaps almost universal throughout the South, but the morals of the negroes are not good—not as good as they were 10 years ago. As a proof of that I refer you to our penitentiary records. The occupants are more numerous to-day than at any time previous, and the crimes are of an entirely different order from what they used to be. Now you will find quite a large number of negroes in the penitentiary for forgery, the result of a little education. As soon as they learn to read and write they think the hoe and plow must be abandoned and they must hunt for an easier way of living, not always with success.

Q. Is that one of the causes of their leaving the plantation?—A. That is one. You know the average American is a restless individual. He has traveled from Plymouth Rock and Jamestown entirely across the continent, and is crossing the ocean now into the western isles. The negro, associating with the white man, imbibes that disposition, and as soon as he can read and write he desires to travel, too, and he takes any opportunity he can to do so. If he can go no farther than the village, he will go there; if he can take shipping on board steamer from New Orleans to St. Louis, or along the banks of the river, he will do that. He will get away somewhere. He wants to see the world, and wants to live easier. He does not like to work. I suppose it is one of the inheritances of America that the negro is just taking hold of. He is not as steady as he was. There are not the local attractions there used to be, and he is not satisfied, as formerly, with his work.

Q. Has improved machinery any effect upon your labor?—A. I would like to premise a little by stating here that Louisiana is peculiarly unique in its agricultural products. The southern portion of our State is devoted exclusively, I might almost use the term, to the growing of subtropical crops. Commencing at the Lower Mississippi we grow oranges very largely; then the sugar plantations begin; then the rice fields are interspersed among the canefields, and extend across the State southwesterly into Texas. Beyond this sugar and rice country commence the cotton, and corn, and stock. Now, when we get into the cotton country there has been very little improved machinery introduced, for reasons which I will explain presently. When we get into the cane and rice country we are up-to-date with anyone, I suppose. The lower portion of Louisiana to-day is, perhaps, more intelligently cultivated, and there is more economy in methods, than is any other portion of the world. This is due to the fact that in south Louisiana all our estates are run with hired labor, by the day, under intelligent supervision of managers, overseers, etc. Our sugar interests have had to bring to their aid every single implement and every single method or process that can best economize the production of sugar and rice, and they have done so. The negroes are taught to use these improvements by the supervising overseer or manager that accompanies them to the field and remains with them all day long and comes out with them at night. They work entirely under the eye or supervision of the manager. You will go into a field and find a hundred 2-horse plows or cultivators with a man on horseback riding from one to the other all day long pushing and seeing that the work is done properly. These estates are under experienced, educated managers and overseers, and their methods of cultivation have improved enormously in the last 15 years. Cultivators—everything that can minimize labor—are now used

where formerly we used the plow and hoe. The hoe is largely dispensed with to-day by the use of the improved cultivator. These laborers living on the place are given house rent free—a house and garden patch and all the fuel that is needed. The only condition of their occupying these houses is that they are to work whenever called upon, and they are usually called upon all the time. When they refuse to work they have to vacate the house, and that is the chief stimulus to make them work. In the southern portion of the State they have no other place to go. There are no houses for rent off the plantations, and hence they have to remain on some plantation, and if they do so remain they have to work, of course, because the houses are for the operatives of the estates.

Q. (By Mr. A. L. HARRIS.) Does sugar plantation machinery stop with the cultivation?—A. Oh, no; we have \$100,000,000 invested in sugarhouses, and these sugarhouses are up to date in every respect. I speak advisedly, because during last summer I had the pleasure of an official visit in the Hawaiian Islands; and Hawaii to-day is leading the world in the production of sugar. We have a large number of sugarhouses fully equal to any in the world, and those sugarhouses have been reconstructed, I might say, at the entire cost of all the profit made since the war. I believe every dollar made in the sugar industry in Louisiana has gone into the reconstruction of these sugarhouses, and they have been reconstructed with the object of increasing the capacity and diminishing the expense. To illustrate: When I went to Louisiana 16 years ago a sugarhouse that had a capacity of 200 tons of cane a day was considered a marvel of excellence; to-day we have several of them that are taking up from 1,500 to 2,000 tons a day. It formerly required 40 or 50 hands to put the cane on the carrier. The wagon would drive to the cane yard and drop its load, and then that cane was transferred by hand labor to the carrier, about 40 to 50 hands being required to keep the carrier going and feed a mill whose capacity was 200 tons a day; to-day we have improved machinery that lifts up the whole wagonload and puts it in cars that are run alongside the carrier. The sides of the cars are lowered, and a machine very much like an inverted hay loader puts that cane on the carrier, and 2 or 3 men will feed the carrier with 1,500 or 2,000 tons a day. That is one of the economies.

We have also economized by increasing the capacity. The sugarhouse that will turn out 1,500 tons of cane, or the product of it, to-day can, of course, produce sugar much more cheaply per pound than one turning out 200 tons of cane, because the same amount of intelligent labor is required in the 200-ton house as in the 2,000-ton house. In other words, the vacuum pan discharging 300,000 pounds of sugar a day can be operated by 1 man just as easily as the one in our sugarhouse at the experiment station of 2,500 pounds a day. It takes just as much expert intelligence to run one as the other. Now, the house that can turn out 300,000 pounds per day can do it much cheaper than the small one of 5,000 pounds; hence improved machinery has saved our sugar industry. The time was when we received about 10 cents a pound for sugar—when I first went to Louisiana—and we sold our last at 4 cents and 4½ cents, different grades of sugar.

Q. Is that sugar refined?—A. Yes. It is not, perhaps, in your sense refined; it is the commercial sugar, as it is known on the market.

Q. (By Representative OTJEN.) It is almost white?—A. It is what we call "off whites" and "yellow clarified."

Q. (By Mr. CLARKE.) About No. 16 Dutch standard?—A. Yes; considerably above that. No. 16 Dutch standard is unrefined. We have, perhaps, a dozen sugar houses that absolutely granulate it. It might be proper to tell you the difference between granulated sugar and white sugar. The granulating is simply running the "off whites" through a machine or drum that is revolving. The sugar coming in at one end meets perfectly-dry steam coming in at the other, which takes the last particle of water from it, preventing the cohesion or cohering of the particles. That is the granulating process. The sugar that has not been granulated will cake on account of the little moisture.

We have a dozen or more sugar houses that granulate the sugar; but as the Louisiana crop is consumed in a few months, we do not find it profitable to granulate because the "off white" will sell readily in the market, and it will keep a few months without undergoing the process of getting lumpy.

Yellow clarified is a refined sugar that goes on the market (very similar to what we call "Coffee A") throughout the country. It has a light golden tint, and that golden tint is given it artificially in the sugar house. We put that sugar on the market and it meets all the requirements of ordinary family consumption.

I might say in passing that our sugar houses have been forced to refine sugar by virtue of the want of competition in our markets. We have but one buyer. That is the American Sugar Refinery. Hence we have only a few sugar houses

unprepared to make refined sugar whenever we feel that the prices they are willing to pay for unrefined are not satisfactory. We refine it then ourselves and throw it on the market. While it is probably not best for our sugar houses to refine sugar ordinarily, it is decidedly more profitable to refine than to take whatever we can get from one purchaser.

Q. (By Representative OTJEN.) It is a lever you have?—A. That is right. Whenever the trust will pay us a fair price for 96 centrifugals, we make them. We can do it easier and make a larger profit. But whenever the price falls below such a point as will leave us a profit, then we refine and put the refined sugar on the market.

Q. (By Mr. FARQUHAR.) Then the so-called trust has no contract for the whole of your output?—A. No; none. They have in the Hawaiian Islands, but not with us. It is an individual contract made before the season begins. Several planters contracted before the last season to make 96 centrifugals at a given price during the season.

Q. (By Representative OTJEN.) What is the yield of Louisiana sugar per annum?—A. We will make 300,000 tons this year. That is not enough; we should have made 400,000 tons; we expected to do so.

Q. That is an increase over preceding years?—A. Yes, except one. I will state that the frost of 1899 was very destructive to our cane crop, and we did not make more than a third of a crop last year, 1899. The crop of 1898 was damaged, if you will remember, by a very wet fall; we had rains after rains all through the fall, and as a result we had a very green succulent cane that gave us very little sugar. This crop is the first approach to the crop of 1897, which was the largest we ever made. In 1897 we made about 340 odd thousand tons; this year we made 300,000 tons.

Q. (By Mr. A. L. HARRIS.) Do you use machinery in the rice fields?—A. We have adopted in the last 10 years the most improved machinery that has ever been used in the growing of rice. It is, with some modifications, the process adopted in the West for raising wheat. We break our lands with gang plows; we harrow with enormous 4-horse harrows; we seed the rice with grain drills or broadcast seeders, either one; then we harvest it with self-binder harvesters, and then we use steam thrashers. We did not see how we could make much on old methods, and the result is we are raising rice very cheaply. When I saw in the Hawaiian Islands this year the Chinese transplanting the rice by hand at intervals a foot apart, in water a half foot deep, and claiming to make a profit, I could not see it, while we were not growing very wealthy with the processes we adopt.

We have then, besides the improvement in the methods of the growing of the rice, a wonderful development in the last 10 years in the rice mills. There is hardly a village of 500 inhabitants in the rice district that has not a first-class rice mill. I do not know that you are familiar with rice. We first thrash it and get the rough rice. That is the marketable form to the farmer. He either sends that to the mill, as the Western man does his wheat, to be milled at his own expense, or for toll, or sells it in that condition. Our mills are ready either to buy it or to work it up on toll. These mills take the rough rice and convert it into the condition you see on the market, from head rice down to broken particles, to separate it and make rice polish, rice bran, rice hulls, and the various grades of rice all the way from head rice down to very small fragment rice. We have machines that take it and separate it into different classes, and it is sold according to its class. Good head rice is worth much more than the other; and that rice that will give the largest amount of head rice is the one that gives the greatest profit to the farmer.

Q. (By Mr. CLARKE.) Is it necessary that rice fields should be covered by water?—A. We have found it so; not absolutely necessary, but necessary to be profitable. Five or 10 years ago probably one-third of the rice grown in southwest Louisiana was what is called Providence rice. That country is very flat. There is an under-stratum of clay that renders impervious the soil, and all water that falls upon it is held by running an embankment around the field to retain it. We were enabled to make for 1 or 2 years considerable quantities of Providence rice, but in dry seasons we made nothing, hence we have abandoned Providence growing entirely. We now make it exclusively by flooding. Another thing that has done away the Providence process is the immense amount of money that has been spent in erecting canals for flooding our rice fields, coming from the nearest streams. I believe at least \$5,000,000 have been spent in that way. There are 300 miles of these large rice canals, some of them 30 miles long, and every tributary farmer draws water from that canal.

I may say in passing that I am in charge of the geological survey of Louisiana. Prof. George D. Harris and his assistant, Mr. Pscheco, are now in the field. Two

years ago we discovered underlying this country a bed of gravel nearly a hundred feet thick, which furnishes an abundant supply of water, and we have since then bored 800 to 500 wells all over that country. The water comes within a few feet of the surface everywhere, and by putting in small pumps, we are enabled to irrigate the fields without any trouble. Those wells are being bored now at the rate of 10 to 20 a day. The well borers are at their very busiest, and I can give you no conception of the wonderful activity that is now displayed in our rice fields. Governor Shaw, of Iowa, has a 1,200 or 1,500 acre farm down there. I don't know whether his field is on our side or the Texas side. This same condition runs into Texas up to Houston—the same lands.

Prior to the last 15 years these lands were practically worthless. They were used for cattle and ponies. They were discovered to be valuable for rice culture, and they have been redeemed. A good deal of the land belonged to the United States Government, and a great deal to the State of Louisiana—the swamp lands. The lands have all been bought, and to-day they are being exchanged at values of \$30 and \$50 an acre.

Q. (By Mr. CLARKE.) At what stage of growth of rice are the fields overflowed?—A. The fields are usually overflowed when the rice is about 6 inches high, unless conditions prevail that require flooding to get the seed up.

Q. (By Representative OTJEN.) And then how long?—A. The water is kept on the land until harvest time. The field has to be allowed to dry sufficiently to permit the use of binders. That country being very near a dead level, you can inclose an 80 or 100 acre field within a levee, and use improved implements to great advantage. We can't use the binder on the river, because the field from the river back to the swamp is such that we have to have a levee at intervals of probably the width of an acre, and it does not give room to use a binder with any success, hence we use the sickle for harvesting on the river. Our levees are arranged in both places so as to get the water 4 to 6 inches deep over the rice field, and at a given point.

Q. (By Mr. CLARKE.) Is it healthy to live in the rice region?—A. I understand so, and I have heard no complaint of the climate on that account. I think our last election showed that we have 7,000 voting Northern men down there, who have come from Iowa, Illinois, Nebraska, and they seem to be healthy and enjoying life. They have been there from 1 to 15 years, and I hear no complaint from them. The summer there is very cool and pleasant. It is right on the Gulf of Mexico, not over 10 to 50 feet above it. We have no cold there at all scarcely, and rarely have a frost, and hence it is a delightful climate to live in. Among the old creoles that have occupied this section of the country since its settlement you will find as many octogenarians as you would anywhere else in the world. We regard it as extremely healthy, and with the artesian wells they get an abundance of drinking water of the purest character.

Q. (By Mr. FARQUHAR.) Is your cultivation of rice profitable in Louisiana?—A. Extremely so, just now; particularly in this Southwestern country, where these improved implements can be used. You can imagine so when, as I told you just now, the land advanced from zero to \$30 and \$50 an acre.

Q. How is it with your sugar crop? Is that profitable?—A. That depends largely, as in all other industries, upon the man managing it. That is one of the instances where there is more in the man than there is in the land, and an economic and intelligent administration of a good sugar estate will frequently bring profits where others right by the side of it fail.

Q. What effect has the tariff on the imports of both your sugar and your rice?—A. Our sugar crop in Louisiana only amounts to about one-seventh of the consumption of the United States. Our present consumption is a little over 2,000,000 tons—the Louisiana grown only about 300,000 tons. Our present crop of rice in Louisiana, Texas, Carolina, and Georgia is not one-half of the consumption of the United States. So that the tariff is of great value to both the sugar producer and the rice producer. At the same time it will be years before we can hope to attain a quantity that will be equal to the consumption.

Q. (By Representative OTJEN.) The production of rice has rapidly and largely increased in recent years?—A. In Louisiana enormously. We now grow more rice in Louisiana than in all the other States put together.

You will find in your library here a history of New Orleans, in which I wrote last year an article upon the development of the sugar industry in Louisiana. You will find every year there from 1794, the introduction of cane into Louisiana, up to this year the whole production given there officially. You will find also the tariff that has been fixed. Sugar has been fortunate enough to have a tariff every year since its inauguration in Louisiana in 1794, before Louisiana was admitted to the Union. During the Monroe Administration, in 1812 to 1815, we

had 5 cents protection a pound, and the only time we have had free sugar was during the bounty period. During the first year of the war we lowered the tariff to one-half cent a pound. That is the lowest we have ever had it except in the bounty period.

Q. Have you tried to produce beet sugar in Louisiana?—A. Yes. It has been tried everywhere south of the Ohio River. We can not grow the beet successfully from a sugar standpoint anywhere in the South. We can grow the beet, but there is not enough sugar in it. We have made in the last few years a number of experiments with what are called winter sugar beets, and one year we made a very great success of them. We grew beets containing as high as 18 per cent in sugar. We planted in September and October and harvested them in January, but the next year the frost of 1899 came along and did not leave us a beet. It is a crop that we can not rely upon; nor can we grow the beet in the summer time, because of our climate. Rains are very destructive to the sugar content of beets, and during our summer months we have a deluge. In fact, it is that deluge that makes sugar cane and rice fields profitable. Our heavy rains fall in June, July, and August. The sugar beets that we harvest in October weigh 10 to 13 pounds and will not have 2 per cent of sugar in them.

Q. (By Mr. A. L. HARRIS.) How often do you have to plant your sugar cane?—A. In Louisiana we, as a rule, adopt what is called triennial rotation—once in 3 years. We plant first in corn, and lay by in cowpease. The corn is harvested and the stalks are cut and the pease are plowed under with large 6 and 8 horse plows, and the land immediately put in cane. We plant in September and continue at our convenience up until March. We let the stubbles bear another year. At the end of the second year we plow up and put the land back in pease again. The pease give us a nitrogenous crop of 120 to 125 pounds to the acre, and as cane is a great nitrogenous crop, in that way we supply the fertility of our soil and keep it up. There are some planters who grow the cane, particularly in the extreme southern portion of the State, 2 years in stubble, making a quadrennial instead of a triennial rotation. Then we have a few sugarhouses whose interests are so great that they make what is called succession cane, that is, make it all the time. In other words, they plow up the cane and plant right back again, but they only follow this plan when the sugar houses demand all the cane their lands will produce.

Q. (By Representative OTJEN.) That is wearing on the land, is it?—A. Very; extremely so, because, as I state, the cane is a great nitrogenous crop, and a crop of cowpease and corn helps to grow large crops of cane, and keeps up the fertility of our soil. I may say, also, further, that we use fertilizers very largely. Our fertilizer is usually along the nitrogenous line—cotton-seed meal and tankage, with small additions of acid phosphate.

Q. (By Mr. CLARKE.) What is tankage?—A. Tankage is the refuse from slaughterhouses—the waste. Everything on earth they can't use in any other way in a slaughterhouse, they put in the refuse house, and after getting all the oil out of it, it is sent down to be used as fertilizer for the soil, and it is called tankage. It usually consists of scrapings, blood, bone, meat, hides, and hoofs.

Q. (By Mr. FARQUHAR.) Condemned animals?—A. No; they make use of them for soap. This is just what can't be utilized in any other way, and I understand that since the economy in the slaughterhouses was introduced this constitutes a large part of the profit of the houses—the saving of this tankage.

Q. (By Mr. CLARKE.) What is done with the molasses?—A. Our molasses up to a few years ago had no sale at all. A few years ago we threw it out into the streams and let it flow off, but the introduction of tank cars has made it possible to realize from our molasses now a profit. The tank cars are brought up to our sugarhouses, and the molasses pumped right from our tanks into them, and we are getting from 3 to 5 cents a gallon in those tanks.

Q. (By Representative OTJEN.) Where does it go mostly?—A. It is shipped to Chicago, Toledo, Buffalo, and quite a number of places, to be mixed with glucose, and is sold as molasses. We import almost 3 times as much glucose sirup into Louisiana every year as we sell of the finished Louisiana molasses. One barrel of our Louisiana molasses mixed with 3 barrels of glucose will give us 4 barrels of nice Louisiana sirup.

Q. (By Mr. CLARKE.) In that way all the molasses is utilized?—A. Partially; not all; we feed a great deal of it. Our planters use it largely for feed for stock. It is worth more for feed than 3 to 5 cents a gallon to the planter, but the planter will make from 3 to 5 times as much as all the stock can consume. I am speaking of molasses from these different sugarhouses where they exhaust the sugar. We have still a remnant; probably one-fifth of all the production of the State is made in open-kettle sugarhouses. In these open-kettle sugarhouses we simply evaporate in an open vessel, clarify very thoroughly, and then put the

sugar in hogsheads to drain, and the drainings from that constitute what is called open-kettle molasses. That is valuable, worth from 80 to 50 cents a gallon; that is, not adulterated. When mixed with white glucose one gets a dollar a gallon readily. It is the demand for this molasses that keeps alive those open-kettle sugarhouses. If it was not for that they could not live. We get from 80 to 50 cents a gallon when it is properly made. There is a great demand for it. I doubt if you could get a barrel of it at this season of the year, there is such a demand for it.

Q. What is the principal use for molasses after it reaches the market?—A. Consumption, eating, after mixing with glucose. Then it sells all over the country as Louisiana sirup. It goes into retail consumption. Upon an analysis it is easily detected, because our glucose is a right polarizing sirup, and you frequently find a mixed molasses that will polarize 104 to 105, whereas the maximum of pure sugar is only 100.

Q. (By Representative OTJEN.) Showing that something has been put in?—A. Showing that it is corn sirup, which is entirely different from sugar. It is glucose, as we call it; glucose, maltose, and dextrine, all 3 of which polarize heavily to the right, and, therefore, when mixed with our cane sugar the aggregate polarization to the right is much larger than sugar.

Q. (By Mr. FARQUHAR.) Do you raise any sorghum in Louisiana?—A. Large quantities of it for stock feeding. Our sorghum has a facility for suckering 3 or 4 times in a year, and we get from 3 to 4 crops a year, and hence it makes a very valuable grain feed for our mules and stock. We never make sugar out of it. We used to try to, but found it impossible to do so.

Q. (By Mr. A. L. HARRIS.) What are the hours of labor on your plantations?—A. Our labor all over the State works from sunrise to sunset.

Q. What is the average number of days employed in the year?—A. Just as many as the laborer wants to make. We have a good many hands that make 300 work days a year. I would say that the average hand in Louisiana in the sugar district will certainly make over 200, and a good many of them 300 days. In the extreme winter, after the crop is taken off, the plantation has no immediate use for all of its hands, and may lay off a lot of them during the rainy season of winter, but there are some that work the whole year round. I had some working for me that last year I paid for over 300 days' work.

Q. About how many days does it take to make a rice crop?—A. We plant all through April and May, and harvest from the last of July up to about the middle of September. Then the threshing is done whenever we can get those traveling threshers that pass through the country. They are numerous, and probably one man will thresh to-day, another to-morrow, and so on, in passing through a community. Large rice planters have their own threshers, and they commence as soon as the rice is cut, and continue until it is finished. As a rule, the rice planters have far more leisure time than the cane planters.

Q. How long does it take to make a cotton crop?—A. I would like to premise further on the cotton and to say that our State is divided into 2 distinct classes of cotton farmers or planters. The first of these are located in the Mississippi Bottom, beginning at or above Baton Rouge and running up to the Arkansas line, constituting the Jensas Bottom, with an area of 4,000 or 5,000 square miles. This is the large cotton belt of Louisiana. Then coming down from the north-west and running down below Alexandria is the Red River Bottom, varying in width from 2 to 10 miles, which is a most magnificent cotton section. Between those is what is called "the hill country," consisting of land covered with oak and hickory, mixed with short-leaf pine. In these hills you will find a large number of small farmers, or what we designate planters, who grow cotton and do a great deal of their own labor, but at the same time grow everything else nearly. When we get over again into the alluvial bottom lands you will find large estates owned by individuals, many of whom are absent. They do not live on their places. These places are nearly all worked on what is called the shares, or renting plan.

In the hills the renting or sharing is the exception rather than the rule. The owners cultivate their own farms. They grow corn, oats, and forage crops, have small quantities of stock, raise their own poultry, make their own butter, kill their own meat, and live well. They hire mainly the help that they need during the season.

In the alluvial section the negro becomes a tenant either as a sharer or as a renter. Both systems prevail there to some extent. If I furnish the land and the mules and the house for him to live in and the firewood and the feed for the mules, the negro will work the crop and feed himself, and at the end of the season we divide in halves. That is the system adopted there for sharing.

The renter pays a stipulated rent, either in money or in cotton per acre for the land, and he will own his own mules and run the place. From what I have just

said you would imagine these laborers supplied themselves. They do not. Either the owner of the place advances to them or they are permitted with the landlord's consent (in our State we have a landlord's lien which is prior to everything else) to go to some merchant and get advances, for which, of course, big prices are paid. And we have, unfortunately—in my opinion, unfortunately—what is called a crop-lien law that permits any and everybody to rent land and then mortgage the crop to secure advances. There is no crop existing, but he is going to make one, and on that he makes the mortgage. On that system we have been running 25 years, and it has been very deleterious to our agriculture, in my opinion.

Q. (By Mr. FARQUHAR.) Does that plan keep the cropper always in debt?—A. Always in debt. It is used there very largely. The profits are necessarily abnormally large, and there is a risk to the advancing merchants. They generally have an agent that goes around through the country and reports upon the crops, and the supplies are limited to the condition of the crop.

Q. What is the interest charged on that lien?—A. That varies very much. From 20 per cent up. I do not know of any less than 20 per cent. It probably runs to 200 per cent. When I say 200, I mean it. Frequently they will buy stuff in August, and may pay for it with the picking of the first crop in September or October; and when you calculate the annual interest, it is 200 per cent. That is what I mean. I do not mean to say that they are charged that rate throughout the whole year. I regard this system of farming as being very detrimental to the section of the country in which it is practiced.

Q. Have you many white farmers in your hill country?—A. All white there.

Q. Do these white farmers contract debts, too, under this lien?—A. They did, until the last constitutional convention, rather heavily. But the last constitutional convention gave them each a homestead, which required a man to carry his wife before a notary and get her signature as well as give his own before they could waive their homestead; and, like most things, it became fashionable throughout the community not to waive. Hence, the constitutional convention that adopted that homestead law has almost completely made a revolution in the habits of those small farmers. They will never waive now. Heretofore they have been conducting their business upon what is called the mortgage system. I might explain by saying that in Louisiana, unlike most other places in the United States, we have had a law coming down to us through the French that permitted the mortgaging of an estate and permitting the husband to do it without the consent of the wife, and we go by estates in Louisiana and not by acres and farms. It has worked in many instances great hardships, and it also has been conducive to a great deal of prosperity in the past. If I mortgaged an estate known, for instance, as Bellaire, everything on Bellaire went with it—mules, horses, and, before the war, negroes. Now household and kitchen furniture is included unless it is excepted in the mortgage. That system was established in order to create a credit, and it prevails except in the case of the small farmer with his homestead.

Q. That is a remnant of the Roman law?—A. Yes, of the Roman law. You know our laws in Louisiana are based entirely on the Code of Justinian. We have our civil law coming down to us through the Code Napoleon.

Q. (By Mr. A. L. HARRIS.) To what extent has the crop lien prevailed in other States that you are familiar with?—A. It is just as bad in Alabama. It is a curse, when it was intended to be a blessing. After the war, the difficulty we had in the South was to get money to farm on. Recollect, we were left flat without means to operate with, and something had to be done by which we could get money to follow our agricultural pursuits. Almost every legislature in the South created a lien law to provide farmers with a credit. It was asked for by the best people. But it was found to be in the end detrimental, because a man, as soon as he gets credit, is very apt—even a white man—to go too far into debt; and it does not make any difference whether you are getting the money at the end of the year or not, you run into debt again next year and you come to rely on the merchant to run you.

Q. Is there any hope of a change?—A. Oh, yes; system is employed less and less every year. The "advancing" merchants are getting fewer. The establishment of banks throughout the country ready to loan money to a good man at low interest has caused our merchants to leave the lending alone. All our borrowing that is done to-day is done from the banks. We have made wonderful improvements in the last 10 or 15 years, and we are beginning to have an abundance of our own. Our banks are all prosperous.

Q. (By Mr. CLARKE.) Are those banks State or national?—A. They are mainly State banks in our smaller towns, but in the large cities we have national banks. We have national banks in Shreveport and Monroe and St. Charles; at New Orleans we have a whole lot of them. But in the small towns, county seats, they

are mostly State banks. Our State has a State inspector of banks, and we have a pretty thorough control over them. I want to say that our present national-bank law is based on the old Louisiana law in a great many of its provisions. New Orleans paper was worth its weight in gold before the war, and our banks were widely known. The word "Dixie" comes from the soundness of the New Orleans dollars. The boats went down the river to get the "Dixies" or \$10 notes at New Orleans, and that is where the word came from. They were known all through the Mississippi Valley and everywhere else.

Q. (By Mr. A. L. HARRIS.) Have you any manufacturing interests?—A. Yes; in the State of Louisiana we have 6 large cotton factories, 2 of them being in New Orleans. We have also 2 large knitting factories. We have a large cotton mill in Monroe, 1 in Shreveport, 1 in Washington, and 1 in Clinton. We have got quite a start now, and I would not be surprised if we would not have 2 or 3 dozen more in the next few years. Every neighborhood is starting to organize one. We have organized on the novel plan which has succeeded so well in North Carolina: Shares worth \$100, each person subscribing for 10 shares and paying \$1 a share a week. These I have mentioned were organized last year that way.

Q. Is the number of factories increasing?—A. Yes; we only had 3 two years ago. We have doubled the number in the last 2 years, and will, I think, increase very rapidly in the near future.

Q. Does the presence of local factories give a better profit for your cotton?—A. Yes; and it does this: it diverts and takes a great deal of labor from our fields and puts it into the factories and gives an increased demand for our small products, butter, eggs, etc.

Q. (By Mr. FARQUHAR.) Where do you find a market for your cotton goods?—A. I believe we make mainly coarse goods. I am not certain, but I think they go mainly to China. We have 2 New Orleans mills which are very profitable, the Maginnis and the Lane mills.

Q. (By Mr. A. L. HARRIS.) In what direction do you go to get to the market?—A. I will lead up to that. We had last year a desire to open up quite a trade with Japan in raw cotton, and we have sent a number of shiploads direct from New Orleans to Japan; and when I left the other day there were 2 Japanese commissioners there studying this trade with a view of ascertaining its conditions.

Q. (By Mr. FARQUHAR.) So that they can manufacture their own cotton?—A. Yes; you know they manufacture largely.

Q. (By Mr. A. L. HARRIS.) What is the average wage for your field hands where they are employed by the day?—A. In the rice fields I should say \$1 to \$1.25 is about the average pay for a laborer. That, of course, covers a home, a garden, and firewood, and things of that sort, but it does not cover rations. In the cane fields we pay from 75 cents to \$1.50, according to location and the character of the hands. In the cotton fields we have no regular wages, as I have just explained. But the few white farmers that hire for wages usually feed from their tables and pay from \$3 to \$15 a month. But, as a rule, the wages in cotton are so much a day while chopping cotton and so much a day for picking cotton. That is the way we run in the South.

Q. Is the payment made in cash?—A. In a sugar plantation the following rule is adopted: Nearly every large estate has a store; every night the timekeeper gives the workman a token representing a day's work, giving the stamp of the place on it.

Q. A metal token?—A. Sometimes it is metal and sometimes it is horn. They go backward or forward all the time on the place, and that token is receivable in the stores for anything that man wants to buy. If they are not used up by the 15th or 30th of the month they are redeemed in cash. Everybody in a sugar plantation is paid off on the 15th and the 30th. If he has spent his chips, as the tokens are called, he does not get his money, but he does get it if he has not spent them.

Q. Are stores run in connection with the rice plantations?—A. Only if the owner is a large planter. It does not take nearly as many men to run a rice plantation as it does to run a sugar plantation. The rice planter only needs men to break the land. Keeping the crop between the planting and the harvest requires only about 1 man to three or four hundred acres; whereas the sugar planter has to have a large gang of hands all the while.

Q. (By Mr. FARQUHAR.) Do you have any foreigners engaged in cultivation down there?—A. Oh, yes; in the last 15 years we have imported between 25,000 and 80,000 Italians. There are also some Germans and Swedes. I do not recall any others.

Q. Have you any French immigration?—A. Not of that character. Our French immigration is rather of a higher order. Some of our planters prefer the Italians and some the negroes. Those that have stores prefer the negro, because the negro will spend 95 cents out of every dollar he gets, while the Italian will hardly spend a nickel. He keeps everything he can get.

Q. (By Mr. A. L. HARRIS.) Are the stores run at a large profit?—A. A fairly large profit. There is no risk there. They are fairly good. You go through that country and they are about as good stores as you will find. The stores are numerous.

Q. Are these labor tokens good at any store?—A. They are not taken by any store, but they are swapped around.

Q. Have you anything further to say about the tenant house?—A. Yes; in Louisiana every tenant is given his house.

Q. What privileges has he in connection?—A. He has the privilege of a garden and firewood, and upon some estates where they have pasturage he is permitted to have a cow or something to go on a pasture.

Q. Please describe one of those average tenant houses.—A. On the large plantations the houses are arranged in rows, probably 30 or 40 cabins together. The cabins usually contain from 2 to 3 rooms with a porch and with a kitchen in the rear, and on both sides of the street the houses are usually about 30 or 40 feet apart, occupying the row pretty closely. In the rear of each house is given probably an area varying from a quarter to half an acre for a garden. The woods are open and free for the tenant to go and get his firewood. Every Saturday evening the carts are put at the disposal of the hands to go back into the woods and get all the wood they want free of charge. These houses are very expensive to the planter, because on a great number of the large sugar estates they have sometimes a hundred each, and they will cost \$300 or \$400 apiece.

Q. Are the tenants careful of the property?—A. No; they are not careful; they require supervision in this matter just like they do in everything else. The negro is not careful with anything.

Q. Are the houses well furnished?—A. No; the tenants do not want them well furnished. You could not make them sleep in a room like this one we are in. The negro does not want a glass window, because he does not want anybody to see what he is doing. He wants a deadlight to shut out everybody. He would rather have the natural luxuries than the artificial ones—plenty of air, etc. I am sorry to say our negroes are not careful in that regard at all. They do not want to spend any money in what might be called unessential improvement; though I think they have beds with mosquito nets; we sometimes have mosquitoes down there.

Q. (By Mr. CLARKE.) Is it respectable for white men to labor there now with their hands?—A. Yes; not only respectable, but such labor is the admiration of everybody in that country. You can find some of our best and wealthiest men so engaged—I have seen a millionaire plowing with a 4-mule plow.

Q. Does that condition differ from the one before the civil war?—A. There was no necessity for such labor before the civil war. There has been, however, always a feeling among all Southern people that they should do the work when there was necessity, and when there was no necessity not to do it. I have seen cases before the war where wealthy and aristocratic farmers would suddenly break all to pieces financially, and I have seen their children go to hard work, work like negroes, and yet be received in the best society, as they had always been. But a man that owns a lot of hands either for to-day or to-morrow, or for a lifetime, and can make use of them to do the work probably better than he can do it, on account of his physical ability—I do not care where he is from, North, South, East, or West—is very apt to make them do it and not do it himself. I have investigated conditions in California, and I find that the man in California uses the Chinese just as we use the negroes in the South. Whenever we can make them do at 75 cents a day what we can do and then turn our attention to something else and make more than that, we are very apt to let them do it. But so far as the respectability is concerned, I will say to you to-day that our people admire the man that has the pluck in him to get down and work, if he is honest and intelligent. I have done as much hard work as any workman in the North, and I believe I have the entrée anywhere I want to go in the South. I have a sugar school with a course of 5 years, and I am director of it. I make every boy that comes there plow, plant, hoe, ditch, cut cane, run the boilers, run the engines, run the machinery of the sugar house, and do everything that is done on the place, and, as I told you before, I have had a millionaire's son on a 4-mule plow, and I have kept him there while the thermometer was ninety-odd degrees in the shade. So you can understand my position on labor. I believe in every man laboring when there is necessity.

Q. (By Mr. A. L. HARRIS.) Are your public school facilities good?—A. Our public school facilities are increasing.

Q. What is the school age?—A. I think the school age is between 6 and 16. Our public schools are improving rapidly. We are taxing ourselves very heavily for

public schools, and although we have a preponderance of colored schools, I do not think the negroes pay scarcely any taxes. I think the taxes collected from the colored people from our State amount to but very little, and yet our public school fund is divided according to the number of children pro rata. In addition to that our State appropriates annually a large amount to the maintenance of an agricultural and mechanical college for the colored people exclusively, and we appropriate a considerable amount for a normal school, colored only. So our negroes are a heavy tax on us, constituting a very large part of our population and paying no taxes—none to speak of. Yet not only do we have to educate them, but our court costs and our jail costs and things of that sort amount to a very large sum.

Q. Is your course of study in the country schools well adapted to agricultural people?—A. No; we have the same public school curriculum that prevails almost everywhere else in the United States. And just here I wish to emphasize that our public schools are not adapted to the wants of any agricultural community whatever. We have made speech after speech before the farmers' educational institutes and educational organizations, and we have about persuaded a great many parishes in the State to institute an amendment to our public school curriculum by adding agricultural and natural sciences. Three-fourths of our boys and girls in the public schools of the hill section never get beyond the public schools. They go to farming after leaving the public schools. They have never studied a particle of any kind of science; they have not the slightest knowledge of the composition of the soil they are going to work; they have no idea of the nutrition of animals; they have no idea of the plants; no idea of fertilizers; and yet they are called upon to spend a lifetime in working at a profession or occupation of which they have not learned a word at school. It is the greatest monstrosity of the present age. We have taught them all about the geography of the world—the political divisions; we have taught them all about history from Rome to the present day; we have taught them the grammar of English as it is spoken; we have taught them the 3 R's—reading, 'riting, and 'rithmetic; but we have not said a word to them about their future life work, and in my opinion it is a great blunder. But we are now adopting measures in Louisiana by which we can remedy this, by giving to our rural schools a course of nature studies, by which a boy can get some idea and knowledge of the life before him.

Q. (By Mr. CLARKE.) You propose to have this in addition to the other branches?—A. Yes; we have several parishes in which it has been already inaugurated.

Q. Have you any technical education for farmers in your State?—A. We have an agricultural and mechanical college, the origin of which you are already familiar with. They were established by act of Congress in 1863, during the war, giving to each State and Territory so many acres of land for each Representative and Senator. Every State has one. You are also familiar with what is called the Morrill bill, granting \$25,000, beginning with \$15,000 and gradually increasing up to \$25,000 for each State and Territory in the Union. Under this grant from Congress was established our two agricultural and mechanical colleges, one for whites and the other for colored. The college for whites is associated with the old Louisiana State University at Baton Rouge, and is in a very prosperous condition. It has, probably, to-day nearly 400 students. It is exclusively confined to the male population, as we do not have mixed schools in our State. This university has a literary and scientific course, covering general science and agricultural and mechanical subjects. It also includes the Audubon Sugar School. The Audubon Sugar School was established first by the sugar planters of our State; instituted and run by them for 4 or 5 years. It was started under my direction, and finally the State took hold of it and adopted it, and the State is now carrying it on. In the Audubon Sugar School the students spend 6 months in the study of the sciences and in the workshops of the agricultural and mechanical college. Then they go down 3 months in the year and work practically in the sugar house and sugar fields and laboratories of the sugar experiment station. There they do everything. We have graduated quite a number, and they are now filling positions wherever cane sugar is grown. We have probably 15 or 20 in Hawaii. The director of the experiment station there is one of my graduates, and was formerly my assistant. The director of the experiment station in Queensland was formerly one of my assistants. He has gone there on a contract for 5 years, at \$15,000 a year, made with the Queensland government to give instruction in sugar growing and sugar manufacturing. My assistant who graduated 9 years ago is now director of the experiment station of the Hawaiian Planters' Association of Honolulu, and he is getting \$5,000 a year and expenses. So our boys are doing well everywhere. They have added to our own sugar houses, of course, very largely. A fair proportion of the men running our sugar houses are our graduates.

We had a dozen Cubans in our school when the war for independence broke out, and of those 8 were killed fighting in the army in Cuba. We have a dozen or more in Cuba now. We have them in Mexico, in Porto Rico, several in the Danish West Indies, several in French Martinique and in Guadeloupe, and we have some in Mauritius.

Q. The education you give them, then, benefits your competitors?—A. We can not help it. You know science knows no boundary. You can not restrict science by political boundaries, and hence when we opened the school the question at once arose, What shall we do when we have applications from foreigners? Our people decided all we could do at first was to charge them an increased tuition, which we did until the State took hold of it. We have a State law that prohibits any charge at all for any instruction the State gives, and hence we are educating at Baton Rouge at the sugar school foreigners without a dollar of cost to them.

Q. You get the chief benefit yourselves on your own plantations?—A. Yes; our own plantations are very much benefited by it and are still aiding in the support of their experiment stations whenever it is necessary. I mention here, to show the interest of the planters in our State in advanced agriculture and improved methods, that they established the sugar-experiment station over which I preside 15 or 16 years ago and have already spent over \$100,000 of their own money in the equipment—contributed by them; and they have found it profitable, because they continue to support it. The improvements that are being made, and the better methods that are being adopted, are all largely due to the establishment of this experiment station and sugar school. We have educated a good many beet-sugar men also, and our graduates are scattered all through the beet-sugar factories of the West.

Q. Which do you think is the more beneficial to the local sugar industry, the experiment station or the school?—A. The experiment station is now more directly beneficial, because it develops methods and practices which the planter can utilize at once. The school educates a boy, and the boy has to develop himself in order to put his knowledge into practice, and it takes 6 years to do that. But the station, to us, is nothing more or less than a precursor, so to speak, of the planter. It simply develops methods to-day that are taken hold of by the planter to-morrow and carried into his field or sugar house.

Q. (By Mr. A. L. HARRIS.) How many experiment stations have you?—A. I have 3 in Louisiana—1 at Audubon Park, New Orleans; 1 in connection with the agricultural and mechanical college at Baton Rouge, and 1 in the northern portion of the State, at Calhoun. I might state to you that there is a noticeable interest in Louisiana in experimental work. Our State contributes heavily to it, probably next to New York; it makes the largest contribution from a State treasury of any State in the Union. When the sugar planters started this station at Audubon Park it proved of such great benefit that when the Hatch bill was passed here in Washington, establishing a station in every State and Territory and contributing \$15,000 a year, our legislature determined to divide that into three parts, giving one-third to the sugar-experiment station already established by the sugar planters, one-third to the station at Baton Rouge, already established, and the other third to the hill farmers in northern Louisiana, which I have described to you. They decided on that course and directed the board of agriculture to secure a location for the third station. This board invited bids from the different parishes, and there arose quite a competition between them as to which should have it. This ended in the parish giving all the lands, all the buildings, and all the mules, and equipping the station for the State. Since then that station has become a very valuable ally to those small farmers and planters. The State is contributing somewhere in the neighborhood of \$25,000 a year to its three stations, independent of the receipts from the United States Government. This station in northern Louisiana has also become a social factor of very great prominence. We have a North Louisiana Agricultural Society that holds its monthly meetings there. They have built a hall and hold the meetings on the ground. The people from the adjoining parishes attend these meetings, not only for the agricultural benefits, but for the social life involved in them. They come to see each other and find out what is going on. Once a year this society holds an annual agricultural camp meeting on the grounds of the station, lasting 3 days. We have already held 9 meetings. We have from 3,000 to 7,000 people on the ground during the whole 3 days. The adjoining parishes, through their police juries, as we call them—I suppose you call them county commissioners—contribute from \$25 to \$100 a year as a premium fund to be distributed there, and there is no charge. The mornings are spent in discussion of agricultural subjects by distinguished educators or farmers; the evenings are devoted to the examination of stock and other exhibits, and the nights are devoted to what are called question boxes. We meet in the big hall.

Any planter gets up and asks any question he wants to ask and it is answered by whoever can answer it.

Q. (By Mr. CLARKE.) Do the ladies participate?—A. Yes; the ladies come. There are fine woods and an abundance of water, and the people camp. They pitch their tents and camp and cook the same as on a fish fry, staying the 3 days. The station has caused a perfect revolution among the small farmers up in that section. It has introduced new methods, new plants, and new seeds, and it has been an object lesson to all—the study of experiments in the field. We have a fine dairy with 6 or 8 varieties of cattle. We also have 4 or 5 varieties of sheep and 4 or 5 of hogs. We have horticultural experiments, orchards and gardens, and tobacco barn. We also have forage crops, grasses, and fish ponds, together with laboratories. It has been a revelation to them; it has widened the whole of their mental horizon. Modern dairy methods have been introduced, and they are competing in the markets with first-class butter, though they never sold a bit of butter before.

Q. Has the effect of this new life been to make the farmers ambitious and enterprising and saving?—A. Yes; but the main gain has been to take their attention away from cotton as their sole money crop and teach them there are other crops besides cotton. This has always been a home-raising class of people. They formerly raised a little corn, but their lives were primitive. Their butter was a white product that looked a little like butter, but now they are making first-class butter and first-class everything. You will find the farmers in that country now up to date, equal to any farmers in any section of the country. They can write on agricultural topics and discuss subjects with a great deal of learning and intelligence, all brought about by the 12 or 15 years' work of the experiment station. Our sugar planters are perhaps the most intelligent body, as a rule, in the world. They are wealthy men, thoroughly educated; but the smaller farmers are what you might call the yeomanry of the country. The sugar planters are a cosmopolitan people; they have come there and invested their means in sugar plantations, and, while they were extremely intelligent and educated on many lines, they were not all well advanced on sugar methods, and hence they early felt the necessity of information of that character.

Q. (By Mr. A. L. HARRIS.) Do you make exhibits in these meetings?—A. Always; enormous exhibits.

Q. Any premiums offered?—A. We give from \$300 to \$500 every year in premiums, contributed by the adjoining parishes. Our police juries contribute from \$25 to \$100 a year for the premium list and wealthy, public-spirited citizens also add to the list, and the merchants give certain premiums. We publish a catalogue of the premiums every year, amounting to some \$300 or \$400. There is quite a spirited contest to get the premiums.

Q. Is the interest growing?—A. Yes. We usually have from 100 to 200 head of horses and mules on exhibition, mostly home raised. We have no trotting, no betting. We have cows in abundance, hogs, sheep, and various products of the farm. I saw a pumpkin exhibited that weighed more than 100 pounds.

Q. (By Mr. CLARKE.) Is it a good grazing country?—A. For certain kinds of grasses. It would not be from your standpoint, because your grasses will not do with us. With Bermuda as the foundation for pasture grass it is magnificent. Your grasses of the North will grow with us in the winter, and hence we have to change our pasture grasses as we go southward and get those adapted to our southern conditions. Our Bermuda grass will probably carry more cattle to the acre than any other grass in the world. It will stand biting right into the ground. It is what we call a grazing grass. It has stolons that run underground and shoot out at every point, and for that reason we have been raising stock very successfully, and we have a great number of bottoms growing various kinds of grasses. The whole country is very well watered, springs gushing out of every hillside. It is a little farmers' paradise almost.

Q. Do they make hay?—A. Yes, for home consumption; but there is very little of it sold because up to date there has been no demand for hay in that section; everybody raises his own hay.

Q. How long is the grazing season?—A. Taking our bottoms and hills together, it continues all the year. Our stock go into the bottoms in the winter and graze on cane, which is green then. Our Bermudas will last from April to November, and from November to April we carry them through in the swamps on the grasses not killed by the winter. We have a grass called the *paspalum dilatatum*. That grass remains green the whole winter with us and furnishes a large amount of grazing all through the winter, even with snow on the ground. If they do not prosper we put them on the cane. That grass is being disseminated through the North, and it is sold as Louisiana grass. You will find plenty of it advertised.

Q. Are the cattle gathered in the barns at nights?—A. On the farms, yes; they are brought up and looked after. Where they are grown in large numbers, as in some parts of the State, they are not; no necessity for it. Where they are milking cows on the farm the stock is all brought up.

(By Mr. A. L. HARRIS.) What is the earning capacity of your capital invested in farming, compared with investments in other industries?—A. I imagine, as the banks are loaning us money at a fair rate of interest, it must be better than banking in a small way. I do not know much about the profits in manufacturing, but it is certainly better than our Southern railroads, because most of the Southern railroads are below par in value. The Illinois Central is above and paying, I think, 5 per cent dividend; but I do not think you could get any of our farmers to farm with as low as 5 per cent income. We want a little better than that. I will say the State of Louisiana, as well as all the other Southern States, and I know them all pretty well, are in first-class, good condition just now; money is abundant; farmers are cheerful; improving their farms; diversifying their agriculture; less moving about than I have ever seen (I am referring to the whites); less disposition to sell; more endeavor to improve and embellish the home than I have ever seen in my life. We have great cause to congratulate ourselves on our present condition. There are fewer mortgages, less dissatisfaction, more home comforts, more education, more boys going off to school, more live stock being introduced, better attention being paid to farming, more fertilizers used, etc.

Q. You consider this change permanent, do you?—A. Not in the nature of things, no; because our staple crops are cotton, sugar, and rice, and if the bottom should drop out of either of them we would suffer. Our sugar and rice and cotton interests are prosperous by virtue of the fact that prices are fairly good for profit. Six or eight years ago our cotton planters had an awful time to make both ends meet, selling the crop at 4 cents a pound. With things that they had to buy higher than they are now, they passed through very desperate straits, so to speak. Rice and sugar are both liable to these fluctuations, and so is cotton. You all know how hard it is to make money when the chief staple crops of the country are below the cost of production.

Q. Will the present high prices induce farmers to overproduce?—A. Yes; in cotton. We can not overproduce rice and sugar for years to come, for the reason that the sugar crop is only one-seventh of the country's consumption. Our cotton crop has been depressed for years, until last year, by overproduction or underconsumption, which ever you choose to call it. There has been a dispute as to whether it is due to underconsumption, want of money to buy, or to overproduction; but we have made enormous crops of cotton up to two years ago, and those crops have depreciated the value of cotton all over the world, and made us sell cotton on the plantation for 4 cents, while it is utterly impossible under our best system to produce it at a profit at that price—you have to starve your labor to death if you do.

Q. Is your system of taxation satisfactory in your State?—A. I believe perfectly so. It ought to be, because our legislature represents the farming and planting classes of our State. Our legislature is composed almost exclusively of planters and farmers. I believe our State laws are all satisfactory to most of the planters. There are some few laws which are not, as I have intimated—for instance that crop-lien law. There is a difference of opinion on it, and hence it has never been abolished.

Q. Are your planters organized?—A. We have, first, the State board of agriculture and immigration, consisting of one farmer or planter from each Congressional district, together with certain ex officio officials of the State, among whom are myself, the governor, the president of our agricultural college, the commissioner of agriculture, the director of the experiment station, and the vice-president of the board of supervisors of the agricultural and mechanical college. They have an office in Baton Rouge, from which they are issuing a large amount of literature in regard to agriculture all the time. They organized farmers' institutes some years ago, and we have now farmers' institutes in 50 out of the 59 parishes of our State. At these institutes the farmers of the different sections of the State meet and discuss agricultural questions under the guidance of a director, who is usually either the commissioner of agriculture, myself, or some of our associates; and we carry to them, of course, all the information that we can relative to the subjects nearest and dearest to the farmers of that immediate section. If we are in the rice section we discuss mainly rice and other crops that go along with it. In sugar sections we discuss sugar making, sugar growing, and things of that sort, and in the cotton region we discuss cotton and grass and forage crops and stock and other things.

We also have a State Agricultural Society that has an annual meeting. It is composed of the farmers and planters of our State. They meet once a year and

hold a week's session at such a place as may be selected by their executive committee. The leading farmers and planters of the State meet and take part.

Then at each experiment station we have a local agricultural organization. The Sugar Planters' Association that established the sugar experiment station meets monthly in New Orleans. It was organized as far back as the seventies, and is perhaps the pioneer agricultural organization of our State. That has done more good perhaps than any other. It is composed exclusively of sugar planters, and, as they have annual dues and initiation fees, and so on, they carry with them considerable means. Then we have local agricultural clubs nearly all over the State; also in some sections of the State there are granges and a few alliances.

Q. (By Mr. FARQUHAR.) Do these granges and alliances enter into agricultural matters, or are they mainly political?—A. The grange has never had anything to do with politics; the alliance has. I can not answer definitely because I was never in either. They are both secret organizations.

Q. (By Mr. A. L. HARRIS.) Do you invite local talent to take part at the local institutes?—A. Yes; in every institute we try to select 2 or 3 local men to take part in the institute.

I would like to amend a little. I want to do justice to our State. Besides this agricultural and mechanical college we have 2 industrial schools, 1 located in extreme north Louisiana and the other in extreme south Louisiana, both of them largely attended and entirely supported by the State. They are industrial schools. Pupils are taught all the industries, besides, of course, the sciences leading up to them. Then, of course, we have normal schools, and also denominational schools. The Catholics, Methodists, and Baptists all have colleges in our State.

Q. Have you any suggestions to make as to the most practical way for the extension of our foreign markets?—A. We would like to see the Nicaragua Canal built, and would like to see our trade established with the Western world. The canal would bring the South closer to the West than it is. We are all heartily in favor of it.

Q. Southern people are in favor of the Nicaraguan Canal?—A. Oh, yes; we are all in favor of the Nicaraguan Canal; yes.

Q. Do you favor Government aid for our American marine?—A. I have never heard that subject discussed except the other day before our industrial convention. There it was discussed very thoroughly and some were opposed to it, but it ended by the convention passing a resolution indorsing the subsidy bill. There is a diversity of opinion on that subject, but the convention passed resolutions favorable to it.

Q. (By Mr. FARQUHAR.) Was that convention thoroughly representative of the Southern intelligence and the local interests?—A. That is difficult to say, because the cities predominated, and I do not know whether we had a full and free expression of the agricultural element in it. The agricultural elements do not get into these conventions very largely. Atlanta was well represented, and so were Nashville, Chattanooga, Birmingham, Montgomery, Mobile, Memphis, Houston, Galveston, San Antonio, Dallas, Baton Rouge, and Shreveport. All those cities were well represented, as were quite a number of small towns, but there was not a preponderance or anything like a fair representation of the agricultural leaders of the South there. Most of those were manufacturing, mercantile or commercial men. They were representative men though—you understand what I mean. They passed resolutions favorable to the canal, but only after considerable discussion.

Q. (By Mr. A. L. HARRIS.) What is the condition of your roads?—A. Roads are probably worse in Louisiana than in any State in the Union, first, because of the peculiar constitution of our soils, alluvial in origin, most of them hard to drain, easy to wear with the wheel, and therefore very difficult to keep in good condition. Another thing is the absence of material for road making; we have none. We are all interested in the problem. Our legislators are struggling with it. They have recently passed laws permitting the police jury of the different parishes to tax vehicles and to levy a per capita tax, or to require every man between the age of 18 and 60 to work under the direction of an overseer on the road for 12 days. The police jury of the parishes are now struggling with that question to see how they can best get good roads, and it is a question with us all, because our people are terribly in earnest about it. At a large agricultural meeting which we had at Calhoun last summer, we had representatives of the road machines present with their machines and rollers. The governor of our State made a speech upon the subject, and we had an expert sent down there by Secretary Wilson. Mr. Harrison appeared on the ground and constructed a quarter of a mile of road; that is, he commenced it, and we completed it. He showed us how to build roads, but I think he left under the impression that we had to do the best we could. It

was not a question with us of building the best roads, but the best we could, because we lacked material. Rocks are mighty scarce in our State, and building materials had to be made there entirely out of clays. We have a hard time in the lower portion of the State in making roads, but we usually adopt the gravel system, bringing the gravel in carload lots from the northern portion of the State, or the middle of Mississippi.

Q. (By Mr. FARQUHAR.) Wouldn't you better widen the tires of your wheels?—A. We have done that. We have gone so far as to exempt from taxation all wheels over 4 inches in width. And another thing I would like to call attention to is this: Our riparian parishes have but 1 road in a parish, which is right on the banks of the river, and all travel is along that 1 road, for the estates run from the river bank to the swamps. Then there is a ditch for every 100 feet, and that ditch has to be bridged and the bridge kept in order.

Q. (By Mr. A. L. HARRIS.) Has there been any decrease in your transportation rates?—A. I believe that since the creation of a State railroad commission they have regulated things a little better—more satisfactorily. They are working every day at it. Every complaint is met, and up to date the railroads and commissioners have got along very well. The railroads have done everything the commission required, I believe, and we are getting very satisfactory rates. I think, now; I mean we are not complaining about them. The great trouble with us in the South in going into truck industries is the heavy transportation to Northern and Western markets. These rates have prevented us from going into that business very largely, but that is a question for interstate railroad commissions rather than for our State commission, and therefore we can not touch it.

Q. Have you any suggestions to make in regard to increasing the power of the Interstate Commerce Commission?—A. I am not sufficiently acquainted with their power now to say whether they ought to have any more latitude or not, but I do say this: There is considerable complaint in our country that the commission is not doing what we expected it would do. In other words, we thought, that when established, it would regulate rates to such an extent as to give an opportunity to the farmer of putting his products on an equality with the rest of the world, in the markets of the world, and we have not been able to do so. Complaints arise every now and then in our State that such and such a place is getting rates that we can not get, and that condition of affairs gives dissatisfaction.

Q. Have you a pure-food law?—A. I think not; I think all inspections are left to our cities. The city of New Orleans has a chemist who is entirely engaged in the detection of impure food.

Q. Is there any demand on the part of the farmers for a pure-food law?—A. There is quite a favorable sentiment toward a national law along that line, but we care as little as possible about having State laws, by virtue of the decisions that have recently been made whereby this whole package business frustrates to a large extent the State laws: so we would prefer a national law to a State law.

Q. Where would you rest the authority of the execution of the national law?—A. I would rest it with the national Department of Agriculture.

Q. Have you any law in your State to prevent the spread of disease among domestic animals?—A. No: not among domestic animals, but we have a law concerning disease among plants, and we need such a law as that for animals. We need more national legislation. Our veterinary surgeon, just a few days before I left home, was called to the parishes around Shreveport (Bossier, Caddo, and De Soto), and he spent nearly a week there in exterminating and destroying animals, and giving instructions to the police juries of those parishes whereby the stables might be disinfected and so on. The trouble was all due to a carload of animals brought from Idaho and Montana and sold in our State. We are suffering somewhat from the operations of the quarantine law concerning Texas fever. We are entirely within the Texas fever region, and in only two months of the year are we allowed to ship cattle to the Northern portion of the United States. We are counteracting the effect of that, however, now to some extent by improving our stock by the introduction of a better class of animals, and we are inoculating them as soon as received with Texas fever, and acclimating them. I left 25 or 30 fine animals in the hands of our veterinary surgeon, who was inoculating them when I left.

Q. Have you any amendment to suggest?—A. Yes. I think the United States Government ought certainly to prohibit just as much the importation from State to State of glanders as it does pleuro-pneumonia in cattle, for glanders is just as bad among horses and mules as pleuro-pneumonia among cattle.

Q. Does glanders ever break out locally with you?—A. No, it is always imported; it is always brought to our State, and they have had a dozen outbreaks since I have been living there.

Q. What are the conditions in other States in regard to agriculture?—A. I

should say all through the States there is a very healthy condition just now. Everywhere there has been a constant tendency toward diversification, the raising of home supplies, increased growing of stock, and increased growing of pasturage and forage crops. This has been going on ever since cotton worked down to its low mark. The present price of cotton is unexpected, and it will probably in the end be somewhat of a detriment to this progress, because the people will go back to raising it more extensively; but the increased price added to the home production of other articles has put our people in excellent condition all through the South. I do not think I can name a State that has not been greatly benefited in the last few years, particularly those that have been working along the lines of the farmer rather than the planter. I believe we can persuade our farmers and planters not to go too largely in cotton this present year, and can maintain them along the lines of agricultural diversification, that they have been in for a number of years, and let them pass over this present high tide of cotton, and I believe it is desirable to do so, because cotton can't remain at 10 cents, you know. We can flood the world with cotton any time we want to do so. The area to be devoted to cotton can be increased or decreased at will to any extent.

Q. (By Mr. CLARKE.) Is there any long staple cotton grown in Louisiana?—A. No. The long staple cotton is confined exclusively to the southern part of Georgia, including the islands on its coast, South Carolina, and certain parts of Florida.

Q. Has not there been an attempt made in Louisiana and Mississippi to grow a long staple cotton and yet somewhat resembling the Egyptian cotton?—A. I have made the effort for 8 to 10 years, not only at the stations, but in distributing seed to a hundred odd planters in our State, and it has been a failure.

Q. Did you get the Egyptian seed?—A. I got 8 or 10 kinds of Egyptian seed, and finally, after failure, I received the consular report from Mr. Penfield, issued from Alexandria, Egypt, in which he stated that the reason of our failure in Louisiana and Texas and other States was due to the fact that we did not get the proper seed and we did not have proper machinery and we did not cultivate it right. I sat down then and wrote to Mr. Penfield and also to Dr. David, of Zigzag, who is director of the experiment station in Egypt, and I got from both of them the purest Egyptian seed by mail. In the meanwhile I got the name of the roller gin that Dr. David ginned his crop on, and I sent to England and got one of the gins. I left no stone unturned to see that the Egyptian cotton was cultivated exactly like they cultivate it in Egypt, and I have been in correspondence with Mr. Edward Atkinson for 2 years trying to get him to get at the relative merits of the cotton I produced compared with that brought from Egypt to Boston, and I have now 2 bales of home-grown Egyptian cotton, which has gone on to Boston this fall to see what can be done with it. It should compare with the Egyptian imported cotton, but the profits are not there. The yield is too small for us. The growing of the Egyptian cotton is a question of irrigation. It is grown in a very dry climate and is irrigated periodically. We have got Egyptian stalks at our station now, whose roots are long, and they do not bring as much as our ordinary bush cotton this year. In our damp climate it is an impossibility to ever acclimate the Egyptian cotton and get identically the same cotton they bring from Egypt. I may mention that the Egyptian cotton was originally our sea-island cotton on our coast, but it has been differentiated there by that climate until it comes back to us an entirely different cotton. Any attempt to acclimate that Egyptian cotton will result in its coming back to long-staple cotton. The only part of the United States that is favorable for the growing of that Egyptian cotton successfully is the arid section of Texas, and there must be provided irrigation so that it can get periodical water.

Q. Do you think it would do well there?—A. I am stating that Texas is the only place in which we hope to make it succeed. I would think if it is going to succeed anywhere in the United States it will be in Texas. You know what Egyptian cotton is?

Mr. CLARKE. I do; but we would like to have your views as a matter of record.—A. The Egyptian cotton is woolly, coarse, rather long staple, and slightly colored. It has a creamy tint, that is largely used for making the balbriggan goods underwear, and it has a finish about it that we can't get our cotton to give, and hence, when we send our cotton to make the same goods, the goods, instead of having that creamy woolly color and texture, are more like our common cotton goods. Hence we can't suppress the introduction of Egyptian cotton. Our merchants demand those goods, and they will come, and no matter how much we make of other kinds we can't substitute for them. There are six or seven million dollars of that cotton introduced every year for that purpose. Our manufacturers have tried hard to find a Southern cotton that would take the place of it, and we have not succeeded as yet.

Q. Has there been any attempt made to grow *Peruvianum* cotton?—A. We have made the attempt, but Peruvian cotton is a perennial or tree cotton, and does not bloom until the second or third year; it would not survive our winters. I have two or three stalks of *Peruvianum* cotton under glass, the third or fourth year, and some of it is now bearing; but it can not be introduced into the South successfully because we can't get seed from it—it never will bear.

Q. Is there any opportunity to extend the cultivation of the sea-island cotton?—A. Yes; there is abundant room for spreading it. The only question is that the sea-island cotton is decidedly objectionable to an upland-cotton man, for this reason: It is extremely difficult to pick; it grows very tall, and the yield of lint is rarely ever more than 20 to 24 per cent of the gross cotton picked. It is difficult to grow areas of it, unless you have hands that are accustomed to growing it. For instance, if I were to turn you loose in a sea-island cotton field to-morrow I do not think you would earn your salt in picking. I can't. Now, if a man has been taught to pick our cotton, *Gossypium herbaceum*, and he is put to picking the long-lint cotton, he can't do anything. The long-lint cotton has only 3 lobes, while ours has 4 and sometimes 5, and it has a small lump in each lobe; the boll is small, and when he goes to pick it it has horns projecting out, so that he gets them in his hands, and he soon tires of it, and a good picker of upland cotton will be a very slow picker of sea island. We have got to have a roller gin to gin long-staple cotton, whereas we gin all short-staple cotton with a saw gin. Our saw gins are extremely rapid, and you can multiply the saws indefinitely almost. We have now a hundred saws in one gin, whereas the roller gin is very slow in its operation, and the machines are never much longer than 30 or 36 inches. The way we gin quantities of it is to multiply the machinery. The saw gin takes the seed off by means of tearing—breaks the fiber, as it were—while the roller gin or knife gin cuts it clean right from the seed and does not destroy the fiber at all. To pass from the upland cotton to the sea-island cotton is almost as great a transformation as going from cotton to cane. You have to reconstruct your entire labor and machinery.

Q. (By Mr. CLARKE.) If there were a roller gin of as high speed as the saw gin and the same capacity, would that work a revolution in the business there in favor of long-staple cotton?—A. It would help to some extent, but I do not know about the revolution, for this reason: The roller gin is very easy to run and does not require very large horsepower; we run ours with 2 horsepower, and can multiply them very easily. The main feature about the sea island is that its product is less per acre and there is an increased cost to get it. It is nothing unusual for us to make a 500-pound bale of upland cotton to the acre; we rarely ever get that from the sea island. It is something extraordinary if we do.

Q. (By Mr. A. L. HARRIS.) Would the difference in price compensate for cost of production?—A. Yes; the price is very much different. We send all of our sea-island cotton to Charleston and Savannah. They are the markets. There is no sale for it in the other Southern cities. Year before last and last year we shipped out a crop from the lower station over to Charleston, and the prices obtained were from 17 to 30 cents, while the prices quoted went from about 14 to 50 cents.

Another thing about the long staple: It is extremely difficult to hold up the long staple. Those men who get 50 cents a pound for it select their seed with the greatest care and maintain that selection every year; but where they grow it carelessly, as they do in southern Georgia on the plantations, they rarely get over 15 to 18 cents a pound. It is the length that sells it, and the length deteriorates very rapidly under careless cultivation.

Q. When you name these prices, does that mean the cotton ginned?—A. Yes. I should also say that the baling is different. We bale the upland cotton in the press at the ginhouse. The other is put in bags—long bags like you ship wool in—and we pack the bags down by tramping and make them weigh from 300 to 400 pounds, whereas the regular short staple will weigh from 400 to 500 and 600 pounds.

Q. Is the Lowry bale or some other circular bale becoming popular in the South?—A. They are all popular except in one particular. They have only been permitted to be used under what is called a royalty up to date. I understand they are now for sale, or will be next season. Everybody recognizes the merits of the round bale. It dispenses with the enormous amount of bagging and ties that are needed. It condenses and prevents the increased cost for the press at the shipping point, and has many other advantages. Up to date we have had to pay \$1 a bale royalty besides other expenses connected with it. In other words, if we use the machine we put it up, and then on every bale we pack we pay the owners \$1 a bale besides almost paying rent for it in addition.

Q. Can you get any higher price for the cotton baled in that way?—A. I can not say that we get it on the market, but I suppose we could, because you know

that whenever a bale of cotton is sold, whether it is apparent or not, 80 pounds is discounted in every bale of raw cotton, though we are not aware of it generally in this country. A man goes to sell his cotton and he will not be apprised by his merchant; but in England, where all our cotton finds a market, just as soon as it gets there 6 per cent is thrown off as tare. Liverpool telegraphs back the price, and then our local merchants rearrange it so as to cover the whole bale here, but we lose 80 pounds. Therefore we can afford to that extent to pay more for the other, where we only lose about 2 pounds, or 24, per bale, of cotton in sack.

Q. Is there any saving in insurance upon it?—A. Yes; there is a saving in insurance and a saving in compressing. Our big bales have to be compressed at 50 cents a bale. I do not know whether the insurance companies have adopted new rates recently, but it has been shown that these condensed round bales are not inflammable; you can not burn them. I have been present at 2 or 3 tests where they have poured kerosene oil all over them and set fire to a bale, and they have just charred; you can not burn them. If they are tightly compressed, they will not burn.

Q. Is the fiber in any way injured by that pressure?—A. I am told not. Mr. Atkinson writes me word from Boston that by the recent introduction of a machine by which you can take the cotton and unroll it from 5 or 6 bales at the same time and feed it to the spindles or to the pickers the process has become quite popular. Before that it was unpopular, because there was some difficulty in unrolling the bale. Formerly the old, big bale was simply uncovered and drawn out and picked and thrown right into the pickers. Now, this other is unwound very nicely—the round bale, not the Lowry. The Lowry is a spiral bale; the American bale is a round one, and the Lowry is wound in a spiral this way [indicating], and when it is rolled up you stretch the fiber.

Q. Which of these round bales is preferred by the Southern planters, as a rule?—A. No preference has been expressed. There are half a dozen or more now. The only question at issue was which was the greatest monopoly and which was going to squeeze us most. There has been an antagonism developed against these round bales by the large amount of money that we have invested in public gins and public compresses; they have formed a solid front to fight them.

Q. Are the gins and compresses owned by the parishes or counties?—A. No; they are owned by corporations and individuals.

Q. You speak of them as public, then, only in the sense that they serve the public generally?—A. In the hill country, at every crossroads, 2 or 3 miles apart, there is a gin. It is a large establishment, and will probably take the crop of 30 or 40 small farmers. That is what we call a public gin.

(Testimony closed.)

WASHINGTON, D. C., February 7, 1901.

TESTIMONY OF MR. BRYNJOLF PROM.

The commission met at 10.47 a. m., Mr. Farquhar presiding. At that time Mr. Brynjolf Prom, banker and farmer, Milton, N. Dak., was introduced as a witness, and, being duly sworn, testified as follows:

Q. (By Mr. FARQUHAR.) Please give your name, post-office address, and occupation.—A. Brynjolf Prom; Milton, N. Dak.; I am engaged in farming and banking.

Q. (By Mr. A. L. HARRIS.) How long have you been engaged in the business of banking?—A. Sixteen years.

Q. How long have you been engaged in farming?—A. Nine years.

Q. How extensively are you engaged in farming?—A. I own and farm 7 quarter sections of land.

Q. Do you reside on your farm?—A. No; I reside in Milton. It is only three-quarters of a mile from the farm.

Q. On what plan do you conduct your farming?—A. I rent it; have tenants on it.

Q. Cash rent or grain rent?—A. Shares.

Q. What are the terms?—A. I furnish the seed and pay half of the expenses—that means twine and thrashing—and receive one-half of the grain.

Q. Delivered where?—A. On the farm. The tenant receives the other half.

Q. How general is that plan of renting in your State?—A. In our State those are the general terms, only generally the owner of the land does not pay one-half

of the thrashing. Sometimes we thrash from the shock and sometimes from the stack. It is cheaper to thrash from the stack.

Q. Who furnishes the machine?—A. The tenant. He does all the work and furnishes the machinery and the horses.

Q. How large a proportion of the grain raising in your State is done by crop-sharing?—A. A very small portion. The land is mainly owned by actual settlers and farmers.

Q. Then who does the work?—A. They do it themselves.

Q. Any hired labor in the State?—A. During harvest there is some hired labor, transient, coming in. We need extra help during farming and harvest.

Q. The balance of the season the work is done by the owners?—A. By the farmers; yes.

Q. Are the tenants usually men of families?—A. Yes; middle-aged men with families of children; they are preferred.

Q. Are their children educated on the farm?—A. Yes.

Q. Do the young men continue on the farm when they get to doing for themselves?—A. As a rule.

Q. Are they disposed to seek other employment?—A. No; in our neighborhood they do not seek other employment.

Q. What are the hours of labor?—A. Generally from sunrise to sunset. The season is so short they have to use the whole day.

Q. What are the number of days usually employed in the course of a year?—A. We do no farm labor during the months of January, February, and March. Our labor starts in April, and the labor is then continued through until November, when the grain hauling begins.

Q. Do you pay by the month?—A. Yes, by the month.

Q. What becomes of the labor during the winter months?—A. They rest on the farm. They generally stay there. Our population is largely Canadians. Some use the money they have earned to go home on and visit relatives in Canada. The others remain on the farm.

Q. What are the average wages?—A. The average would probably be \$22 per month; that is, during the fall; \$22 and board.

Q. What is the average during harvest or busy season?—A. During the harvest the rate fluctuates very much. They pay up to \$30 a month, but very often we are not able to hire men by the month in harvest; we have to pay by the day, paying from \$2 to \$2.50 cash.

Q. Have you any such thing as payment in kind or out of the crop?—A. No; all cash.

Q. What is the condition of your tenant houses on the farm?—A. They are fair; they are not great buildings, but they are comfortable.

Q. How do they compare with the average farmer's house?—A. They do not look well; they are small; but they are generally warm. They are generally frame structures, protected by sod—that is, where the farmers are not in good circumstances—but they are good buildings; they are exceedingly comfortable, especially during the winter. They are also cool during the summer.

Q. About how many rooms usually?—A. Two.

Q. Who furnishes the fuel?—A. The tenant.

Q. What is your fuel?—A. Wood, and now in North Dakota lignite coal.

Q. (By Mr. FARQUHAR.) Are the tenants free to go into the woods and supply themselves with fuel?—A. No; they pay for it—for grown poplar wood, \$4 a cord; oak, \$5.50. Hard maple and such stuff we haven't got. Maple would probably cost \$8 a cord.

Q. (Mr. A. L. HARRIS.) Do you burn straw?—A. Yes; flax straw. There are sheet-iron drums made, and they fill these with flax straw packed as hard as they can. This drum is opened at the bottom, and they put it on top of a cook stove, take the lid off and light the fire, and that makes a good fire; it heats the house; it heats one room very comfortably, and lasts a long time. There is a very disagreeable odor with it, but it does first rate for fuel for heating. It is a great saving for farmers who are 15 to 20 miles from timber.

Q. (By Mr. FARQUHAR.) Do you utilize flax straw in any other way?—A. For feeding.

Q. How does it compare with the general feed?—A. My stock this winter was fed on flax straw, and came out fine. I suppose that probably the thrashing was not properly done.

Q. (By Mr. A. L. HARRIS.) Of what nationality are your farmers?—A. Our population is mainly made up of Scandinavians and Canadians. There are also some French.

Q. (By Mr. FARQUHAR.) French Canadians?—A. Yes; and half-breeds.

Q. (By Mr. A. L. HARRIS.) Are they desirable citizens?—A. All except where the French colonize, gather together in villages; where they mix with half-breeds they are not desirable.

Q. Do they colonize to preserve their own customs and language?—A. Yes. There is especially one village north of Milton by the name of Olga. It is an Arcadian village. They preserve their customs and speak French exclusively; they have French priests.

Q. Are their schoolbooks in French?—A. Yes. They are not supposed to be.

Q. What has been the effect of your different nationalities upon the agricultural industry of the country?—A. No marked effect. They all seem to work in the same way, and they work well together; that is, the Scandinavians and Canadians.

Q. Have they aided in developing the country?—A. Yes; materially.

Q. Are they generally industrious?—A. Yes; very.

Q. What nationality predominates?—A. In that neighborhood, Scandinavians. In speaking of Scandinavians I mean the Norwegians mainly; the Swedes are not so numerous there; mostly Norwegians.

Q. (By Mr. FARQUHAR.) Which nationality came in first?—A. The Norwegians came in first.

Q. Which one next?—A. The Icelanders came first in that neighborhood, then the Norwegians and Canadians.

Q. What is the proportion of Americans that settled in there on the farms?—A. Why, it is hardly noticeable. We had to hunt through that country to find an American born.

Q. You speak of Canadians being migratory; that is, you say they work during the working seasons, and then go to Canada on a visit?—A. Yes; they spend the winter months in Canada. They get cheap excursion rates and take advantage of them and go back to visit.

Q. What point of Canada does the supply come from?—A. Ontario.

Q. Have you any settlements of Canadians working in your fields from Winnipeg and Assiniboia?—A. No, seemingly not. That country, the Assiniboian district, is not developed very much itself.

Q. Have they not their own workers to develop their own land?—A. Yes.

Q. (By Mr. LITCHMAN.) What proportion of that migratory population is there?—A. It is not a very large proportion. It is mainly composed of young people.

Q. Is it 10 per cent?—A. No, I do not believe it would reach 10 per cent; but they are young unmarried men.

Q. When they first came?—A. Yes.

Q. When they marry they usually remain in the States?—A. They settle down when they can afford to do so.

Q. And become citizens of the United States?—A. Yes.

Q. (By Mr. A. L. HARRIS.) Were there any special inducements at any time by railroad corporations or others to bring the immigrants to your State?—A. There has been to the western part of the State, I think, but not to our country.

Q. How did they generally acquire their titles?—A. Under the homestead law, and in early years by the preemption and by timber claims. There are many men up there that had three rights, and thus got three claims adjoining, and they have valuable farms.

Q. What do you know about the inducements for settling where the railroads had large grants of land?—A. That would be farther west, on the Northern Pacific.

Q. What is the price of land?—A. At present the price will range from \$12 to \$15 an acre. That is a great increase from only 3 or 4 years ago.

Q. (By Mr. CLARKE.) You speak of that as an average price through your State?—A. Not through the State, through my section of the country—in Cavalier County.

Q. That is higher than the average of the State, is it not?—A. The average of the State will be lowered considerably by the price of Western land, but for the district along the Red River Valley it is not as high as ours.

Q. (By Mr. FARQUHAR.) Of course, you are speaking of improved lands?—A. Yes; there is no wild land any more; no more vacant land; it is all taken up.

Q. Did the settlers maintain possession of their lands and cultivate them, or did they preempt to sell?—A. They preempted to sell mainly.

Q. Into whose hands did these purchases go usually?—A. They piled up mortgages on farms and took the money, and the lands went to the loan companies. They have resold now.

Q. Then the loan companies took the renting rates when they sold them, didn't they, for income? They sold at renting rates so as to get the money back with interest?—A. Yes.

Q. (By Mr. A. L. HARRIS.) Have you many mortgaged farms?—A. Yes; the greatest number of farms in our country are mortgaged.

Q. Are they heavily mortgaged?—A. No.

Q. Are they being paid off?—A. Yes; but many that can pay off will not pay off. They prefer to keep a mortgage on the farm and keep the money to buy extra land.

Q. What is the average rate of interest?—A. On farm mortgages, 8 per cent.

Q. (By Mr. FARQUHAR.) Were not there a great many mortgages made there to acquire more land?—A. Yes.

Q. That is why they maintain them?—A. To a large extent.

Q. The 8 per cent interest they pay enables them to hold the land, and they are able to pay the interest?—A. Yes.

Q. And they make a little money on the crops they raise?—A. Yes.

Q. (By Mr. A. L. HARRIS.) Was that wise or unwise?—A. Wise.

Q. You do not look upon the fact that you have a great number of mortgages as being an argument in favor of adversity?—A. No, sir.

Q. Did it aid your country in developing?—A. Yes. There is no money produced out there except by crops; that is too slow.

Q. Could you have developed upon a cash basis?—A. No, we could not. Our country would not be settled to-day. Most of our farms are bought on a credit. We deem it wise to buy on credit. We can buy lands on crop payments, or we can buy for so many thousand bushels of wheat, and it is no hardship to the farmer. A man can buy a farm, for instance, on the crop payment. Say the price is \$2,000, and he binds himself in the contract to pay one-half of the grain he raises every year. Now, an honest man will do that. All he has to do is to deliver his half and retain the other half for seed and expenses, and he can do it in that way. He can gradually pay for the farm. That he can do in connection with another farm he owns. A man can buy more land that way, and it is an excellent plan.

Q. When he gets out of debt in that way what does he do?—A. Buys more land. They are restless people up there; they can not lie still.

Q. Are your public-school facilities good?—A. They are very good.

Q. Are your schools well attended?—A. Yes, sir.

Q. Can you give us the average per cent enrolled?—A. No, I can not do that; but our State is populated by young people, only young married people, and there are not very many children of school age. It is seldom you see a gray-haired man up in our State. We have few grandfathers. We need them.

Q. (By Mr. A. L. HARRIS.) Is your course of study sufficient for the agriculturists, needs?—A. Not in the public schools, of course; but we have an agricultural college in Fargo, where the more advanced scholars can go to learn.

Q. When was that agricultural college established?—A. About 6 years ago.

Q. That is the college grant?—A. Yes; United States grant.

Q. Has the college an agricultural course?—A. Yes; and it does much good in the State.

Q. Are classics taught there?—A. I think so; but the greatest benefit that our farmers derive is from the professors of the agricultural college making tours throughout the State and holding institutes during the winter months, when the farmers are not busy and can go down and attend and learn how to cultivate farms and get the best results of the experiments of the college.

Q. Please describe the workings of one or those institutes.—A. We had one in Milton in December. Three professors from the college came up there and lectured on the handling of the soil, giving us their results in experiments on farms. They had grown wheat for so many years in succession and gave us the result of the last year. They took another plot of ground that had been planted to corn, and in that way they gave the results of the different ways of feeding the soil, where manured and where not manured, and it is of great benefit to the farmers. We also had an institute the year before. That was the first institute there, after we had a tremendous dry year in North Dakota, and those farmers went there to get the benefit of instruction from the professors who had raised a crop during the dry year, while the others did not.

Q. Do you have any local talent to take part?—A. Yes; we make it as attractive as possible for the farmers, give a little entertainment, and make it all as inviting as possible.

Q. Are your institutes well attended?—A. Very well attended.

Q. At how many points in your country do you hold institutes in the year?—A. It depends upon how great the demand is from the other parts of the State. We have only two points in our county.

Q. That is once a year?—A. Yes; just during the winter months. But in con-

nection with this I wish to state that the president of the Great Northern Railroad, Mr. J. J. Hill, during the summer sends a train up through our country and invites the farmers to ride over to Fargo to the agricultural college to visit it and learn what they can during that time, and brings them back again, without any charge.

Q. Is that privilege taken advantage of by the farmers?—A. Very much; farmers press for the chance to go.

Q. Good results?—A. Yes; they get the best results.

Q. Have you an experiment station in your State?—A. There is one connected with the agricultural college.

Q. Is that doing good work?—A. Yes.

Q. Do they conduct experiments along practical lines?—A. Yes.

Q. How is that knowledge distributed?—A. Through bulletins, which we can get by sending for them; also, the professors give results. They have large tables, and they hang them up on the walls of the institutes, so that we can see the results for ourselves. They work in our interest, and we can ask questions and get information.

Q. Do your experiment-station men attend your institute meetings?—A. Yes; they are the professors that conduct them.

Q. You feel that there is a growing interest in the education of the farmer in your State?—A. Yes; there is. Our farm boys are getting a better education.

Q. Does that improvement have a tendency to keep the boys on the farm?—A. I think it has.

Q. Does it have the tendency to remove the drudgery of farm work?—A. It has a tendency to make it more interesting. Instead of looking at and seeing nothing, they see something.

Q. As a result your farmers are more sociable, are they, and have more extensive acquaintance among themselves?—A. Oh, yes.

Q. What are the earnings of capital invested in agriculture compared with investments in other business in your State?—A. I think agriculture is way above any business enterprise we conduct in our State.

Q. How does it compare with banking?—A. First rate, although banking pays pretty well up there. Our banks pay 20 per cent dividend; but my farm pays better than that.

Q. How does the investment in farming compare with manufacturing investments?—A. We have no manufacturing plants.

Q. Have you anything to suggest in regard to taxation?—A. No; our taxes are just in the State.

Q. How is your property valued for taxation?—A. By an assessor. He values it, and then a levy is made to meet the expenses of the different counties.

Q. You tax upon an actual value basis of your property?—A. Upon what is supposed to be actual value. It is upon the assessed value, which is a great deal below the actual value.

Q. Does the farmer have any advantage or disadvantage by that system of valuation?—A. No; he does not seem to have any advantage, nor are there any disadvantages. The farmers are fairly treated.

Q. Have you any suggestions to make as to amendments to your tax laws?—A. I have not.

Q. Is your soil declining in its productive qualities?—A. No; not if it is taken care of, and it is being taken care of. There are farms that have been sowed to wheat for 15 years in succession. Of course, that is hard on land; but the last year's production was a wonderfully big crop. That is not proper treatment, but it shows a tremendous strength and richness of our soil.

Q. What is the character of your soil?—A. It is black, heavy, clay loam, a rich black loam; it is about 24 inches deep on an average upon a clay subsoil.

Q. Does it respond favorably to fertilizing or rest?—A. Yes.

Q. Is it easily brought up when run down?—A. Yes. The only way we rest it is to summer fallow it, lay it over 1 year, and let weeds grow, then turn them down during the month of July before they go to seed.

Q. Do you raise clover?—A. No.

Q. What are your chief products?—A. Wheat, flax, oats, and barley.

Q. What is the nature of the country?—A. Open territory.

Q. Have you any oak there at all?—A. Some, but not a great deal.

Q. (By Mr. A. L. HARRIS.) Have you any bonanza farming in the State?—A. There was some in the northern part of the State.

Q. What is the effect of bonanza farming upon the farmer?—A. It is not good.

Q. Will you state why?—A. The bonanza farmers do not patronize the villages. They ship in all goods from the East. They act as a wholesale grocery house for themselves, and it is probably a drawback for the other small farmers in the way

of school privileges. The bonanza farms are very large. They divide them up into different parts, with a foreman for each part. They have a little village of their own.

Q. Is the bonanza farm generally conducted by hired help?—A. Yes.

Q. Single men?—A. Mainly, yes; only the foreman is married.

Q. What school facilities have they?—A. On these large farms there are none. Of course, they do not need them, but if there are small farms wedged in between their occupants suffer.

Q. Those large farms are conducted upon strictly business principles?—A. Strictly business principles, nothing else.

Q. Are they farmed upon more scientific principles?—A. The farming there is done more scientifically than on the small farms.

Q. Is it done more economically than on the small farm?—A. I think so; yes.

Q. The percentage of profit, then, is larger on the bonanza farm, is it?—A. In proportion; yes.

Q. What are the general results?—A. The general results to the people of the country at large are not good, and the people generally would favor the abolishment of bonanza farming.

Q. (By Mr. FARQUHAR.) The bonanza farming is simply to get the product out of the soil and ship it East?—A. Yes.

Q. (By Mr. A. L. HARRIS.) Have you any organization among your farmers?—A. There is none now. There was one once which was called the Farmers' Alliance. It was originally started for the purpose of discussing agriculture for the benefit of farmers, but it turned into a political association and went to pieces.

Q. Has it any strength now?—A. None whatever.

Q. Have you any farmers' clubs?—A. There are none, excepting a "Farmers' Institute Association."

Q. To what extent do you diversify in your farming?—A. We are just in the beginning of the period of diversified farming in our county. We have been exclusively grain growers, of wheat mainly. Now we are turning into flax, and the more advanced farmers are raising a great deal of stock. The stock they kept there before for meat purposes was scrub stock, and was very unprofitable, but now they are going into blooded stock to see if that pays, and it is being taken hold of largely.

Q. What kind of stock is raised generally?—A. Shorthorn cattle.

Q. Do they do well?—A. Quite well.

Q. How much of the year do you feed?—A. We have to feed nearly 5 months, but we can feed on straw. The cattle eat up all the straw which formerly was burned just as soon as thrashed.

Q. Do you raise horses?—A. Yes, each farmer tries to supply himself with horses, but we do not raise them for export. They import a few horses every year. That is mainly because our country is just being settled; the western part of it is just being filled up.

Q. Where did the original breed of horses come from?—A. We got them from South Dakota, Minnesota and Iowa. Most dealers go down there and get them and ship them up.

Q. Is the trade profitable?—A. It is very profitable to the horse dealers.

Q. Do you raise any sheep?—A. The sheep industry is not flourishing now. It was at one time.

Q. What is the cause of the decline?—A. When wool went down to 5 or 6 cents a pound, it was not profitable. Since that the business has been taken up again.

Q. No disability, then, so far as the climate is concerned?—A. No; the climate is favorable to sheep raising—very favorable; it is cool and crisp up there, and the wool grows long, but wheat raising is easier than stock raising, especially as the water question enters into the stock-raising question. The farmers who have no rivers and lakes have to rely on wells, and they can not rely on them when they have a large amount of stock. That is one of the main reasons why we have not raised stock extensively. We have no artesian wells.

Q. Is there any disposition to return to sheep raising?—A. The few men that have sheep say they receive great profit on them.

Q. Is the profit alone in the wool or partly in the mutton, sheep, lambs, etc.?—A. In the wool alone is more profit, and it increases, of course, very rapidly.

Q. You spoke about burning flax straw. Is there any other use that you put this straw to except burning?—A. Feeding.

Q. You do not manufacture it?—A. No; we have no manufacturing plants.

Q. Has any attempt been made to manufacture it?—A. Yes; there is now in Fargo a flax mill where the straw is thrown in and it is run over rollers, and the wooden part of it is taken out so that the fiber is left. These fibers they press into hard blocks and ship them East for linen manufacture.

Q. Is that profitable?—A. They say it is very profitable. It is very profitable to the farmers living close to the mill.

Q. What do you do with the flaxseed?—A. Ship it to Minneapolis.

Q. What price does it command?—A. Last year the average price, I should think, would be from \$1.40 to \$1.50 a bushel.

Q. How many bushels to the acre do you raise?—A. Last year the production varied from 8 to 9 bushels to 24 bushels. The average yield of flax is from 14 to 16 bushels.

Q. Is that a profitable crop to raise?—A. Excellent.

Q. Is it hard on the soil?—A. We do not think so if the land is properly treated. If you do not sow to flax continually, it is not hard on the soil, or where they rotate the crops it is not hard.

Q. (By Mr. CLARKE.) The flax is grown entirely for seed, I suppose?—A. Entirely for seed.

Q. (By Mr. LITCHMAN.) The straw is a by-product?—A. Yes; that is by-product; it is simply a chance the farmer has.

Q. If he averages 16 bushels to the acre for his flax at \$1.50 a bushel, his straw would be an extra income?—A. Yes.

Q. What would the average be if the average production was, say, 16 bushels; what would be the value of the straw?—A. I think they get \$2 a ton for the straw.

Q. How many tons would it average?—A. Probably 2 tons to the acre.

Q. The rent of your tenants on your farm is made from the half share of the product of wheat?—A. Of all grains.

Q. If the farmer raised a diversified crop, the half share would apply to that?—A. Yes.

Q. He must get his living out of the half share he retains?—A. Yes.

Q. And would the half share apply to the garden crop that he raises for his own living?—A. No; he gets a certain part of the field for his own exclusive use for garden stuff, potatoes, etc.

Q. (By Mr. A. L. HARRIS.) What effect has improved machinery had upon farming?—A. It has had a great effect. It has had the effect to facilitate the raising of crops.

Q. (By Mr. FARQUHAR.) How successful are you growing corn and ripening it up there?—A. Corn is creeping up on us; we are beginning to raise corn up there, and are maturing it. Cavalier County lies on a plateau, about 400 or 500 feet above the bottom of the Red River Valley. The altitude shortens the season a little up there. We are a little later in the spring and a little earlier in the fall, and the corn on top of the hill, as we call it, does not mature, but we are confident that it will not be very many years before we can mature it, because our seasons are longer than they were when we started. The cultivation of the soil farther West, the breaking up of the whole vast territory West of us, gives us more heat.

Q. What is the influence of the west and northwest winds?—A. The Chinook winds do not reach us.

Q. Do you get the southwest wind?—A. Yes.

Q. That is all land wind?—A. Yes; but we have no hot, burning winds. They don't strike us. Those hot winds that strike South Dakota do not reach us.

Q. (By Mr. A. L. HARRIS.) Has farm machinery to some extent compensated for the decline in the price of wheat?—A. Oh, yes.

Q. What is the average price you get for wheat now?—A. There are different grades of wheat. During the last 6 years the average grade of our wheat has been No. 2, and the average price during the 6 years has been 55 cents for that grade of wheat.

Q. How many bushels do you raise to the acre?—A. In 1895 we had a big crop, but last year we had a small crop. In the intervening time we had average years, and the average yield has been 14½ to 15 bushels to the acre.

Q. What is the cost of production of an acre of wheat?—A. It costs about \$5.72 an acre.

Q. That includes interest on the land?—A. No; not interest. It is the cost of production—of all labor, seed, hauling, and all things pertaining to the work and marketing the wheat, but not interest on the investment.

Q. Then you have a margin of profit?—A. Yes.

Q. What have you to say, if anything, in regard to the extension of foreign markets?—A. We are very desirous of having an extension of the markets up our way.

Q. In what direction are you looking?—A. West. We are hoping that the ship subsidy bill will pass so as to get aid from the western shipping. We think that will help us greatly.

Q. (By Mr. LITCHMAN.) How far is that opinion shared by your associates

among the farmers?—A. The farmers that know of the bill generally share the opinion, but there are many farmers who have no idea what it means.

Q. Are you so situated as to be able to get the opinion of the thinking men among the farmers, the leaders of the farmers?—A. Yes, sir.

Q. Do you believe their sentiment is that the subsidy bill would be a good thing for the development of foreign trade?—A. Yes. All the farmers there know that the development of foreign trade will help their cause, but they would not lay it absolutely to the passing of the subsidy bill.

Q. Do they look upon the passage of the subsidy bill as an instrument in that direction?—A. Yes.

Q. (By Mr. CLARKE.) Would not the development of the home market help it also?—A. No. We have no home market. The North Dakota farmer can not sell his grain in North Dakota. That is the great trouble with us.

Q. Suppose the population of all your towns should increase several fold, and that of the large Western cities also, so as to have more consumers; would not that increase help the market?—A. It would help to a certain extent, but hardly the grain market so much. It would aid the farmer in diversifying his crop, in raising chickens, garden truck, sheep, and stock. I do not think it would tend to increase the price of the grain. But we can not look for any increase in that way except by establishing manufacturing plants.

Q. You are aware, are you not, that here has been a steady increase in manufacturing throughout all of the Western States?—A. Yes.

Q. Do you not anticipate something of that experience in your own State?—A. I do not anticipate. We hope that such a thing will happen, but we do not see how it can, because we find that all manufacturing plants go to places where fuel is cheapest and where power is cheapest, and there is none of either in our State. We have no water power there. We can not manufacture electricity cheaply, and so we are shut out.

Q. So long as farming pays 20 per cent or more per annum, do you think it is an object for anybody to be engaged in manufacturing?—A. No; we do not think it pays the farmer to leave his farm to go into anything else, and our farmers up there do not think so, either. They stick closely to the farm. Our farmers who came there in 1882 and 1883 (they were the best years) are as independent as any rich man living here; that is, according to their means. They do not want all the luxuries, but they are progressing.

Q. In your opinion would a man engaged in manufacturing in Chicago consume more of the Dakota farm products than a man engaged in manufacturing in London?—A. I think so, from what I have seen myself. I have been through Europe, and have been very much among the laboring class there, and from the way they are fed I am quite sure the American laborer lives better.

Q. Besides the mere matter of living better, is it not true that the London workman would draw his agricultural supplies from several countries, while the Chicago workman would draw his almost exclusively from his own country?—A. Yes.

Q. (By Mr. A. L. HARRIS.) What is the condition of your roads and highways?—A. They are fair; not been very good, but they are improving right along.

Q. Have you good material for making roads?—A. Not the very best. We only have the clay of the ground; but if the roadbed is properly built it makes a very good road.

Q. How many months are the roads good?—A. All the year round. They are dry in summer and frozen hard in winter, if properly constructed.

Q. Is there much interest in the good-roads question?—A. Yes; that has just been awakened.

Q. Is that one of the subjects discussed in your institute meetings?—A. Yes; attention is always called to it.

Q. Is the price of farm products, especially wheat, affected by dealing in options and futures, "puts and calls"?—A. As a farmer, producing the actual grain, I think that it does us harm to have gambling in wind. It will sometimes increase the visible supply artificially and therefore lower the price where the supply does not exist.

Q. Does the "future" sale have an effect upon the spot sale?—A. Not the future sale of actually delivered wheat.

Q. Are future sales usually based upon actual delivery?—A. They are not. Those sales and purchases are made by men who never saw wheat and who have no wheat to sell.

Q. Do you think that practice should be prevented by legislation?—A. I think it would be better for the farming community if that practice were prevented by some method.

Q. Have you any remedy to suggest?—A. I have not. There are laws forbidding gambling, but I do not think it would come under the head of gambling. If they did, it would help.

Q. How many railroads have you in your county?—A. Just one—the Great Northern.

Q. Has there been any reduction in rates in the last few years on that road?—A. Yes. The freight rate, I think, was reduced 2 cents a hundred pounds during the last 3 years, which was a very welcome thing to the farmers.

Q. (By Mr. CLARKE.) Between what points?—A. All through the State.

Q. (By Mr. FARQUHAR.) Was that a voluntary reduction?—A. That was a voluntary reduction by the railroad.

Q. (By Mr. A. L. HARRIS.) Does that road give you good shipping facilities?—A. It gives us good shipping facilities except during the main shipping season in the fall of the year. We have no competing elevator companies. Outside of grain shipping in the fall months we have good facilities; we can get a stock car at any time.

Q. What is your terminal point or points?—A. Minneapolis and Duluth are the only points.

Q. How many elevators have you in your town?—A. We have 10 in my town, all "line" elevators.

Q. Are they all owned by the same persons?—A. Seemingly not. They are different corporations. There might be the same stockholders, though, in the different companies.

Q. Can you name the corporations that own them?—A. I can give the names, yes—the Northwestern Elevator Company, the Duluth Elevator Company, the Minneapolis and Northern Elevator Company, the St. Anthony and Dakota, and the Imperial Elevator Company.

Q. Where do your shipments go, mostly?—A. They are very evenly divided between Minneapolis and Duluth. The freight rate is the same to both points.

Q. What are the freight rates from your town?—A. Fifteen and one-half cents per 100 pounds.

Q. How is the price of grain regulated?—A. The price of grain is telephoned up every day to the agent at one of the elevators, and he is supposed, at once, when he gets the price, to go to all the other agents and give it to them.

Q. Where does that message come from?—A. It comes from Fargo, and Fargo receives it from Minneapolis.

Q. (By Mr. KENNEDY.) Does Minneapolis receive it from Chicago?—A. No.

Q. (By Mr. A. L. HARRIS.) Do you receive any price from Duluth?—A. No.

Q. From no other point except Minneapolis?—A. None.

Q. Is there any combine in Minneapolis that you know of that controls the card price of grain?—A. All the elevator companies in Minneapolis, the line elevator companies, have given it into the hands of one man to fix the prices. That one man determines what the prices are to be from the market of the day. He goes on the floor of the exchange; he is the master; he determines what is right to do, whether they shall reduce the price or raise it. If the price is raised, if the price goes up that day, he generally writes a line up to the man in our town and tells him to raise the price; but if the price goes down, he wires at once.

Q. What does he take into consideration when he raises or lowers the prices?—A. The actual market quotations on the floor of the exchange. He is governed by them.

Q. Are they governed by the quotations of any exterior point?—A. Only by inference. Any reports from the Argentine Republic, the condition of the weather, possible wars in Europe, and rain in the Northwest during the dry season, all have an influence. He has to consider all these causes and be the sole judge whether the price ought to go up or down.

Q. It really, then, is an arbitrary fixing of the price upon apparent conditions?—A. In reality that is what it is.

Q. Have you any independent elevators along the line of your road anywhere near you?—A. No; not near us. No independent elevators.

Q. If the price is given out at Milton and you do not feel like accepting it, what do you do?—A. Keep our wheat. Either that or try to get a car and ship it to Minneapolis or Duluth to a commission firm.

Q. Will the railroad officials furnish you a car promptly?—A. They will if they can not help it; but they are not very eager to furnish cars to private shippers.

Q. Do the line elevators in your town get cars in preference to the independent man?—A. Yes. The way we have to order our cars makes it nearly impossible for us to get a car. When there was very little wheat during the dry season like last year, there was an abundance of cars, and the railroad company was anxious to do some business. Then we could get cars. But during the busy season, when

our crop is abundant, we can not get cars. The rule of the railroad company is that if we want a car we must order at 6 o'clock Saturday afternoon, and the elevator agents must do the same. They are there beforehand; they stand by that little window and put in their orders for, say, five cars—each one so many cars. The farmer can only order one. Now, as the cars come up, the first man that ordered is first served, and all the elevator companies have ordered first and they are first served. Only a limited number of cars are sent up during the week, and if that is not enough to go around the farmer gets none. Then he has got to be there the next Saturday and give an order.

Q. Suppose you get a car and load it with wheat, where do you send it?—A. We send it either to Minneapolis or Duluth to a private commission merchant.

Q. Does he have all the facilities that the elevator men have?—A. Yes, if he is a member of the board of exchange he has; he must be a member of that body.

Q. Does the railroad carry that car as quickly as it does the other?—A. Yes.

Q. And delivers it as promptly?—A. Yes.

Q. And charges the same switching and demurrage rates?—A. Yes.

Q. (By Mr. KENNEDY.) Does that farmer get the same price for his wheat or a greater price than if he had let the line elevator have it?—A. He generally gets a greater price. Of course, he also gets the margin that the elevator companies reserve to themselves for their own business.

Q. (By Mr. FARQUHAR.) Have you ever tried independent shipping yourself?—

A. Yes.

Q. How did it result?—A. Profitably every time.

Q. Profitably. Where did you try, Duluth or Minneapolis?—A. Both points.

Q. What is the difference between the Duluth price and the Minneapolis price?—

A. At times there is 2 cents difference in favor of Duluth, and at other times of the year Minneapolis is higher; it fluctuates. The best grades of wheat go to Duluth; the No. 1 Northern goes there. The poorer grades are generally shipped to Minneapolis. They mix it with the better grades and raise the other grades.

Q. Is the Great Northern Steamship Company a buyer in your section?—A. No.

Q. Are those elevators owned by Mr. Hill's road?—A. No, none; he may have an interest in them.

Q. Have the Milwaukee, Chicago, and New York markets an influence in making the Minneapolis price?—A. They may have, if they are heavy buyers there. There may be a greater demand, and it may raise the price at Minneapolis. Of course, the board of exchange in Minneapolis gets those prices every minute from New York and Chicago.

Q. Have you any Chicago buyers in your section at all?—A. No.

Q. (By Mr. A. L. HARRIS.) Do the line elevators compete with each other?—A. No, seemingly not.

Q. The price at one elevator is the price at all?—A. Yes, and they dare not go above it.

Q. Do your farmers store wheat with these elevators?—A. Yes.

Q. What are the terms of storage?—A. The same storage there as in Minnesota. I think it is 2 cents a bushel for the first month. We have, I think, the first 15 days free. Fifteen days free, and 2 cents a bushel for the first 30 days, and half a cent for each additional 30 days per bushel.

Q. Is there any feeling among your elevator men if one elevator man gets grain and the other elevator man does not?—A. Yes.

Q. Is it harmonious?—A. Not harmonious; no. If one elevator's agent grades a load of wheat a little better than the other elevator agent would have graded it and buys it for a better grade, the other elevator reports the fact to Minneapolis at once, and he is complained of.

Q. What is the result?—A. The result is that the superintendent of that elevator line writes him and gives him an overhauling for not sticking closely to grade.

Q. How is your grading done?—A. Each agent of the elevator jumps up on a load of wheat, takes a handful, and looks at it and says what in his judgment that wheat ought to grade. If the farmer questions the grading, he says, "That is all I can give you," and to verify what he grades it he has a little scale and he weighs it to see whether it comes up to weight.

Q. What you call a tester?—A. Yes; only if it comes up to a certain weight. No. 1 hard; that is the only test he has there.

Q. Suppose the farmer is not satisfied, what then?—A. He goes to another and the new elevator agent will ask him what the other offered him.

Q. Have the elevators telephone connection?—A. No; but they have a very good system of dealing, because their windows are nearly opposite the others, so that you can see.

Q. Are these elevators close together?—A. Yes; there is just enough room between for driveways.

Q. And if the farmer answers truthfully, what is the result?—A. The other fellow does not give him any better; he says, "That is all I can do for you."

Q. If he should remonstrate, what then?—A. Sometimes he makes a better grade.

Q. Does that cause any trouble between the elevator men?—A. Yes; the man that buys at a better grade is reported at once, and the superintendent comes up and overhauls him. I think the main cause, or the greatest difficulty of the farmer is the grading system of the wheat; it is left in the hands of men who are not competent.

Q. When a farmer stores his grain with an elevator company is it all dumped in the same bin or are different grades kept separate?—A. No; they have different bins for different grades, and it is also possible for a farmer to get an independent bin for his own wheat if he desires to ship it. The elevator company will take in my wheat, for instance, and allow me to ship it in a car on my own responsibility and charge me 2 cents for that privilege.

Q. Do you mean that you can draw out the identical grain that you store if there is an agreement?—A. Yes; but if I store without any special agreement I just get what he calls that same grade; I do not get my own identical wheat, and if we differ on grades, I am liable to get an inferior grade.

Q. Have you a law forbidding the mixing of grain at your elevators?—A. I do not believe so. We have no mixing houses, no facilities.

Q. Suppose you are not satisfied with your elevators and desire to build an independent elevator, what facilities have you for doing that?—A. We have to apply to the railroad company for a site and we are very slow in getting it. It is almost impossible to get it. Any facilities for shipping or handling grain independently are very hard to get. It is necessary in order to ship our grain to have a loading platform to drive up to in order to get our wagons on a level with the car floor. The railroad commissioners compelled the railway company to build one, but the commissioners did not designate the place. So the railway company put it away out where it was so steep the farmers could not drive up, and they could not use it, and the railway company built it so "peaked" that the wagon would stand down on one side and the horses down on the other, and it was impossible to use it; so we had to build one and donate it to Jim Hill—make him and his company a present of it. The farmers up there combined to build a farmers' elevator and applied for a site, but they did not get it.

Q. For what reason?—A. They did not get it: the railroad people will not give you reasons; they simply stand you off.

Q. (By Mr. RIPLEY.) Does not the law require it?—A. They do not pay much attention to law up there in that respect. Then you go to the railroad commissioners, and if you have nobody that stands in with them you do not hear anything from them. It has been one of the most difficult things to get a site.

Q. If you make a showing as to the need of an elevator, does the railroad commission turn you down?—A. The railroad commission is supposed to come up and investigate the subject. Their investigations consist of a flying trip on a private car. They stop two minutes at the private station, and if we are there to speak to them they say "Yes; that is all right; we will give it to you;" and on they go, and that is all there is of it. It is practically impossible for us to get anything. Maybe the law is good enough but our administration is not.

Q. Does the presence of five elevators in your town have anything to do with the railroad commission deciding against you?—A. It should not.

Q. On the ground that you have sufficient elevator facilities?—A. No; they are not supposed to give judgment on that point.

Q. Suppose you are turned down by the commission, then what can you do?—A. Nothing but sell our grain to the elevator companies; that is our only way out of the difficulty.

Q. (By Mr. FARQUHAR.) What advantage would it be to you to have an elevator of your own?—A. We would obtain better prices.

Q. That is, by holding for a market, or what?—A. We would not have to take the card price; we would not have to pay the margin that the elevator companies get, which is sometimes too large, especially on the lower grades. They are supposed to do business on a margin of $3\frac{1}{2}$ cents on No. 1 hard, and on the lower grades that they have in Minneapolis the margin is 4 and $4\frac{1}{2}$ cents greater, and it is the lower grade that they buy. The fact is that they never buy a bushel of No. 1 hard wheat in our town. It is out of the question. The wheat has to be an excellent fine quality in order to get No. 1 Northern grading for it.

Q. (By Mr. FARQUHAR.) How clean is your wheat presented for inspection?—A. As it comes from the threshing machine.

Q. Is it uniform?—A. No; it is not from the different farms. It is mainly as it comes in from the farms in loads that it is graded.

Q. Is the inspector supposed to be a man that understands grain?—A. He is a man who has been in the grain business for some years. Of course, one year is his first year, and then he is very green.

Q. Can you state to the commission for yourself what advantage this independent elevator would be?—A. It would create competition. A good honest man would give us a better grade for wheat, and that means 2 and 3 cents a bushel for the farmer. Besides that, he would not buy on that wide margin, and we would make something there, and he would give the farmer what is actually in the wheat—what he should have in the weight. When it is possible for a farmer to get a car he makes from 5 to 10 cents a bushel on his wheat. Now, a private elevator would do that and would help him to get that without waiting for a car. Now they have to hold their wheat in granaries until spring, when cars are plentiful.

Q. So you think it would pay a farmer to take his chances on the Minneapolis and Duluth markets and do his own shipping rather than sell to the line elevator?—A. It would pay him now, yes.

Q. How much margin is the hazard worth as it is?—A. There is no hazard.

Q. None at all on a falling market?—A. No. Of course, as soon as the market falls below it falls at Milton, and they wire up the minute it falls; but if it rises they take time to write about it.

Q. (By Mr. A. L. HARRIS.) The inspector you speak of at your local point at Milton is merely a grain buyer?—A. Yes; that is the man we have to sell it to, a grain buyer.

Q. He is the manager of the elevator?—A. Yes, practically.

Q. Do you know of any independent elevators that have been built along the line of the road?—A. I know one at Lakota.

Q. How far is that from your town?—A. About 70 miles.

Q. Do you know anything about the operation of that elevator?—A. The line elevators decided that it should be killed, and if they could not kill it they would kill the men that went into it. The merchants of Lakota stood behind it to help the farmers, and the old-line elevators started stores in Lakota—general stores handling all the goods that the merchants handled, and sold them at absolute cost as a revenge. The result was that the merchants ceased their support of the independent elevator; they could not stand it.

Q. What became of that elevator?—A. It gave up the business.

Q. (By Mr. FARQUHAR.) Did the line absorb it?—A. No; it stands there yet. I think. A year ago last winter the elevator companies laid it down that on points both above and below us the wheat prices were to be above ours. At Union, a station 6 miles below us, they bought wheat at 2 cents above our price, and they were also paying higher prices at the other station 6 miles west of us. Consequently all our trade went away. Our town was as dead as on a summer's day right in the middle of the busy season. We decided we ought to do something, and we combined and employed a private buyer. We hired men and fixed a place to draw the wheat into and to load. The superintendent came up to see about it, and we told him we would keep it up until they gave us a better grade, and they promised to do so. So they did not buy anything for just about a week. The merchants and all the business men combined to hire these men, pay their expenses, and all that, and they brought about a settlement. The move raised the prices to the standard, to the average where they should be, so that we would be on an equal footing, at least, with the other fellows. But they said: "See here; if you keep this up we will simply wade into your business; we will establish hardware stores and general stores as well as wheat houses." Just as soon as we had started all the agents of these 5 houses reported. The managers and heads of these companies conferred in Minneapolis, and they sent a man up to see us. Now, as a proof that these elevators pool, are all one, a few years ago there was only 1 superintendent sent out to superintend the whole line for all the different houses in our town; there was only 1 man sent as a superintendent. But that was such an evidence that they were pooling that they quit it, and now they send out 1 to each house.

Q. That is a traveling man?—A. Yes; the superintendent.

Q. They keep up a show, then, of being separate?—A. Yes; they would not give themselves away.

Q. Have you ever known the line elevators to have any friction with each other?—A. No; I do not know of any; that has not come under my notice.

Q. At Lakota, where the farmers had an independent elevator, did the line elevators put up the price of grain to freeze out the independent elevator?—A. They generally do that; yes, I think they did that in the beginning; they always do it.

Q. After the independent elevator quits, then what?—A. They lower the price immediately.

Q. Have you any information, based upon reasonable facts, as to what the loss to the farmer is on account of this elevator combine that you speak of?—A. We figure that we generally lose; we lose sometimes 2 grades on wheat. On the lower grades the difference in price is more. I have here a card showing the different grades. No. 1 hard, for instance, sells at 60 cents; No. 1 northern is 59 cents; that is only 1 cent difference. The No. 2 is 55 cents; that is 4 cents difference. That is the only grade we can get, No. 2. While our wheat is good enough under the weight to be No. 1 hard, if one of the kernels is a little wrinkled, or a little dirty in the end, they say, "Look at that, we can not allow for that;" and in that way they lower it. If there is any little irregularity in the kernels they lower the grading. They do not go by grades, they go by actual weight in the kernel. They want it well shaped; if it is not, if it is a little bit off shape, they lower the grade. Now, you see, between No. 1 and No. 2 there is 4 cents difference; if we lose that grade we lose 4 cents a bushel right there. Sometimes we get No. 3 for wheat that we should have No. 1 for; that is another 5 cents. No. 3 is 50 cents. So we sometimes lose from 4 to 9 cents a bushel on our wheat.

Q. Please state whether the farmer and the independent elevator get justice in grading at the terminal point.—A. That also depends upon the ability of the grader; that is an appointive office. The governor of Minnesota has the power to say whether it is to be a man or a dummy that is going to do the grading, and we are absolutely under his thumb in that respect.

Q. Has the independent elevator man any more to say than the line elevator man?—A. No; he does not seem to have.

Q. Do you know of any influence that he may be under?—A. Yes; I know that the men of the large elevator lines can go along the train that brings in their cars and say, "Here, that is all No. 2." They will say to the inspector, "That is all No. 2," and they stand in. But where the inspector is an honest inspector who comes up to the requirements, he will not do so. He will inspect it and put his mark on the car.

Q. When you ship grain to Minneapolis does it go into the terminal elevator?—A. Yes; it does. If I ship a car to a private commission man and he gets the car he will take a sample of it and bring it up on the floor and offer it for sale. If it is No. 1 he calls it No. 1, and then it will bring the standard No. 1 price. If it is good wheat it will sometimes sell for the same price as No. 1 hard. The question is what benefit it is to the farmer to have his grain called No. 2, if he receives No. 1 price on the board; and you never find that the wheat that is graded No. 1 hard at home sells below; it never does. It simply ends with the man that graded that wheat. Of course men who need the wheat and buy wheat and have bought wheat for many years, and know what they need in their business, are willing to pay for No. 1 hard wheat while the inspector says it is all No. 2. So we prefer to ship it and take our chances on the merit of the grain.

Q. (By Mr. FARQUHAR.) In other words, wheat graded as No. 2 at Milton will sell in the Minneapolis market as No. 1 hard?—A. Often; not always, of course; but it has been done.

Q. (By Mr. A. L. HARRIS.) You have no complaint to make as to any rules against the independent shipper at the terminal elevator?—A. No. Of course his grain is all handled by private commission houses.

Q. Is the building that the independent man puts up, if he gets permission to put up one, a costly building?—A. It is not; it does not require a costly building. It is about the same kind of a building that the elevator company puts up with a minimum capacity of 30,000 bushels. That is the requirement, and they would have to have facilities for loading the grain into the houses and weighing it and spotting it into the cars.

Q. Have you a law in your State regulating elevators, storage rates, etc.?—A. No; I do not believe there is any in North Dakota. I think it all comes under the Minnesota regulations, but I am not sure.

Q. Has your railroad commission any power in regard to the appointment of inspectors, and the making of rules and regulations as to storage?—A. No, not the North Dakota railroad commission.

Q. Have you any complaint to make in regard to the practice of storing and mixing grain?—A. No.

Q. (By Mr. CLARKE.) Do you know what profits these elevator companies make?—A. I do not know that I can state any definite profits, except that I know, for instance, that this year 1 car of flax was shipped from our station, and the company's profit on that 1 car of flax, containing 1,000 bushels, was \$450. That shows how much under the market they buy.

Q. Was that profit exceptional, do you think?—A. Yes; that was exceptional.
Q. Owing to some fluctuation in the market?—A. It was not owing to fluctuation in the market: it was owing simply to the way they bought the flax. That was a special feature with them this year.

Q. (By Mr. FARQUHAR.) That was taking advantage of the ignorance of the farmers?—A. Yes. Not only that, but the rules that they laid down for grading flax. There were only 2 grades, No. 1 flax and "rejected" flax.

Q. (By Mr. CLARKE.) Do the farmers at their institutes discuss these questions of the elevator service and the grading?—A. No; simply the agricultural part of it.

Q. Are they discussed among the farmers, then, except in private conversation?—A. No; only in private conversation.

Q. There has been no common action of a political character by the farmers, then, to protect themselves?—A. No.

Q. (By Mr. RIPLEY.) Is it felt by the farmer that the presidents of these railroads are responsible for this action, or do they refer it to the action of other officials in the traffic departments?—A. Oh, they do not complain of the presidents of the railroad companies.

Q. They make a clear distinction between the elevator companies and the railroad companies?—A. Yes.

Q. And they see no evidence that the railroad companies control the elevator companies?—A. No; it is not the general belief among the farmers that the railroad companies control the elevators.

Q. That was formerly the case, was it not?—A. Formerly, I believe it was.

Q. How long since the two have been divorced?—A. I do not know.

Q. (By Mr. A. L. HARRIS.) Do you know whether the elevator companies ever bear the market?—A. I think they have a good deal to do with bearing it.

Q. What evidence have you?—A. I have no evidence, but I am quite sure they do.

Q. Do you know if the same owners own stock in all these elevator companies that you have mentioned?—A. Well, I know that the same men hold stock in different elevator lines.

Q. Do you know whether those same men are also stockholders in the Great Northern road?—A. I know that there is one man that has stock in the Great Northern road that is heavily interested in the elevator companies. This information I got in Minneapolis.

Q. Do you think that there is a community of interest in the management of the elevators and the road?—A. I have no doubt of that. I know that the same parties are interested in both, but they are operating absolutely separately. There was a time when the elevator lines got a rebate from the railroad at the end of the season on shipments. They do not get it any more. There was one line of elevators at the end of the season that got a rebate of 2 cents per 100 pounds.

Q. (By Mr. RIPLEY.) In cash?—A. Yes; in cash. They do not get that any more. It has been abolished.

Q. (By Mr. LITCHMAN.) Have you any laws in North Dakota for the inspection of grain?—A. I do not know of any.

Q. The inspection is done at the point of distribution—at Minneapolis and Duluth?—A. Yes.

A. And you are compelled to accept that inspection?—A. Yes.

Q. Is there no inspection at the farm—at the delivery to the railroad?—A. No.

Q. How do you grade the grain, then?—A. When we ship our grain we simply dump it into the car and seal the car, and consign it to a house in Minneapolis or Duluth, and leave it absolutely in their hands to get what they can for it.

Q. That commission man superintends the inspection of the grain in Minneapolis and Duluth?—A. Yes; and if it is too low he appeals, and it is reinspected.

Q. That inspection is made by the State inspectors?—A. Yes.

Q. What percentage of the farmers have to sell their grain within 3 or 4 months of thrashing?—A. They nearly all sell within 3 months after thrashing.

Q. All, substantially, then, of the grain is sold within a short time after thrashing?—A. I think 75 per cent of it is sold at once.

Q. Is there sometimes an advantage in holding the grain?—A. Only when a man like Leiter would appear upon the scene; ordinarily there is not.

Q. Is the card price for grain lower during the months following thrashing than at other times?—A. No; I have averaged the prices for the 5 months—September, October, November, December, and January—and I find that the average price is within a fraction of a cent the same during that whole time.

Q. How does that compare with the months succeeding January?—A. It is very dull then—the market is very dull—and unless the price is stimulated there is no

advantage. The only advantage would be probably to hold it over until June or July, and it is a question whether it will pay, because the wheat will shrink during that time and the demand is reduced.

Q. You think the system of rebates given to elevator companies by railroad managers has been discontinued?—A. Yes.

Q. Actually, or on the surface?—A. No; I believe it is actually discontinued—that is, on the Great Northern where the people are compelled to use that line only; but I believe it exists where there are competing lines.

Q. (By Mr. FARQUHAR.) Have you any positive knowledge of that?—A. I have. My positive knowledge consists of information from those who know. Of course, I am not supposed to give the sources of it, but it is inside information that I have.

Q. Have you any general statement to make on any of these points that you have been questioned about?—A. The only statement I should like to make would be to impress upon the commission here that the evil we suffer most from is the inspection in Minnesota.

Q. The inspection?—A. Yes; I believe that that office should be taken out of the hands of the governor of Minnesota; that a man should be appointed to that office because he is fit for it, and he should be allowed to appoint his own deputies and not take everybody that the governor sees fit to thrust upon him. I believe that the greatest evil that we suffer from is right there.

Q. (By Mr. RIPLEY.) Do you recognize any difference in the way of grading wheat or in the way of handling it in Minneapolis and St. Paul as against Duluth?—A. No. It all depends upon which man happens to be at Duluth and which man happens to be at Minneapolis.

Q. There is no difference in the system?—A. No; there may happen to be a more able man at Minneapolis or at Duluth.

Q. (By Mr. LITCHMAN.) How does the system of inspection at the present time compare with what it was in former years?—A. There is no very great difference.

Q. You think it is as fully expert to-day as it has been in the past?—A. It seems to me so. We have all the grievances now just the same as we had then. We are not favored any more. At times we get an exceedingly good rate; at times, for the same sort of wheat, we get very little.

Q. Have you any means of judging how the wheat in your section compares with that in South Dakota as to quality?—A. I do not know much about South Dakota, but we raise an excellent grade of hard wheat.

Q. And it grades well in quality with other wheat, does it not?—A. They do not give us the grade we should have. We do not always get the grade that Minnesota wheat gets, while we should have a better grade. Our wheat is the wheat that they use for mixing to elevate their own grades—to raise them up.

Q. Could that trouble be reached without some interstate law covering the three States?—A. That is what I believe. I believe that is the real remedy.

Q. A system of inspection established by the three States?—A. By the four States; I should also include Wisconsin.

Q. As I understand it, Duluth accepts the grading of the Minneapolis market?—A. Not always, but as a rule. As a rule, those men at the line elevators that have the faculty of standing in with the inspectors can make an immense amount of money, and they do it. They did that in the flax shipment this fall. Flax was either No. 1 or "rejected." All the flax bought up in our country was graded rejected, and it was a good grade of flax. It was bought as rejected and brought rather a low price. It came down to Minneapolis and there it was graded No. 1 and shipped up to Duluth. The inspectors there are made to verify that grade, No. 1, and so they have had No. 1 flax that they had contracted to buy delivered at Duluth, and they made that tremendous margin. They bought it at 30 cents, below No. 1, at our market, besides the margin, which was at that time about 25 cents; so they made a clean profit of 55 cents on a bushel of flax. That is a good deal.

Q. (By Mr. LITCHMAN.) You think there is a collusion, then, between the inspectors and elevator men?—A. Yes.

Q. Is that a matter of opinion or a matter of evidence?—A. A matter of fact.

Q. Of which you have evidence from confidential sources?—A. Yes; from confidential sources.

Q. Those sources you think it inexpedient to give?—A. Yes; I should rather not give them if it would make no difference.

Q. (By Mr. L. HARRIS.) Who furnishes the capital for your local elevators to buy grain?—A. The corporations. In the busy or most active time of delivery or purchase of wheat they borrow the money at the banks on their storage tickets,

or their local agents draw on the house for \$500 or any amount that they want and the owner pays that in cash.

Q. Are the managers of your elevators citizens of your town?—A. No. They go from point to point. Where a man is disliked they remove him; when the community does not like him they send him to another place.

Q. They are in the employ of the different companies that own the elevators?—A. Yes.

Q. And the capital is supposed to be sent out from those companies for the movement of grain?—A. Yes; that is the way they do it—through the banks. Of course, that is to prevent shipping currency to the agents. Sometimes, if they expect a heavy movement of wheat, they ship \$2,000 in money to the agent. Then the agent has no wheat to buy and he is compelled to carry that money on his person. That is undesirable, and they allow him to draw through the bank for the amount he needs, and sometimes it goes through the bank two or three times.

Testimony closed.

WASHINGTON, D. C., February 12, 1901.

TESTIMONY OF HON. I. B. NALL,

Commissioner of Agriculture of the State of Kentucky.

The commission met at 10.12 a. m., Vice-Chairman Phillips presiding. At that time Mr. I. B. Nall, commissioner of agriculture, Frankfort, Ky., appeared as a witness, and, being duly sworn, testified as follows:

Q. (By Mr. A. L. HARRIS.) You may state your name, your address, and your official capacity, if you please.—A. My name is I. B. Nall; my position, commissioner of agriculture of the State of Kentucky; residence, Frankfort, the State capital.

Q. How long have you held the position of commissioner of agriculture?—A. I was elected, I reckon, in 1899. We had a contest, which was decided in my favor, and I have been the occupant of the office since February, 1900—about the 26th day of February.

Q. What was your occupation previous to your election as commissioner of agriculture?—A. Immediately preceding that I was president of the American Attorneys' Contract Company, of Louisville, and for 20 years before that editor of the Farmers' Home Journal, a paper on agriculture, published at Louisville; also for 10 years secretary of the National Saddle Horse Association, now changed to the American Saddle Horse Breeders' Association.

Q. Have you ever engaged in farming practically?—A. I have, previous to taking charge of the Agricultural Journal. I may say I was raised on the farm, and then, after 4 years' service in the army, I went to farming in the Blue Grass section of Kentucky.

Q. Have you kept in touch with the industry from that time until the present?—A. I have; yes.

Q. You may state, if you please, whether there has been an increase or a decrease in the farm laborers of your State compared with 30 or 40 years ago.—A. Our population has increased, our farm acreage has increased, and I may say that the number of agricultural laborers has increased in proportion.

Q. What is their condition now compared with their condition at that time?—A. The labor employed in my State is very largely colored labor. Forty years ago the colored laborers were slaves, and the master, as a rule, was expected to see to their comfort and take care of them, especially when they were ill. They were cared for as comfortably as could be. It was to the interest of the master to do so, especially of the younger ones, as they were valuable as they grew up. Now they are mostly congregated in the outskirts of the towns, and whilst I believe a free man is always better off than a slave, I must confess there are times when they suffer from disease, and their condition is, I believe, not so good as it was when they were slaves—that is, their personal condition, their physical condition. They are subject to smallpox and other diseases that carry them off, and I do not think the rate of increase is as great as formerly. I have no statistics to support that statement, but I think so, just from observation. They are not in any better condition, but at the same time I believe a free man is better than a slave.

Q. (By Mr. PHILLIPS.) Is it the feeling in the State that their condition is not so good as it was when they were slaves?—A. It is pretty hard to answer. I sup-

pose at first prejudice may have had something to do with the sentiment. In a large part of Kentucky—the agricultural part—the farmers were slave owners largely, and there was some prejudice existing, and to some extent probably that kept down a feeling in favor of improving that race; but I think now that has all died out, and for several years back we have had more liberal educational laws. We still try to separate the colored from the white people as much as possible in social relations. We have separate coaches on the railroads for them, but we demand that the carriers shall furnish equal accommodations for the money paid for the white and the black, and we have equal school facilities.

Q. The educational facilities, then, are better now than they were in the days of slavery?—A. There were no educational facilities then at all. It was forbidden that they should be taught. It was almost a rarity to find one who could read. A man could not teach a colored school at that time.

Q. (By Mr. LITCHMAN.) Right in that connection, I understand you to say that the condition of the colored man is worse now than under slavery?—A. No; it is better now as to educational facilities.

Q. Do you know of colored people that have acquired property?—A. Yes.

Q. Give us a little information along that line.—A. I can not say positively; some of them are better off, I know, but a great many of them are not so well off; they have suffered from disease. As I say, I would not risk the statement that they were worse off, because I believe in freedom. I believe it was the best thing ever done to free them, and that their destiny is working out. We do not now keep the amount and value of land owned by white and colored persons separate. The last figures I have show that colored people owned 171,570 acres of land in the State, valued at \$1,172,206, and 5,027 town lots, valued at \$1,131,871. They also owned 12,508 horses, valued at \$376,726.

Q. I would like to ask whether this impression is of your immediate surroundings or whether it covers the entire South.—A. I am only answering from my surroundings—for the State of Kentucky generally. I do not know the conditions farther South, where the colored population predominates.

Q. (By Mr. A. L. HARRIS.) Is your farm labor regularly employed?—A. Yes; the laborers can get regular employment, and usually they hire by the year, with the wages payable every month. Soon after the war there was more paying by the year, but since that period they have changed mostly to the method of payment by the month.

Q. How much is that?—A. Well, per day agricultural labor gets 50 cents to \$1.50. In rare cases they will get sometimes, in harvest, \$2.50, but not so much now as they did a few years ago. By the month, where the hand is boarded, the pay is \$11.50 to \$14, and running as high as \$15. Then, per month, without board, where the hand lives on the place, the farmer furnishes the house for him to live in, and the wages run from \$15 up to \$23, and sometimes a good hand will get \$26 or \$27, because he may be a specially good horseman, or something of that kind, that is needed. The average pay runs from \$16.50 to \$19.10 per month where they board themselves.

Q. (By Mr. PHILLIPS.) Are they chiefly or wholly colored?—A. Well, 41.5 per cent of the labor employed on the farms in the State, in the agricultural portion of the State, is colored; of the rest, I would guess that perhaps 25 per cent was white labor and the remaining 25 per cent owners. These have smaller farms and in the mountain section mostly, where very little labor, black or white, is employed, the work being done by the owners themselves.

Q. Of the white laborers, are they almost all American or are they foreign?—A. About 60 per cent of the white labor employed, I suppose, would be Americans, I should think. We have around every city a drift of German population, thrifty Germans that take up little places. They locate around Louisville, Lexington, Covington, Paducah—more or less near all of the towns. They do well, and they embrace a considerable portion of the labor. They work their own farms as a class rather than get out and hunt positions.

Q. (By Mr. CLARKE.) Are the laborers who board themselves frequently housed on the premises rent free?—A. As a rule, yes.

Q. Are they allowed any privileges, like a garden patch, or free access to the woodlands?—A. Yes; usually they have their little houses set apart, a pasture for a cow, and they also have their fowls and pigs. I think that system might be improved, though. I think it would be much better for us, and I am going to recommend it always, that they furnish those homes and make them more inviting, and, under another head, I may be more explicit on that point.

Q. (By Mr. A. L. HARRIS.) About what is the average number of days employed?—A. The answers I have to that question made in reply to inquiries I made after receiving the notice that I would be wanted here, place the number

at from 240 to 300 days. In some parts of the country where they are employed by the month they let them go, and I suppose that they engage in other work not in the agricultural line, or perhaps they go from one to another; one may have winter work and another be willing to do without. I do not suppose that the laborer is just thrown out without anything to do, because we know there is usually something for every man to work at in our State.

Q. Is there a tendency to seek other employment?—A. I may say, yes.

Q. You may state the reason why.—A. In the first place, our labor being largely colored, the laborers like to get together. They like to live in the suburbs of a town, in groups, their houses all on one street or in one section; they enjoy life more when thus situated. In addition to that, they are drifting largely to the large cities, where the factories employ them, and they are employed by the week or by the day, and they get better wages than they do on the farm. I think their wages are somewhat higher in these factories than I quote here for farm labor, but the cost of living is greater and may equalize advantages.

Q. (By Mr. CLARKE.) What is the nature of their employment in factories?—A. We have large tobacco interests, and the handling of this tobacco that is raised upon the farm is an important line of work. It is generally brought to the factory in wagons. Quite a number of the larger towns are big markets for loose tobacco, and that is all to be handled and redried, and in some of them they strip it, take the stem out, preparing it for foreign shipment—export. Many of these hands are employed at that work. They seem to be very fond of that kind of work and rush to a factory. Then, where they manufacture tobacco for home use—our domestic manufacturers—they employ hands in stripping and sorting, and every factory that we have employs some teamsters, etc., if they do not even put them into the actual work in the rooms. The colored man who is a teamster makes pretty good wages about the cities. Of course he can spend his money there more easily, and he doesn't come out with any more in the end.

Q. (By Mr. A. L. HARRIS.) Have you a remedy to suggest for this condition?—A. My remedy would be to make them happier in the country, recognize their social necessities, in order to, if necessary, encourage the better class of them, with their families, to settle at some convenient point in the neighborhood of large farmers, within reach of them at all times, and make their homes comfortable, regulate them as to their morals, etc., and establish their churches, their schools, and improve their condition and ambition, if possible.

Q. What is the condition of the ordinary farm tenement?—A. As a rule it is not as comfortable, I think, as it should be made. The tenants are expected to occupy quarters that are hardly as good as they should be. Of course there are many exceptions to this. They are willing to accept these rather uncomfortable houses. They can stand, it seems, a great deal of discomfort. I am speaking now of the colored labor in particular.

Q. (By Mr. CLARKE.) Are these houses generally frame houses?—A. Frame or log, as a rule.

Q. Divided into how many rooms?—A. As a rule about 2 or 3 rooms. The average farm house is a couple of rooms with a shed room attached, maybe.

Q. Do they have chambers?—A. Not in addition to these rooms.

Q. Do they have wooden floors?—A. Yes.

Q. Cellars?—A. Not as a rule; you will scarcely find one with a cellar.

Q. (By Mr. A. L. HARRIS.) Are wages paid in cash or with store orders?—A. As a rule in our State the payment is in cash. The employer will sometimes give orders on the stores that are equivalent to cash.

Q. (By Mr. PHILLIPS.) Would the stores sell them as cheap as if they paid the cash on orders?—A. I think so, just about the same as the proprietor would get. They treat them in that respect just like they would the proprietor of the farm.

Q. (By Mr. LITCHMAN.) Is there any pressure brought to bear to induce a man to trade with a company store?—A. I am speaking of farm labor now. The farmers have no company stores.

Q. How does the practice of giving orders on stores, arise then?—A. From convenience. The hand may be going to town on some Saturday evening, and the farmer not; the hand would want to draw a little of his salary, maybe a few dollars, and the farmer not having a check at hand (usually our farmers are depositors in the banks, especially in the blue grass region)—gives the laborer an order on the store rather than a check. He can not get the check cashed, as a rule, and he may want provisions or something at the store.

Q. (By Mr. A. L. HARRIS.) Have you any crop sharing?—A. Yes; that system is growing in the State.

Q. You may state upon what terms that system is prevalent.—A. It is growing, especially in the blue grass region, because of the introduction in the past 15 or

20 years of the culture of Burley tobacco. The blue grass country before that produced no tobacco, we will say, but, with the discovery of this type that was adapted to that soil, it spread very rapidly, and now nearly all of the blue grass counties are more or less engaged in growing Burley tobacco. The owners found that they did not know how to handle it so well with their colored labor, and they induced white labor to come from the more hilly and poorer sections of the State, along the Kentucky River, largely, and up the Ohio below Cincinnati. They let the tenant have whatever number of acres of ground he wants for growing a crop of tobacco. They furnish a house, pasture for a cow and a horse, a few acres for growing corn, and a garden. Sometimes these are free, sometimes a charge is made for them according to contract. The farmer selects the best land for the tenant, and they divide the crop of tobacco at the warehouse equally. In other words, it is sold at the warehouse, and when the expenses are taken out the tenant gets half the money and the farmer half of it.

Q. Who furnishes the team?—A. The tenant furnishes the team. Sometimes that is a matter of contract between them. If the farmer furnishes the team he is entitled to so much pay for it.

Q. Which is the most practical of the two, hiring or crop sharing, in your judgment?—A. Crop sharing is the most satisfactory for tobacco. It doesn't extend over the whole crop, as a rule. In our State a good deal of corn land is put out, but with that the tenant is not furnished a house, as a rule. He takes the land and cultivates it for one-half, he furnishing all the labor.

Q. Does the landlord furnish the supplies and take a lien on the crop?—A. If he makes an advance it becomes a lien on the crop.

Q. Have you a lien law that protects the landlord?—A. Yes; I have a copy of it with me here.

Q. You may just state the substance.
(Witness reads as follows:)

“LANDLORD AND TENANT.

[Kentucky Statutes.]

“SEC. 2323. A landlord shall have a superior lien, against which the tenant shall not be entitled to any exemption, upon the whole crop of the tenant raised upon the leased or rented premises to reimburse him for money or property furnished to the tenant to enable him to raise the crop or to subsist while carrying out his contract of tenancy. But the lien of the landlord shall not continue for more than 120 days after the expiration of the term, and, if the property on which there is a lien be removed openly from the leased premises, and without fraudulent intent and not returned, the landlord shall have a superior lien upon the property so removed for 15 days from the date of its removal, and may enforce his lien against the property wherever found.”

“SEC. 2325. Contracts by which a landlord is to receive a portion of the crop planted, or to be planted, as compensation for the use or rent of the land, shall vest in him the right to such a portion of the crop when planted as he has contracted for, though the crop may be planted or raised by a person other than the one contracted with; and so, if the land be planted in a different kind of a crop than the one contracted for, and for the taking of or injury to any of the crop aforesaid, the landlord may recover damages against the wrongdoer. The landlord may also have an injunction against any person to prevent the taking or injury of his portion of the crop aforesaid; but nothing contained in this section shall bar the landlord of his right to such damages against the person contracted with as he may sustain by reason of the land being planted, without his assent, in a crop other than that contracted for, or not planted at all, nor for failure to cultivate the crop in a proper manner.

“This section shall include a purchaser, without notice, of a growing crop or crops remaining on the premises, though severed from the land; but it shall not apply to a purchaser in good faith, without notice, of a crop after it has been removed for the space of 20 days from the rented premises on which it was planted.”

“SEC. 2326. A tenancy at will or by sufferance may be terminated by the landlord giving 1 month's notice, in writing, to the tenant requiring him to remove.”

“SEC. 2327. When a tenant enters or holds premises by virtue of a contract in which it is stipulated that he is to labor for his landlord and he fails to begin such labor, or if, having begun, without good cause fails to comply with his contract, his right to the premises shall at once cease, and he shall abandon them without demand or notice.”

Q. Is the law satisfactory to both parties?—A. It seems to be.

Q. What per cent of your labor is colored?—A. As near as I can get at it for the whole State, 41.5 per cent.

Q. Is that percentage spread regularly over the State, or are there sections in which the colored labor comprises a larger percentage?—A. The percentage is greater in sections. I have here a plat of the State in sections, showing the sections in which colored labor predominates. The colored labor predominates in sections No. 1, No 2, and No. 3. There is very little colored labor (except in the mining districts) in No. 4 and No. 5. I am referring now to agricultural labor.

Q. Your papers explain that division of your State into sections?—A. They do in reference to farm labor.

Q. Could you let the commission have that map?—A. Yes; with pleasure.

Q. You may state briefly, if you will, how that subdivision is made, and what object you had in making it?—A. This is a division I made since I became commissioner, because of the character of the soil in different parts of the State, and also to separate the mountainous part from the agricultural part. We have 3 separate divisions of the agricultural part. In division No. 1, 95 per cent of all the dark export tobacco is grown and handled; in No. 2, perhaps two-thirds of the red tobacco is grown for domestic manufacture and also the greater portion of what is called "regie" tobacco.

(The map referred to is reproduced on the opposite page.)

Q. Please describe export tobacco —A. Export tobacco, in the sense in which I use the term now, is grown in division No. 1. It is the long, heavy tobacco, strong and black, raised in the Clarksville, Hopkinsville, Paducah, Owensboro, and Henderson districts. It is marketed mostly loose in wagonload lots, rehandled and straightened, and rehung in very large factories. It is brought to market in seasonable weather, and, that especially going to England, is stripped, the stem being taken from the leaf. That is done in order to make it lighter. It pays a duty of 86 cents per pound when taken from the Government warehouse there.

Q. In England?—A. Yes, in addition to the cost of the tobacco. It goes into a bonded warehouse, and of course they don't want to pay the duty or tax on the stems.

In the second district is grown largely the tobacco used in domestic manufactures, and what is known as the "regie" type. It is shorter and redder.

In the the third district is grown about 90 per cent or 95 per cent of all the white Burley tobacco. That is the variety originated just across the river, in Ohio. Its cultivation has spread all over the blue-grass region.

Q. What is that tobacco used for?—A. It is used almost exclusively for domestic filler and wrapper; more for fillers than for wrappers.

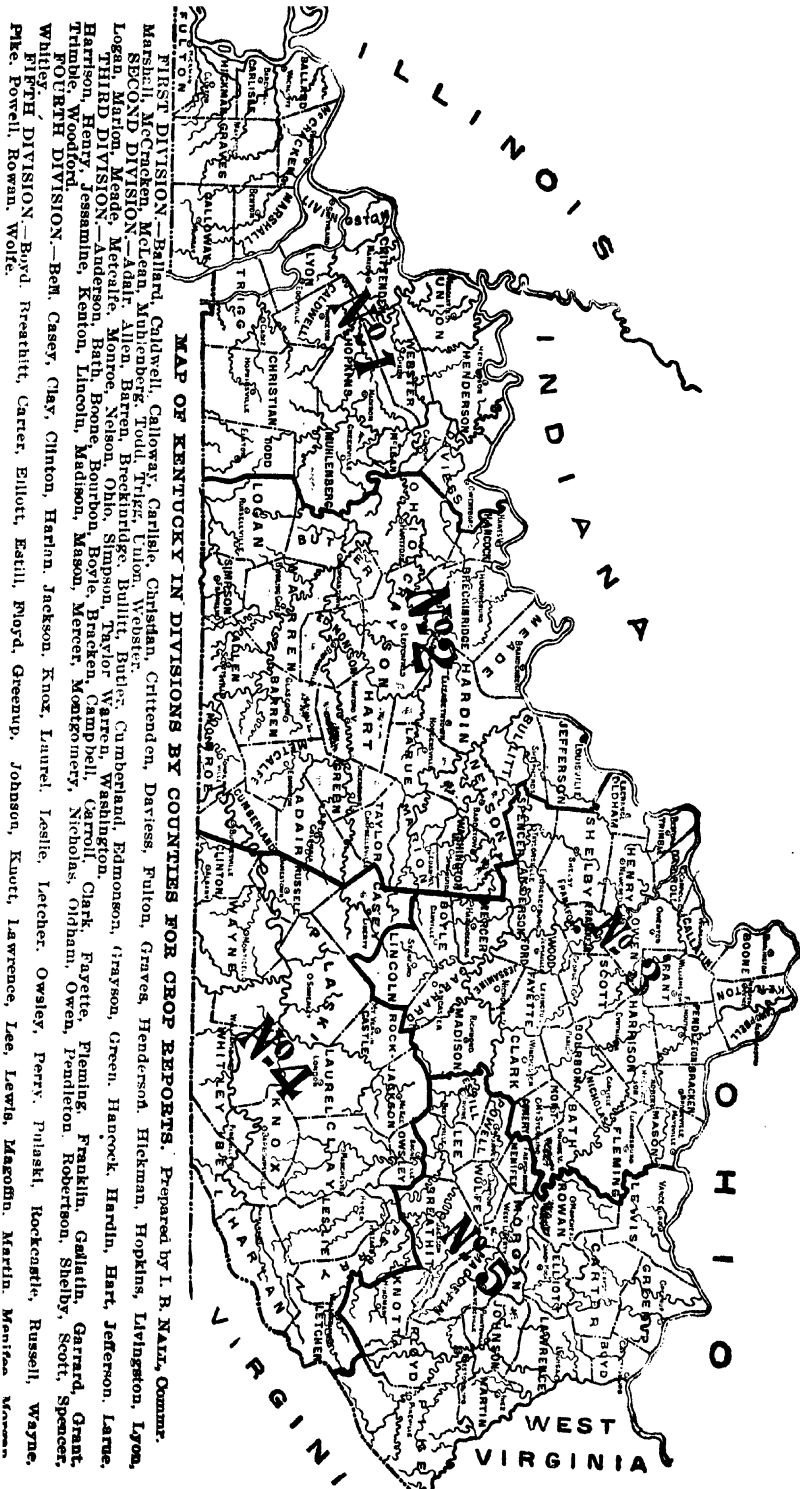
Q. Is any part of it manufactured into plug tobacco?—A. That is what I speak of—filler for plug. It has a splendid leaf, is light in color, and will absorb a great deal of licorice, moisture, sugar, and other things which are cheaper than tobacco. I do not chew tobacco, but I know what plug is made of. They are breaking up the blue-grass pastures to raise that tobacco. It is more profitable than grazing.

Q. (By Mr. PHILLIPS.) Can they grow more of it per acre than of the other kind of tobacco?—A. No more than they can in the rich agricultural districts in district No. 1, but more than they do of that for domestic manufacture grown in district No. 2.

Q. (By Mr. A. L. HARRIS.) How is that tobacco cured?—A. The Burley tobacco is cured in barns without fire. The black tobacco is cured by fire; big fires under it.

Q. Kiln-dried?—A. They make kilns, yes. It is the heat they want, but they do not want smoke on it. You see, the purchasers stick their noses in the samples, and if they smell smoke on it, it injures the tobacco. The presence of smoke does not, however, seem to affect the tobacco shipped to the English and German markets.

Q. Do you raise what is known as cigar tobacco in the Second district?—A. If a crop of that kind is raised it is by accident—some condition in the curing process, perhaps. We do not attempt to do it, I believe, at all, and very little of the tobacco grown in our State is used for cigar making. We tried it and found it did not go in our State. We have, then, districts Nos. 4 and 5, two mountainous sections. There, of course, the mineral and timber interests predominate, but all along the valleys there are some pretty good fields, and they are cultivated, as sometimes are the tops of the ranges; but as a rule it is not a very good agricultural district. They are running railroads into it and developing the mines and the timber interests, and now I suppose that, taking the whole country over, they do not raise as much in the way of farm products as would feed the people there since they have got so many miners working in the mines. Their money product



Q. Or are they sharers in the extra profits that are brought into them otherwise in the stores?—A. They do that, of course; they are recouped to a great extent for their losses by trading and trafficking with these people, but they only continue to do that when they can do no better.

Q. (By Mr. LITCHMAN.) I would like an answer to the question of Major Farquhar as to whether the land owners are native Georgians or men from outside?—A. Oh, yes; they are native Georgians. There is no land that is owned in our country that is under cultivation, except by people who live there and own the land.

Q. (By Mr. FARQUHAR.) Now, a man in continual debt, wearing out the land there for 10 or 15 years, is practically in slavery?—A. Yes; I think that is it.

Q. He is so tied up that it is impossible for him ever to escape it?—A. Yes; I think so.

Q. And one successive debt follows another there like an endless chain, and there is no hope for a man?—A. In many cases that is true.

Q. It would take probably a great season and an advance in crops to some abnormal prices probably to lift him out of that debt, would it not?—A. Yes.

Q. Normally he could not get out of debt?—A. Normally he would not at all. A great many of the tenants go on these lands possibly and farm them, say, for 5 years, and then they have poor prices and poor crops, and they become discouraged and throw up the whole thing and get out.

Q. (By Mr. TOMPKINS.) At the end of any one year they do not have to work there the next year?—A. Oh, no.

Q. Is there any reason why a man should not take another place and make a new start?—A. Not at all.

Q. Is the indebtedness any design on the part of the government or the renters holding to a condition of poverty, or is it the result of some other influence?—A. There is nothing whatever to force a man to stay on the farm. They usually rent these lands from year to year. The lands are not leased for continuous years, but usually they are rented from year to year, and if the landlord becomes dissatisfied at the end of the year he need not retain the tenant longer unless he wants to keep him. If the tenant is dissatisfied for any cause, he has a perfect right to go whenever he wants to. The landlord has no lien and no claim upon the property of the tenant whatever except for rent and advances, and those only apply to the present crop. To illustrate: Suppose I rent from you a farm and I agree to give you so much money for it, or I agree to give you so much cotton for it. We will say I rent a 2-horse farm now and agree to give you 1,500 pounds of middling cotton. It is possible that I have not supplies enough to make that crop with. I go to you and you advance me the supplies and charge them to me on your book and take my note for them. Under the law all the crop made upon that farm for that particular year is liable and subject to that debt for rent and supplies furnished for that particular year, and there is nothing that you can keep you from collecting that debt from me, provided I make enough to pay it, except we have what is known there under the general law as the "pony homestead," which gives to every man at the head of a family his household goods and his horse and \$300 worth of provisions and so on. That is exempt by law, but the balance of the crop would be subject to the rent and the supplies furnished for that particular year. Suppose now that I wanted to leave that place this year. You would have no claim whatever on me to hold me there, nor any claim on whatever I might have. You could go and sue me in the common court and get a judgment and follow me up in that way under the common debt.

Q. (By Mr. LITCHMAN.) What would be the position of a man, however, who had defaulted on one farm? What would be his probability of being able to get another farm in that locality, provided he did not liquidate his indebtedness in the first instance?—A. Oh, he would not be regarded as a first-class tenant. But there is always plenty of room there for everybody, and he always gets a place and gets along in some way. Some people always take him up.

Q. (By Mr. TOMPKINS.) Is there ever any inducement offered to a tenant to quit and go to another place?—A. Oh, no. I have never seen a man in Georgia yet who wanted to work that could not get a place.

Q. Then, to return to the original question, what is the cause that leads to tenants working the farm for one year and coming out short at the end of that year? Is it because, as we understand it, they work single years at a time totally independently of each other?—A. I did not mean to say that they all do that; but I mean to say that there is nothing to force them to stay on the farm.

Q. I understand, but I am trying to get at the cause of the deficiency.—A. It is a hard matter to tell just what that is. Sometimes you have a tenant on a place, and he finds he can do a little better somewhere else, and he moves off and goes to the next place. Sometimes the landlord finds that he can get a better tenant

than the one he has. He lets this fellow go and gets the other fellow. They are continually moving around from place to place.

Q. (By Mr. LITCHMAN.) Is not there first the fact of his being compelled to buy his supplies at an enormous profit over the actual cost?—A. Yes; to some extent that would be true.

Q. And if the owner of the land was also the owner of the store, is it not possible for the owner of the land to keep him in debt all the time year after year?—A. No; I do not think that is true. He would like to see him up to date.

Q. (By Mr. FARQUHAR.) What would you say is about the average profit or interest that is made on that class of crops in the stores?—A. The percentage would be somewhere in the neighborhood of 20 to 25 per cent. That would be the actual profit. That is to say, you furnish a man with corn that costs 80 cents a bushel delivered there for cash, or you could go the store and buy for 80 cents for cash; you would charge for that corn, to be paid next fall, \$1 a bushel. A pair of shoes that you would buy for \$1 cash would be charged for at the price of \$1.25.

Q. Now, would you say, because this crop lien system and this system of dependence is maintained and kept up, that it is a better paying way than working your own farm?—A. Oh, no; I would not say that.

Q. Then what is the necessity of owners of land there driving these hard bargains with these people?—A. For instance, you take a man down there who owns, we will say, 2,000 acres of land. He can not work that land himself. He has either got to cultivate that land by hiring men for wages and paying so much per month or one-half at the end of the month and one-half at the latter part of the year, or he has to rent it to a tenant for so much money per acre or so much cotton, or he has to share it out and crop it out with a tenant upon the plan which I have suggested here. He has to adopt one of these courses. The most of the landowners down there live on the farms themselves and cultivate what they can, then they turn out or rent out the balance of the land under these systems.

Q. Would you say that it paid the owner of the land better to have this tenant system than it would to cultivate the land himself?—A. Oh, no. It would be better for the landowner, as suggested here, to cultivate that land and control it himself, much better for him, and it would be better for the tenant; but there is another trouble on that line. The tenant when he rents the land is his own manager. He controls his own affairs; he goes when he pleases and he comes when he pleases; he is under the control of nobody at all. In most cases they prefer to do that. Now, when he comes along and hires out for so much per month standing wages he is under the control of the landlord; that is to say, he is expected to be there at sunup Monday morning and to work until Friday night. Very few people there work on Saturday. Saturday is usually a holiday and all of them quit Saturday at 12 o'clock.

Q. You would not say that the tenant farmer does not work just as hard as the hired hand?—A. Oh, yes; he works just as hard. He works right along just the same as the laborer.

Q. And he is his own overseer as well as his own workman?—A. Yes.

Q. Now, you have not given us the reason yet why this system is maintained and kept up—this system of crop sharing. Is it because of the poverty of the men who own the land? Is it because they can make more money out of this system? Is it because the laws of the State are so onerous that it is impossible for the black man to right himself and that he has got to take what he can get?—A. That is exactly what I want to speak about. It is a matter of impossibility for me to state what the reasons are. All I can do is to give you a statement of the facts. There is no reason in the world why a man should stay there and rent land unless he wants to. He prefers to rent it for the reasons I have given you. If he becomes his own manager, he is under the control of nobody; then he comes and goes when he gets ready; he works when he wants to and quits when he wants to. Now, the landlord does not rent this land so long as he can get better labor, but it is impossible to get just the kind of labor he wants all the while and have it just like he wants it. You understand, as I have said here, that it is not to his interest to rent these lands all the while, but he rents it in the absence of something better. Now, in my judgment, and in the judgment of all farmers down there, we think it is best to hire these laborers for so much wages per month. You can control the labor better and manage it better, and a man can take care of his land and take care of his stock better. But you just can not do it every time, and there is no rule down there to make a man stay on a farm if he does not want to stay. There is no law to compel him to do so. He can leave when he gets ready; he can leave you in the middle of the crop if he wants to. He can work clear up to Saturday night and leave and never tell you good-bye, and you may never see him more, or he can go on the next man's farm and live there.

Q. There is no judgment that would rest over a man of that kind?—A. No; there is no law by which you could pursue him at all.

Q. (By Mr. CLARKE.) Are growing crops attachable in your State?—A. No.

Q. (By Mr. TOMPKINS.) And also, does not the contract require that if the tenant agrees with you to make the crop he has got to stay the whole year?—A. No; there are no laws to that effect in our State.

Q. (By Mr. LITCHMAN.) What is the first step for a man that is compelled to labor for his living?—A. When he starts out on the farm he goes to a man and applies for a place. He takes him and tries him and sees how much he is worth to him, and they agree on a price.

Q. A step above that is the tenant farmer?—A. Yes.

Q. What opportunity is there given to the tenant farmer to become an owner of land?—A. Oh, well, we have hundreds of colored men who own their own farms.

Q. Is there any disposition to prevent this ownership on the part of the colored people?—A. None at all. I know of none.

Q. Have you any information to show the size of the farms usually acquired by these people?—A. Yes. In my county and in my own neighborhood, where I live, we have seven colored men who own their own farms. One of them owns 65 acres of land; another one owns 140 acres; another owns 280 acres; another 200 and odd acres of land, and another one owns 300 acres of land. They own all their own stock; they own property around there; they have bank accounts; their notes are as good in the bank as mine for any reasonable amount.

Q. A farm of about 60 acres is as small as can profitably be cultivated?—A. Oh, no; there is no special number of acres for a farm. We cultivate about 40 acres of land with 1 horse or 1 mule. The land is usually a light loamy soil that is easily cultivated, and these farms run all the way from 1 to 100 plows. I used to run 100 at once.

Q. You spoke a while ago of a 2-horse farm; that would mean about 80 acres?—A. Yes; that is about 80 acres.

Q. You spoke also about the system of retaining one-half of the earnings of the farm laborer until Christmas and turning that in to the amount of cash?—A. Yes; they get credit for that. That depends entirely upon the amount agreed to be paid monthly. Say that a hand's wages are \$10 a month. In addition to that pay he would be furnished with a house, fuel, a garden sufficient to make his vegetables and a potato crop, and with a house possibly for a milch cow, and at the end of each month, as he has agreed, the farmer pays him \$5 a month and puts \$5 to his credit to be paid at the latter end of the year.

Q. That would be substantially \$60?—A. Yes.

Q. What security has the laborer for that money?—A. A lien on everything in the world that the landlord owns under the law.

Q. The law protects the wages of the laborer, then?—A. The law protects the laborer entirely. You have nothing to do but go before an officer and swear to the amount, that so much is due for labor, and you can attach property wherever you can find it.

Q. Is there anything in the nature of public sentiment that sustains the safety and prompt payment of claims of that nature?—A. Yes.

Q. It is regarded as a debt of honor that must be paid above all else?—A. Yes; and a man who does not pay it and goes to law does not get any more labor at all. Public sentiment controls that.

Q. (By Mr. CLARKE.) Is there a garnishee process in your State?—A. Oh, yes.

Q. Could not that \$60 held by the landlord be garnisheed?—A. The garnishee law does not apply to wages. The law provides that wages for labor of any kind can not be garnisheed. Labor is protected all around. A man can go into your store and buy your goods to be paid for at the end of the month; but if he is working for me and I hold his money, you can not garnishee me.

Q. (By Mr. LITCHMAN.) I am glad you brought that point up, because I thought when you first mentioned it there was a loophole there by which injustice might be done?—A. No; the law in our State protects the laborer in every instance.

Q. Does it then operate in the nature of a sort of forced saving for the man himself, really for his benefit?—A. I do not know whether it does or not.

Q. Your opinion is if that system of saving were not enforced he would not have anything at the end of the year?—A. Well—

Q. (By Mr. TOMPKINS, interrupting.) What does he do when he gets it? Does he save it or spend it?—A. Oh, he spends it; yes, he spends it. I would like to state to you gentlemen that the colored laborers in our country as a rule are not financiers at all; they would spend every cent in the world that they make before it is made, if you would allow them to do it. There are exceptions of course to all rules and there are to this. Some of those people down there are industrious

and economical, and they succeed in life and do well. They make good citizens, behave themselves, attend to their own business, and are accumulating money.

Q. (By Mr. LITCHMAN.) What methods do you have of saving money?—A. Oh, we invest in real estate and in property of various kinds.

Q. Do you have savings banks and such institutions?—A. Yes; we have savings banks that pay interest on money; but this class of people never put any money in the bank for that purpose. They always invest it in some kind of property that pays much better than the savings bank. We have a number of savings banks all over the State that allow us 3½ per cent interest on monthly settlements. And a good many of our people take advantage of that. For instance, a man sells his crop in the fall, and he does not have to use his money until spring. He will put it in the savings bank and add a small amount of interest to it, and in the spring he will draw it out and go on and use it in his crop for that year.

Q. Is there a disposition among the colored people to acquire land?—A. To some extent there is.

Q. Does that disposition prevail among the better educated among them?—A. It prevails among all classes, those that are educated the same as those that are not. Usually where they are educated they become teachers, and preachers, and professional men. There are very few of them who have educations that go to farm life. A few of them branch off into merchandising; some of them do well and some of them fail.

Q. Has there been any improvement in the homes occupied by the colored people, taking a period of 20 years?—A. Oh, yes; very considerable improvement.

Q. A much better class of homes is being built for them and occupied by them?—A. Yes.

Q. How far is the movement in that direction assisted by the white people?—A. In the past the landlords have been forced to build better tenant houses and provide them with modern systems that are adopted all around, in order to retain and keep the best labor. That is really the way that a great many of our best people succeed in keeping their labor, and the better class of labor, by making everything around them as comfortable as possible.

Q. So that in the last analysis the benefit goes to the farm laborer of improved conditions for his work?—A. Yes.

Q. (By Mr. TOMPKINS.) There is one thing I would like to ask you, if you please, and that is in relation to the original question practically asked by Mr. Farquhar and by myself, both. I would like to learn what is the cause of the fact as you stated, that at the end of each year a great many of the tenants make no money—they are in debt. Is it because of the oppressive disposition of the white people to drive hard bargains, or is it because of the bad management of the tenant when freed from the general management and direction of the white people? Or is it because of the bad system? Are the system and the law bad?—A. The law has nothing whatever to do with the systems that are adopted for farm labor; nothing whatever. The only law that we have is the law that protects a laborer in collecting his wages, either one way or the other.

Q. Now, may I take the liberty of suggesting that that is a sufficient answer to that phase of the question. It is not the law. But is it the oppressive disposition of the white people?—A. No.

Q. Is it the indifference and bad management of the tenant?—A. Well, not every time; no.

Q. Then I understand the fact remains—

Mr. FARQUHAR (interrupting). The terms are bad, onerous on one side.

Q. (By Mr. TOMPKINS.) He says not.—A. No; you get the wrong idea entirely; entirely the wrong idea. I give you all the systems that have been adopted. I say and state here emphatically that the tenant system is a bad one, that we do not approve it, and to a great extent it is being done away with. Now, then, as to the cause for that, it grows out of the fact of bad management upon the part of ignorant tenants. I do not say of all the tenants, because they are not all ignorant. Some of them are men of intelligence, and they succeed in renting as well as they would succeed any other way. But as a rule the common colored laborers of Georgia are ignorant. That is to say, they do not know how to raise crops. They do not know what kind of crops to put in to improve the land. They have no disposition in the world to get out of that land anything but what benefits them—that is, to get the best crop that the land gives. That is the rule, and it applies not only to the colored laborer, but to the white laborer in the same way. Therefore, I state that it is a bad system, and we are trying to improve it as fast as we possibly can. Now, then, in addition to all that you must remember that bad seasons often come upon us and that low prices often come upon us, and all these things together go to make the tenant fail and become discouraged and fall into debt. As I stated in the first instance, he pays very large interest on the

supplies that he buys on time. He must therefore make a good crop, he must get moderately fair prices with fair management in order to pay his debts and accumulate anything.

I think the landlords are all against this system, and we are trying to overcome and remove it as fast as we possibly can. Now, in addition to what I have already stated on that line, possibly I had better state for your benefit that wherever we can sell small tracts of land to these people at prices that they can pay we try to do it. For instance, we sell them the land, depending entirely upon improvements, at from \$3 to \$7 per acre. We give them from 5 to 7 years to pay it in. The rate of interest in our State is 7 per cent. We are permitted, however, under special agreement to collect 8 per cent. We allow them to run this debt and pay 8 per cent interest. So long as a man keeps the improvements up and pays that interest we never trouble him at all. We have a large class of those people who are managing that way. Some of them are paying for their land, and some of them are not.

Q. (By Mr. CLARKE.) If the maximum rate of interest allowed by law is only 8 per cent, how can anybody collect 20 or 25 per cent?—A. Well, Mr. Chairman, it is not charged as interest.

Q. (By Mr. FARQUHAR.) Is it profit?—A. No. For instance, I come to you and say I want to buy a pair of shoes. You say, "Very well; do you want to pay cash?" "No; I want to pay when the crop is in, the 1st of October." Now, for a pair of shoes that I would pay \$1 cash for you would say, "I will let you have these for \$1.25." Those are what they call "time prices."

Q. Is that considered a legitimate system in Georgia?—A. Yes.

Q. (By Mr. CLARKE.) Now, I think we have got at the crux of this business.—A. Yes. Now, if I come to you and say, "I want to borrow a hundred dollars," you say, "Very well; I will let you have that hundred dollars, and I will charge you 8 per cent on it." That is put on the face of the note. I give you my note payable a year hence for \$108. When I come to buy a pair of shoes and you simply charge me \$1.25, there is no rate of interest mentioned; nothing at all. That does not apply to one class of people any more than it does to another, but that is a rule of trade and traffic.

Q. Has there been any attempt made by legislation to control that system?—A. Oh, no; I do not see how you could control it. How would you manage that?

Q. Maybe we shall be able to find some way to recommend.—A. I hope you will. I would be very glad, indeed, if you could. You will certainly have my cooperation. If it can be done, I am willing to come up here and see my Congressman and get him to help you out in it. I made a memorandum here that possibly would throw some more light on the subject, if the interrogation is not getting too long for you gentlemen.

On the question of immigration, I note that within the last few days a number of immigrants have been landed at New Orleans. They are mostly Italians and Hungarians. I am informed that they are to work in the sugar-cane fields in Louisiana. A few have been secured by the State of Alabama to work in the coal fields near Birmingham. This, however, is a mere experiment with this class of labor.

At present labor is not as plentiful in Georgia as we would like to see, and it is possible that later on the cotton mills may be forced to try immigrant labor. White labor is used almost exclusively in the cotton mills and other manufactories. In my opinion, the question of labor will naturally settle itself. The whites in our section will be given all the work in manufactories and positions of transportation where the wages are a sufficient inducement for them to take it. The colored laborer to a great extent—I might say almost exclusively—is inclined to agriculture, and will of his own accord naturally drift to the rich alluvial lands in the Mississippi Valley and possibly into Mexico. The negroes are inclined to a warm climate. The wants of the colored man South are few. He must have a house of worship, a schoolhouse, that he may send his children to school if he desires, and by all means he must have his tobacco and rum. I simply make these suggestions to you gentlemen because the inclination is all that way. They are drifting in that direction. I notice that whenever they move at all they go to a warmer climate—go in that direction.

Now, so far as our own State is concerned, the immigration of intelligent laborers or small farm owners modifies conditions in particular neighborhoods, and industrial education tends to improve any class of laborers.

(Reading:)

"Question 15. We have very little foreign immigration of any kind, most of the newcomers into Georgia being Americans from the North and Northwest, and from other Southern States. This class of immigrants make for us the most satisfactory citizens."

The truth is that we are not seeking people to come among us as common laborers. What we would like to have, and what we would like to see, would be people who make good citizens that would come there and take hold of our lands and settle among us and help us to develop the resources and become owners of them and enjoy whatever we might have. That is what we would like to see and what we would like to have, for the Southern people are intensely American and cling with tenacity to American ideas, but I would not have it understood that our people are unfavorable to the best class of foreigners, some of whom are among our best citizens.

Around Savannah, which is our largest seaport town, for instance, some of the very best people that we have are Germans. They have gone there and have gone into agriculture. They are producing vegetables in immense quantities. They have gone into the dairy business and make butter and cheese; and they are developing all that country around there, and their industries are extending back to a great extent into the interior. Now, that is the class of people that I have reference to here; people who come there and become citizens and take hold of what we have and develop it. They do not only do well themselves, but they help us. We get a great many good ideas from them, and they make the very best citizens we have. But their number is comparatively small. We welcome those who come into our State from any country to be landowners or men of business; but for ordinary laborers we do not seek or especially desire foreign immigration.

We believe that the negro, under the direction of the white landowner, furnishes the best labor for our cotton fields. In fact, there is no better. At present at least 95 per cent of all the colored labor that we have in Georgia has been either born and raised there or has moved in from adjoining States, and they are acclimated. They are not subject to taking the malaria like the white race; they are not troubled with chills and fever like the whites are; in other words, they stand our hot summer climate. They are accustomed to and speak our language, and they understand our customs, our manners, our modes and methods of cultivation and caring for and gathering the crop. The fact is, in my judgment there is no better labor known for the Southern States than the colored labor for common field work.

Q. (By Mr. LITCHMAN.) Is your indisposition to have foreign immigrants come in there due to any possible complication between negro labor and this foreign labor?—A. Oh, yes; I do not believe they would mix at all. Now, possibly I had better suggest right here that as a rule nearly all the labor that we have in our cotton factories and manufactories for all purposes is white labor. The white laborer and the negro laborer do not like to be together. They want to be separate themselves one from another, and for that reason the colored laborer naturally goes to agriculture because he feels free and easy there.

Q. So far as you know have you in Georgia any mills or factories run exclusively by colored labor?—A. No factories; no, none that I know of.

Q. (By Mr. TOMPKINS.) Any oil mills?—A. We have oil mills and a guano factory; but, of course, that is not very pleasant work for whites, and they do not like it.

Q. The colored labor has not been tried as yet in connection with cotton manufacturing?—A. Oh, no; in our State up to now I do not think there has been room for them. I would state here that in my own town, Griffin, we have 4 cotton factories. I do not think there is a colored man or colored woman working in those factories at all except to do the menial labor: that is, clean up around the premises, look after the seepage, and drive drays and do work of that kind.

Q. (By Mr. LITCHMAN.) Are those the mills that Judge Edmund Daniel is connected with there?—A. Yes; and I know they have no colored labor in their mill at all. It is all white labor except to do the menial labor around. Yes, Judge Daniel is one of my neighbors.

"Questions 17 and 18. The few foreigners in Georgia are compelled by their very surroundings to become Americans, adopting our language and conforming to our customs. What few foreigners there are there have little or no effect upon our agriculture.

"Questions 20, 21, 22, and 23. By far the largest percentage of agricultural labor in the South is furnished by the negro. Free tuition in the public school is provided for during 5 months of the year for the agricultural districts, and, by special appropriations by counties and cities, local taxation is levied to support public schools during 9 months in the cities and towns."

That you may thoroughly understand that, let us take the city of Griffin, where I live. Mr. Daniel is the president of the board of education of that town. We have a local act for the city of Griffin which permits the mayor and city council

to levy a certain rate to raise a sufficient amount to run those schools after getting the public school fund for a term of 9 months. We have there what is known as the public-school system. We get from the State a sufficient amount to run that school system for 5 months, and then an ad valorem tax is levied upon the property of the city to raise a sufficient amount to run it for 4 months longer, which makes 9 months.

Q. (By Mr. LITCHMAN.) Does that apply to the colored schools as well as to the white?—A. Oh, yes; it applies to all.

Q. You have separate schools, of course?—A. Yes; we have separate schools entirely, and it applies to all—not only in the country and rural districts, but in the cities where they live. In this ad valorem tax there is no distinction made whatever. The school buildings are separate and distinct one from another. The colored people have their own people and the whites have theirs, and one superintendent has charge of the whole system of all the schools, both white and colored.

Q. Are the teachers in the colored schools colored or white?—A. Colored.

Q. It is claimed that there is not the same quality of teaching in the colored schools as in the white; how is that in your locality?—A. That is a mistake.

Q. You think that would not apply to Georgia, from what you know?—A. Not at all; not at all. They have various grades there, and, of course, a man has got to come up on his examination to a certain mark before he gets a license to teach at all. He is examined by the county school commissioner and he is given a certain license. Now, for instance, when the board comes to select a colored teacher for a colored school, then the patrons of that school recommend some person that they especially desire to have teach it, and if the man or woman that they recommend or select comes up with his license and stands the examination all right, he is selected. Sixty-six per cent of all children are enrolled in these schools. This estimate includes negroes as well as white children, and the school age is from 6 to 18, inclusive.

The curriculum of our public schools is not now specially adapted to the agricultural class. But there is a move on foot to require the schools in the rural districts at least to teach nature studies, including text-books on agriculture, and everything pertaining to the theoretical part of farm life. The department of agriculture of Georgia has from time to time recommended legislation on this subject. There is a school of technology in Atlanta, and there are schools for technical training in Savannah, Macon, Columbus, and Sandersville.

(Reading:)

“ PART II.

“ CAPITAL EMPLOYED.

“ Question 25. Of the \$435,000,000 of taxable property in the State, \$165,000,000 represents the capital invested in agriculture, which includes the value of lands, \$120,000,000; the value of live stock, \$22,500,000; of farm implements, \$5,250,000; of household furniture, \$16,250,000. The income of this \$165,000,000 is shown by the following estimate of the value of the various crops of Georgia for the year 1900:

Cotton	\$54,000,000
Tobacco	27,000
Rice	1,200,000
Corn	18,000,000
Sugar	107,000
Sirup	1,295,000
Vegetables	1,000,000
Peaches	3,750,000
Apples	1,000,000

Total	80,379,000
To this add value of cotton seed	2,800,000

The income therefore is 83,179,000
Or 50 per cent gross or 8 per cent net.

“ Some idea may be formed of the general prosperity of a people by considering the percentage of those who own their homes and farms unencumbered. By the census of 1900, out of 352,059 families, there were reported 110,639 owning farms and homes. Of the number of these home-owning families 107,117 had no incumbrance on their homes and farms. The percentage of families owning free of incumbrance was very nearly 97 (96.82) per cent. There were 241,420 families

hiring homes and farms. The country banks hold a much smaller number of farmers' notes, and for smaller amounts, but have in their vaults much larger deposits from the farmers than ever before in the history of the State.

Total amount invested in merchandise.....	\$21,000,000
Total amount invested in banking.....	14,000,000
Total amount invested in railroads.....	46,000,000

"Question 26. Generally speaking, well-managed farms pay from 8 to 10 per cent on the capital invested.

"Question 27. The earnings of capital invested in farms compare favorably with the earnings of mercantile and other similar lines of business.

"Question 28. The tax rate of agricultural property is the same as the rate fixed for other property.

"Question 29. There has been a tendency for the past several years on the part of the agricultural class to drift from the farms into the cities. This is possibly not so great now as in the past. The cause is attributed largely to better educational advantages in the towns and cities than in the rural districts. The present condition of the agriculturists of Georgia is much better now in every way than for years past.

"Question 30. Overproduction in 1897 and 1898 of our main money crop, cotton, we think, had something to do with the decline in the prices of this staple.

"Question 31. The value of agricultural lands has greatly advanced in the last 3 years.

"Question 32. We are planting more largely of cereals, hence more vegetable matter is produced.

"Question 33. The increase in acreage in cultivation is attributable to diversification of crops.

"Question 34. The effect of underproduction has been to increase prices, as farmers because of the raising of supplies have been able to control the sale of their products, both cereals and cotton. The prices for wheat and oats have been advanced, and the price on cotton has greatly increased.

"Question 35. Intensive farming is generally claiming the attention of the people more than heretofore, and the utilization of barnyard manure from the raising of cattle, sheep, and hogs, has increased. The effect on production is favorable. Wages are increased because crops are more directly profitable and prices are better.

"Question 36. There has been in this State for nearly 60 years an organization of the leading agriculturists of the State in a State agricultural society; also a horticultural society and dairy association. These organizations are based upon the idea that the council of farmers will be generally helpful, and the object sought is the improvement of agriculture, horticulture, and dairy methods. These organizations, together with similar organizations less known, have very greatly benefited the farming conditions of the State."

Q. (By Mr. FARQUHAR.) At what place is your experiment station?—A. At Griffin, Ga.; my home.

Q. What color is employed for service?—A. They are mixed; both white and colored. Generally the farm labor is all colored. For the dairy products and entomologists' places and positions of that kind are usually filled by whites. But all the farm labor on the place is colored.

Q. Are there any agricultural or industrial schools in the State where they teach agriculture and manual training?—A. Yes.

(Reading:)

"Question 37. The production of grain up to this time has not been sufficient to meet the home demand, though this is more nearly possible now than for the last 40 years. Farm products of all kinds meet with ready sale in home markets, with generally remunerative prices.

"Question 38. There has been overproduction for some few years in cotton—about 1897 and 1898. The very great increase of cotton mills in the State and the South has now made this almost impossible with present conditions. There has been underproduction in corn and general farm supplies, which condition is now being very much remedied by the good prices received for our staple product, cotton.

"Question 39. As before stated, the diversification of crops is upon the increase.

"Question 40. The introduction of improved farm machinery, to which allusion has been made before, has made it possible to produce all crops at very much less expense, and therefore to very greatly increase profits.

"Question 41. Georgia, together with other Southern States, will of course receive large benefit from the opening up of markets for cotton in the Orient and the islands."

I believe what we need is an extension of our market for what we produce down there. I know that is contrary to the views of some of our leading men; but I believe that Georgia would receive large benefits from the opening up of markets in the Orient and the islands.

Q. Then you have no fear of the policy of the Government that gives to us the markets that are likely to come from our Oriental possessions?—A. Not at all. Supply and demand is what always controls the market. You can say what you please about everything else, but what we people need is a market for our output. We will go on until we raise 20,000,000 bales of cotton in our Southern and Western country, and you have got to have some place to put it. The whole thing is a failure unless you can sell it somewhere, and the more markets you can secure the better off our people will be. When it comes to a question of this kind, it is not a question of politics. We do not care what your policy is; but we want to do business. That is the way it strikes business men.

(Reading:)

"Question 43. The railroads in the State are operated largely under the control of the State commission, and transportation rates have been very greatly reduced since the organization of the commission.

"Question 44. Some counties in this State, notably the city counties, are giving very much attention to improvement of roads. The country counties are beginning to take it up, and the cost upon local transportation is very greatly diminished. The local markets for almost all agricultural products are satisfactory, and these products pass from the hands of the farmers most generally in their local markets.

"Question 45. There has been a very successful effort made in this State in connection with other Southern States to control the price of cotton, and the greater demands made by local mills, together with the efforts just mentioned, have given promise of very satisfactory prices for this product."

Now, I hope you will understand me there. I do not mean to say by organization or anything of that kind, but we have been trying to raise our home supplies and keep our people in a position where they would not be forced to throw all their cotton on the market at one time—so if a man had sufficient to live on at home he could sell a bale of cotton whenever he wanted to do so.

(Reading:)

"Question 46. The effect of grain and cotton gambling has been very hurtful to the farmers of the South, as indeed it has been to the general industrial interests. If some method can be introduced by which actual products will be sold and all gambling in futures suppressed, the price, in my judgment, will very greatly advance and farmers will be very much better remunerated for their labor.

"PART III.

"Question 47. It will require the wisdom of our national Congress to determine suitable regulations on trust combinations and other forms of monopoly. There are few, if any, means more important than legislation along this line. It affects not only the agricultural interests, but all the interests of the people, and combinations of this kind should be intelligently and successfully resisted and broken down."

I do not mean to say by that, simply because you have got a trust or something of that sort, it ought to be broken up, but where it is oppressive to the people and to business it ought to be suppressed; but do it intelligently.

(Reading:)

"Question 48. We have not felt any favorable results from existing antitrust laws or others mentioned in this question. Something more far-reaching will have to be enacted before favorable results will come to the farmers of this section.

"Question 49. The same statement can be made in answer to this number also, insisting that there should be very strong Federal legislation on all the subjects mentioned.

"Question 50. Farmers are generally careless, even when their own interests are to be affected, and nothing short of strong Federal or State laws will prevent the spread of diseases among animals or plants. This is especially true of live stock on the farms, and of our orchards. Possibly the most of these reforms can be better accomplished through State rather than Federal laws.

"While the condition of the farmers of Georgia is by no means all that it should be, under the advantages that we possess in our soil and climate, yet it is much improved over that of 1 year ago. The short cotton crop of 1889 and the fact that the mills of the South used more of the great staple than ever before combined to raise the price of cotton. For the first time in history the South fixed this

price, and the farmer who was so fortunate as to rush his crop upon the market received a good profit on his labor and investment. Another fact in the betterment of his condition is that he raised during the past season more than his usual food supplies, in consequence of which many debts were paid and many mortgages raised. The farmers of Georgia harvested last year more wheat than at any time since 1865; in fact, more than in any other 3 years since the civil war. More attention, too, has been paid to meat supplies. Last winter many smoke-houses were filled with ham, bacon, and sausage, from hogs fed and slaughtered at home. That the West is the granary and smokehouse of Georgia is less true now than for many years past. It has been many years since the agricultural interests of Georgia were in such good shape. The farmers have in the last 12 months made encouraging progress toward the goal of independence. Nor should we fail to mention the good peach crop of 1900, which, notwithstanding all hindrances, has brought good profits to some of our fruit growers. Although this crop, as a whole, did not prove as remunerative as early indications promised, yet the money it has put into circulation within our State entitles it to rank among the great new money crops of Georgia. It has paid during the dull season thousands of dollars to the laborers employed in gathering, packing, canning, and shipping the fruit.

"The sugar-cane industry of Georgia has also made gratifying progress. The growing of cane and the manufacture of sirup in south Georgia has doubled in the last 2 years.

"We predict that in the near future a number of sugar refineries will be established in south Georgia. These will give a wonderful impetus to this great industry. The more we add to the productions of Georgia the more will we increase the general prosperity. Therefore it is gratifying to note the possibilities which Georgia offers for the addition to her resources of another great money crop.

"Tobacco of the best grades has been successfully raised in several sections of the State, but seldom in greater quantity than is required to meet the individual wants. But more attention is being paid to this valuable crop, especially in south Georgia.

"We do not hesitate to declare that Georgia possesses possibilities for successful agriculture unsurpassed in the world. There is no reason why our farmers should depend upon any other country or section for food supplies for man or beast. The success of some of our most scientific farmers in wheat growing, raising as high as 40, 50, and even 65 bushels to the acre, gives convincing proof of our ability to raise our own bread supplies and have some for exportation besides. And when we come to food for stock no country has a better store of native grasses, with the additional advantage that the many foreign grasses so highly esteemed elsewhere will, with proper management, grow luxuriantly in Georgia soil and yield a handsome profit."

It is nothing uncommon for us down there to raise 4 tons of hay to the acre. It is very common.

Q. What is your main grass—Bermuda?—A. We have Bermuda, crab grass, orchard grass; they all grow there.

Q. What is your best haying grass?—A. It is usually crab grass.

(Reading:)

"In the new plan of cutting, shocking, and shredding the cornstalk by machinery we have a method far superior to the old one of pulling fodder and leaving the stalks standing in the fields.

"In the peavine, also, the farmers of Georgia possess the most nutritious hay, as well as a splendid renewer of exhausted soils and preserver of those that are yet in good condition. Even the cotton seed, once cast aside as useless, after enough for the planting of a new crop had been saved, supplies in its meal and hulls rich food for stock, and in its meal a superior article for supplying nitrogen to the compost prepared for fertilizing the soil.

"With all the advantages thus possessed every inducement is offered the farmer for raising meat for his own family and for the neighboring markets. At present the Western beef, by its superior quality, holds the field, even in the small towns crushing out local competition. All the money carried out of the State for the purchase of Western beef, mutton, pork, and ham can be kept at home for circulation among our own people if the Georgia farmer will pay more attention to the raising of stock. Considering the difficulties that have beset them on every side the farmers of Georgia have done well. For their long and heroic struggle of 85 years, and for the difficulties they have overcome, they deserve all praise. But the phenomenal success of some of our Georgia farmers has shown the marvelous possibilities within our grasp.

"One great need of our farmers is the formation of a farmers' institute or club in every county, in which may be discussed the best methods of agriculture, the latest and best machines for labor saving, and other things of interest and profit to the farmer. Industrial education is as necessary to the farmer as to the mechanic. Nature studies should form a prominent part of the curriculum of our public schools. From the kindergarten to the university the pupil should be taught to know something of nature's ways, and in special schools the farmer should prepare for his profession just as the physician, the lawyer, the preacher, or the mechanic does for his. This is a day of machinery, the proper handling of which demands education. Nowhere does machinery pay better than on a farm, provided it be wisely bought and judiciously managed. The West makes much greater use of farm machinery than Georgia. This ought not so to be. A farmer can no more afford to be behind the age than can a man engaged in any other business. In the physical as well as in the spiritual world growth is life, stagnation is death. Progress is the watchword of the farmers of Georgia, and progress is finding out the best methods and adopting them. What the farmer has learned for himself he is teaching his children at home and then sending them to school, where that education can be continued and enlarged."

Q. (By Mr. LITCHMAN.) Have you cotton factories in Georgia?—A. We have a few. They have been very successful. Our people have for years been wild and crazy on cotton. They have thought that everything they needed there could be bought somewhere else cheaper than they could raise it; but they are just waking up to the fact that they have been mistaken; that they can raise their own food supplies, and for this last 2 or 3 years they have been doing that. In that is the greatest change among our planters that I have seen.

(Testimony closed.)

WASHINGTON, D. C., March 23, 1901.

TESTIMONY OF HON. ROBERT RANSOM POOLE,

Commissioner of Agriculture of the State of Alabama.

The commission met at 11.15 a. m., Mr. Farquhar presiding. At that time Hon. Robert Ransom Poole, of Montgomery, Ala., commissioner of agriculture of the State of Alabama, was introduced as a witness, and, being duly sworn, testified as follows:

Q. (By Mr. FARQUHAR.) Give your full name, address, and official position.—A. Robert Ransom Poole, commissioner of agriculture of the State of Alabama.

Q. Now, take the first question in our plan of inquiry, the increase or decrease in number employed in agricultural labor in the several States in the last 50 years?—A. That is a very wide question, and one that I have no data hardly on which to predicate an opinion. In a general way I would say that we have an increase of at least 50 per cent engaged in agricultural pursuits during the last 50 years.

Q. What is the character of labor, what is the percentage of black, and what the percentage of white?—A. About 50 per cent of black.

Q. Of this colored labor is there a large percentage that are tenants, or do many of them own the property that they cultivate?—A. A very small percentage own their property. They are engaged in different modes of farming: Tenants, shares or partnerships, and the wage system, about 33½ per cent each.

Q. What are the terms of your sharing of crops? What does the owner of the land furnish, and what does the tenant furnish?—A. The owner of the land furnishes the land and the tenant house and all the teams and implements necessary to make a crop. The tenant furnishes the labor. The tenant generally gets one-half of the cotton and one-third of the corn and other crops raised by his labor. Frequently the landowner or landlord furnishes everything, and furnishes the tenant so many provisions, say provisions for 6 months, and the tenant gets one-third of the crop raised by his labor. In the wage system the maximum amount paid is about \$10 per month, the minimum about \$6, for farm laborers with their provisions and tenant house furnished.

Q. Are those wages in cash monthly or are they withheld for a certain time?—A. They are generally paid half cash monthly.

Q. Is there such a thing as a lien or a mortgage on the crop by written contracts between the owners of the land and the tenants?—A. We have in Alabama, I think, about 18 black belt counties and 6 or 8 of the other counties, not known

as black belt, say 25 agricultural counties, where this negro labor is worked, where the negroes rent the land from the landlord; generally there is an advance by merchants in the villages and towns, and where that is the case they take a mortgage on the growing crop for supplies furnished the laborer or tenant.

Q. Do these owners of lands there usually make an arrangement under the contracts with stores for the supply of food, etc., to these tenants?—A. That is frequently done.

Q. Do you know what rates those tenants usually pay for supplies?—A. They pay a small per cent above the cash price, whatever the price may be, and along that line their conditions are improving very much. The transportation has improved in our country, and provisions and everything of that sort have been steadily growing cheaper all the while. Competition has been increasing also, and consequently has forced down the price of provisions, and the conditions have improved along those lines very much.

Q. You do not know of any extortionate rates of interest that are charged, do you?—A. No.

Q. Or profits on this class of supplies to the tenants?—A. No.

Q. You speak of the black belt. What are the principal agricultural industries in that black belt?—A. There are 18 of those black belt counties going across the State from east to west. The soil generally is black, and the population in a large measure is colored. The negroes out vote the white people of that section 5 or 6 to 1, and that section is known as the black belt of the State of Alabama. The southeastern portion of the State is engaged in agricultural pursuits also, but that is inhabited by a class of white people that are very thrifty farmers, and, in fact, the most intelligent farmers in our State. They are farming generally on the intensive plan, and they do their own work; they are small farmers generally. In this black belt section the lands are owned in large tracts by white men, and frequently a man will work from 50 to 150 hands or tenants on his place. I have several plantations of my own. On one place I work about 65 hands, and on others a lesser number. The land is held in that section in large tracts of from 320 to 2,000 acres generally. In the eastern and southeastern portions of the State the land is held in smaller tracts by the white farmers.

Q. What is the general condition of the colored man in this black belt compared with his condition in the other sections of the State?—A. He is well fed and well clothed; he is peaceable and law abiding and well adapted to the growing of anything. The South seems to be his home. The colored people there come in contact with a class of white people who owned them when they were slaves, or their descendants. We have no labor troubles at all, and have never had any. They are obedient and respectful, and we have no trouble whatever with them.

Q. You have, then, very little migratory labor in that black belt?—A. Very little.

Q. Nearly all born and raised in that section?—A. Largely born and raised there.

Q. Are there many of these colored people who have moved from that section either into Mississippi or elsewhere?—A. Not of recent years; but there is a disposition among the younger negroes to go to the mining districts on account of higher wages. We are just south of the Birmingham mineral district, and in many instances the younger negroes go there. But they always come back. They go there and work a few months and generally drift back to the plantations.

Q. You say then that this black belt is chiefly agricultural?—A. Yes; entirely so.

Q. What changes have occurred in agriculture there in the last 10 or 15 years?—A. Very few. We are not very progressive there, but the conditions are improving.

Q. Are you chiefly in cotton raising?—A. Entirely in cotton and corn; very few other products are grown there.

Q. You have not then very much diversified agriculture in that section?—A. No; very little. I am endeavoring to bring that about through my department of agriculture. I am encouraging that in every conceivable way.

Q. Just state to the commission what are your propositions in Alabama as to the diversity of products and how far you have progressed and what the State has done to encourage it, if they have done anything?—A. I do not know that we have any plans, or that the State has done anything. Do you think, Mr. Adams, we have? I would like to have you assist me.

Mr. ADAMS. We have spent a good deal of money for the different seeds this year.

The WITNESS. Oh, yes; we have through our seed department distributed quite a large number of seeds, supplied seeds of every kind. I can say that our agriculture is improving all along the line in Alabama. The department of agriculture in Alabama, I will state, if you will allow me is supported from a tag tax.

Every ton of fertilizer sold in the State of Alabama pays to the State of Alabama a tax of 50 cents a ton. The manufacturer before offering his goods for sale applies to the commissioner of agriculture for tags, and we supply those tags to him at the rate of 50 cents a ton, and he, before offering his goods for sale, files with us an analysis of his fertilizers, showing the constituents composing them; and those goods are sold to the farmers by dealers throughout the State. At the college at Auburn is located the State chemist, and we have there analyzed all the fertilizers offered for sale in the State, thereby securing to the farmers the genuine article of the goods offered for sale.

Q. This tag tax is a State tax on the sale of fertilizers?—A. Yes; on the sale of fertilizers.

Q. And does it carry a warranty of the genuineness of the fertilizer?—A. Yes; every sack of fertilizer has the statement of an analysis on the bag showing its component parts.

Q. When was this school at Auburn first founded?—A. Mr. Adams, do you know? It has been in existence quite a number of years.

Mr. ADAMS. It has been in existence about 30 years.

The WITNESS. Yes; about 30 years. But the department of agriculture has been in existence only about 12 years.

Q. How many pupils do you have in this school? What is the tuition and what is the class of studies that are pursued there?—A. They have about 425 students. It is an agricultural and mechanical college, and agriculture in all of its branches is taught. We have an experiment station connected with this school also, which is in charge of a professor of agriculture. The tuition is nothing, but the students pay their own board. It is absolutely a free school. I think there are some incidental fees of perhaps \$10 or \$12 a year to each student. We have 9 district agricultural colleges in our State, one located in each Congressional district, that draw from my department \$2,500 a year, and then we contribute also to two colored agricultural schools, one located at Tuskegee, Booker Washington's school, which is doing a very fine work in Alabama, and another located near the city of Montgomery, under Professor Patterson. We contribute to those schools from my department. We will sell this year from my department about \$100,000 worth of tags. The receipts from the tag tax is steadily increasing year by year.

Q. And this amount of revenue is expended entirely in what line?—A. It is covered into the treasury. It passes through my hands. I have an expense fund allowed me of \$500 a month for holding farmers' institutes, the purchase of seed, etc.

Q. (By Mr. KENNEDY.) I want to ask you if you can raise in Alabama your own corn and pork and other provisions, and if you do raise them, and if not, why not?—A. We can raise in Alabama everything that grows in the agricultural line. We have soil adapted to the cultivation of corn, and I suppose in our State we would make an average of 15 or 20 bushels. In the black belt they make as high as 40 or 50 bushels, but, of course, it will not average that much. We ought to raise all the corn and the pork that we consume, but we do not do so for the simple reason that we are cotton crazy down there. After the increase in price of cotton directly after the war, every farmer went into raising cotton, thinking there was more money in the production of cotton than in other products, and neglected the raising of pork and corn; but the decrease in the price of cotton forced them back to raise more corn, and now we are raising nearly all we consume in my State.

Q. A number of Southern representatives have complained that the South has to ship in corn and pork and other provisions that they could raise themselves.—A. Yes; that is a fact.

Q. And it is to the interest of the South to raise them as much as cotton, possibly?—A. Yes; that is a fact. That is the fault of the individual more than anything else. There is no farmer there, I do not care how poor his land may be, that can not raise all his home supply if he would do so. It is very much with the individual.

Q. You said, I believe, that you were encouraging the diversifying that would bring this about?—A. Everything that we can do from our department is being done; we are encouraging the diversification of the agricultural interests of the State.

Q. (By Mr. FARQUHAR.) How frequently are your farmers' institutes held?—A. That depends. As often as we can hold them. During the winter months, of course, we can not get the farmers together, but I shall try to hold them once in every 2 weeks in different sections of the State. We are assisted in that by the professors of agriculture and chemistry, and veterinary surgery, etc., from the department at Auburn, and as the chief or as commissioner of agriculture, I direct the holding of those institutes largely.

Q. What immediate interest do the farmers take in those institutes?—A. Considerable. They are very generally attended.

Q. Are there participants in any discussions there or questionings, or the production of papers on agricultural subjects by the farmers who attend, or is the programme entirely left to the teachers?—A. Yes; to the teachers generally, but we propose along this line to hold institutes and encourage them among the farmers. In holding these institutes I am going to invite progressive farmers over the State to go with me, and I am going to encourage that feature in the holding of our institutes in the future. I am, comparatively speaking, a new commissioner of agriculture, and consequently I have not held a great many institutes, but my work will commence along that line as soon as I return to Alabama.

Q. Are there many of your farmers there just simply owners of lands, or have they practical knowledge themselves as to diversification, as to cropping and as to marketing?—A. Yes; our farmers generally own their own lands, and as a class the farmers are very intelligent. In the black belt you will frequently find a graduate of Yale or Harvard college, living on his estate directing perhaps himself or by one of his sons or by an overseer the cultivation of his plantation. Then in the sandy land counties—we have two distinct sections—there are the smaller farmers, and as I remarked some time ago, they are more progressive than our larger farmers. The colored laborer is hard to teach in the use of improved methods of agriculture; consequently we are pursuing very much the old system inaugurated a number of years ago by our fathers and grandfathers in many instances.

Q. Is there much introduction in labor-saving machinery in your section?—A. Yes; we are beginning to bring in new machinery very generally. A number of years ago all the cotton was sown by hand; now we use the cotton planter entirely. Our oats and wheat (we have very little wheat in the southern part of the State but some in the Tennessee Valley) were cut with the old-fashioned cradle; now we use the McCormick binder and reaper there generally. We have dreamed of a cotton picker, but so far we have not been able to obtain anything that is a success. We have numerous labor-saving machines, such as cultivators. Different cultivators are generally used by the farmers, and the cotton planter and the stalk cutter, and we clean our lands with improved stalk cutters, etc. Our farmers, by the leaving of the younger labor for the mining business, are forced to resort to these labor-saving machines to supply the deficiency thus caused; but so far we have had an abundance of labor to meet all demands. I do not know what we will do perhaps in the future, but so far we are having no trouble.

Q. What is the condition of farming in your white settlements where the small farmers and the poor whites are?—A. Among those east and sandy land counties the small farmers are, as a general thing, prosperous, and they own their land to a very large extent.

Q. Have they equally with the colored men acquired lands since the war?—A. More rapidly. The negro is roving, is migratory in his disposition, and moves from plantation to plantation. One year he will move away to get more pay, and then go somewhere else, and the next year he will come back to where he started from. The white farmer is very much more stationary.

Q. Is it the colored man or the white man that takes up your mechanical trades?—A. I believe it is the colored man; is it not, Mr. Adams?

Mr. ADAMS. About equally divided.

The WITNESS. About equally divided. The white man is going more into mechanical trades, but, you know, we are rather a peculiar people.

Q. I wish you would explain the peculiarities; that is what I am trying to find out.—A. Before the war those negroes were the slaves of the owners of those lands I have described to you. On every plantation there were two or three carpenters, two or three taught the carpenter's trade by their owners, and every house was built by the owners of those slaves. Consequently, while a number of those old negro carpenters are still living, their numbers are decreasing and their places are being supplied by white carpenters generally.

Q. What has been the increase of your cotton mills in the last 10 years?—A. They have increased enormously; I suppose 75 per cent at least.

Q. What class of labor do you employ in your cotton mills?—A. Generally white.

Q. Have you exclusively colored help in any of the mills in Alabama?—A. No.

Q. (By Mr. KENNEDY.) Has there been a marked change in the attitude of the people of the South toward mechanical trades?—A. There is a very liberal disposition. Among the old aristocracy of the South there was a tendency or disposition to look down upon the trades, but that is gradually disappearing, and many of our best young men are going into trades. They are looked upon very favorably. I have a neighbor who has a son now at Lowell learning the textile indus-

try. He sent him there. He is a wealthy owner of a cotton-seed mill. That is one of the numerous instances I have heard of.

Q. (By Mr. FARQUHAR.) Is the incentive general in the South to young men to go into other business than agriculture?—A. Yes.

Q. And other than the professions?—A. I do not know about that. There is a great disposition among the young white men to leave the farms and go to the towns.

Q. Is there not the same disposition among the colored people to flock to the cities?—A. Yes; somewhat; because they are rather imitative. I have always had certain ideas along those lines. In many sections our public highways are miserable, and consequently it is hard to get around from neighborhood to neighborhood or from town to town. But in some of our counties we are now building good roads—macadam roads—and wherever that is the case the disposition is to go back to the farms. The lands have increased in value along these roads, and I think that is the key to the situation with us. The improved roads will have a tendency to encourage rural settlements.

Q. What do you think is the increase per acre in the worth of land for the last 10 or 15 years?—A. Before the war the lands in this section were worth anywhere from \$35 to \$100 an acre, but after the war they decreased in value very rapidly, and, in fact, for a number of years there was no demand for them at all. Our citizens were very, very poor, and we had very little money there. I suppose they went down to an average of \$10 an acre, but within the last 10 years our lands have more than doubled in value. I think that is a fair proposition. Lands which were 10 years ago worth \$10 an acre are now worth from \$20 to \$25.

Q. Are your large plantations breaking up into smaller tracts?—A. There is very little change along that line. The lands are held in large tracts, generally from 320 to 2,000 acres. If we could induce our farmers to sell off their lands in smaller tracts it would be much better for the country as a whole, but the person who owns a property that pays from 10 to 15 per cent on the investment is very loath to part with that investment.

Q. Are there any debts or mortgages on that class of property?—A. Ten years ago it was largely mortgaged, but the mortgages have been rapidly paid off, and there is now but a small percentage of those lands that are mortgaged. The mortgage debt of Alabama is decreasing very much. I should say there is not over 15 or 20 per cent of our lands mortgaged, not to exceed 25 per cent at the very outside.

Q. (By Mr. KENNEDY.) I would like to ask you if that is not one item of great interest to the people upon which the department of agriculture of the State ought to be able to give information?—A. I think that a very good suggestion. We have had rather an era of prosperity in Alabama for the past 10 years, and these mortgages have been paid off very rapidly.

Q. (By Mr. FARQUHAR.) A good deal of your prosperity in Alabama comes through minerals and manufacturing, does it not?—A. I have not elaborated on the mineral district; I have been speaking along the agricultural line. We are not as progressive as I would like to see our people in our agricultural districts, but there is an improvement along the line, however.

Q. What encouragement does your legislature give agriculture other than simply the establishment of your bureau?—A. We have the public lands that are open to settlement and some State lands open to the homestead laws. I think we give 160 acres to the homestead.

Q. (By Mr. KENNEDY.) Has the Government any lands to speak of other than swamps?—A. There are no very desirable lands now; they have been taken up. I frequently get inquiries along that line from different States. We have some swamp and overflow lands that are not desirable for agricultural purposes.

Would you like to hear about the timber districts of our State and ask me questions along that line? In the southern part of the State we have large quantities of virgin pine forests. The increase in the price of lumber has stimulated the building of sawmills all over the southern part of Alabama, and the people there are very prosperous—the timber people. They have made lots of money, and pine lands have increased in the last 10 years 100 per cent in value.

Q. What is your means of transportation through the pine lands, railroads or rivers?—A. Railroads principally, although we have several rivers, the Alabama, the Warrior, the Tombigbee, the Coosa, the Tallapoosa, and several other streams. But the timber generally is transported by rail.

Q. Do you say that the timber lands have been lately utilized?—A. The industry has been stimulated very much by the increased price of lumber. We have some of the finest pine lands in the United States, and Mobile is getting to be one of the largest lumber ports in the United States. We ship lumber from Mobile and Pensacola all over the world.

Q. What immediate interest do the farmers take in those institutes?—A. Considerable. They are very generally attended.

Q. Are there participants in any discussions there or questionings, or the production of papers on agricultural subjects by the farmers who attend, or is the programme entirely left to the teachers?—A. Yes; to the teachers generally, but we propose along this line to hold institutes and encourage them among the farmers. In holding these institutes I am going to invite progressive farmers over the State to go with me, and I am going to encourage that feature in the holding of our institutes in the future. I am, comparatively speaking, a new commissioner of agriculture, and consequently I have not held a great many institutes, but my work will commence along that line as soon as I return to Alabama.

Q. Are there many of your farmers there just simply owners of lands, or have they practical knowledge themselves as to diversification, as to cropping and as to marketing?—A. Yes; our farmers generally own their own lands, and as a class the farmers are very intelligent. In the black belt you will frequently find a graduate of Yale or Harvard college, living on his estate directing perhaps himself or by one of his sons or by an overseer the cultivation of his plantation. Then in the sandy land counties—we have two distinct sections—there are the smaller farmers, and as I remarked some time ago, they are more progressive than our larger farmers. The colored laborer is hard to teach in the use of improved methods of agriculture; consequently we are pursuing very much the old system inaugurated a number of years ago by our fathers and grandfathers in many instances.

Q. Is there much introduction in labor-saving machinery in your section?—A. Yes; we are beginning to bring in new machinery very generally. A number of years ago all the cotton was sown by hand; now we use the cotton planter entirely. Our oats and wheat (we have very little wheat in the southern part of the State but some in the Tennessee Valley) were cut with the old-fashioned cradle; now we use the McCormick binder and reaper there generally. We have dreamed of a cotton picker, but so far we have not been able to obtain anything that is a success. We have numerous labor-saving machines, such as cultivators. Different cultivators are generally used by the farmers, and the cotton planter and the stalk cutter, and we clean our lands with improved stalk cutters, etc. Our farmers, by the leaving of the younger labor for the mining business, are forced to resort to these labor-saving machines to supply the deficiency thus caused; but so far we have had an abundance of labor to meet all demands. I do not know what we will do perhaps in the future, but so far we are having no trouble.

Q. What is the condition of farming in your white settlements where the small farmers and the poor whites are?—A. Among those east and sandy land counties the small farmers are, as a general thing, prosperous, and they own their land to a very large extent.

Q. Have they equally with the colored men acquired lands since the war?—A. More rapidly. The negro is roving, is migratory in his disposition, and moves from plantation to plantation. One year he will move away to get more pay, and then go somewhere else, and the next year he will come back to where he started from. The white farmer is very much more stationary.

Q. Is it the colored man or the white man that takes up your mechanical trades?—A. I believe it is the colored man; is it not, Mr. Adams?

Mr. ADAMS. About equally divided.

The WITNESS. About equally divided. The white man is going more into mechanical trades, but, you know, we are rather a peculiar people.

Q. I wish you would explain the peculiarities; that is what I am trying to find out.—A. Before the war those negroes were the slaves of the owners of those lands I have described to you. On every plantation there were two or three carpenters, two or three taught the carpenter's trade by their owners, and every house was built by the owners of those slaves. Consequently, while a number of those old negro carpenters are still living, their numbers are decreasing and their places are being supplied by white carpenters generally.

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Q. (By Mr. FARQUHAR.) You accept the statements of Mr. Adams as a part of your testimony, do you, Mr. Poole?—A. Yes; we endeavored 2 years ago to pass legislation to encourage the building of cotton mills in Alabama by exempting them from taxation for a number of years, but the bill looking to that end failed of passage. I was a member of the legislature at that time and was on the ways and means committee, and remember making an attempt to pass it.

Q. The repeal of the laws in respect to the hours of labor was made also as an encouragement for the establishment of mills in the South?—A. Yes.

Mr. ADAMS. In our State, now, the number of hours employed is usually settled by contract between the laborers themselves with the operators.

Q. Just an open bargain?

The WITNESS. Yes.

Q. What have you to say about your laws on the taxation of the agricultural property of your State?—A. I do not think they are excessive. There is no complaint along those lines at all. I do not think they are at all excessive.

Q. Have you a system of equalization of taxes?—A. Yes.

Q. Do you think that in the last 25 or 30 years there has been a decline in the productive quality of your soils?—A. No; the productiveness of our soil has increased by the use of fertilizers, etc. We have lands there that 25 years ago were not making a bale of cotton to 5 acres, and which are now making a bale of cotton to the acre.

Q. But, of course, that is under the force process of the fertilizer?—A. Yes; of course, where lands are not fertilized they deteriorate very much, but under the fertilizing system and intensive plan we have obviated that and are now making more cotton than ever before.

Q. What increase of acreage of arable lands has there been in the last few years?—A. I have no data as to the increase of this year over last year, but there has been a steady increase for years in the amount of land cultivated. What percentage, I can not say; a very small per cent, say 3 to 5 per cent.

Q. Has there been anything done on the part of the State or others, in the matter of the reclamation of your swamp and waste lands?—A. Nothing.

Q. They lay just as they are, subject to entry, I presume, on a small fee?—A. Yes.

Mr. ADAMS. Some of the lands are first rate. Some are swamps and are overflow, but a great deal of the land is good.

Q. You would say then that the condition of agriculturists in Alabama is much better now than it was 15 or 20 years ago?—A. Yes; by 50 per cent.

Q. That labor is also better provided for and receives better returns than it did then?—A. Better compensation; yes.

Q. And that labor is more stationary than it has been—less migratory?—A. Yes.

Q. Has Alabama suffered any from attempts on the part of colored men to have the colored people colonize and leave the State and go elsewhere?—A. There have been attempts made to carry them off.

Q. Have you any practical knowledge of the motives that control the men who have practiced these migratory schemes?—A. It was for the money they could dupe these individuals out of; for their own gain and not for the benefit of their fellow-man at all.

Q. Do you think there is any State in the South where your colored population could be better off than where they are now?—A. No; I do not. I think our State is peculiarly blessed in many respects, in climate and soil and in conditions generally.

Q. Have you observed much of an increase in the mental capabilities of the negro since he has received an education?—A. Yes; his condition is improving very much.

Q. Do you think it is possible for the colored man, up to a certain line, to improve in educational matters as much as the average white man in the South?—A. I find that the young negroes—the younger children are very ambitious to improve their condition, and their parents are anxious for them to do so. There has been a fear among the negroes for a number of years—and I expect they have good grounds for it—that some of these days we will have an educational qualification for suffrage. I think they have apprehended that, and therefore they have stimulated their children to acquire an education. They are very ambitious generally. I will state that in the agricultural districts among the colored labor the strike is unknown.

Q. (By Mr. KENNEDY.) Is there any sentiment in Alabama in favor of getting rid of the colored population of the State?—A. No. I think 99 per cent of the white people of Alabama are glad to have the negroes there. They are law abiding, comparatively. They will steal a little bit sometimes; but they make good farm laborers and good servants generally.

Q. Have you a compulsory crop contract law in Alabama?—A. Mr. Adams, what was the bill that passed through the legislature in regard to the breaking of contracts?

Mr. ADAMS. That was simply as with any other contracts, to make it a misdemeanor for any man to break his contract without proper notice.

The WITNESS. Frequently when we contract with our labor, and that is done usually the 1st of January, they sign a contract to perform certain labor. It is an agreement between the land owner and the tenant. We have very little trouble along that line, but sometimes we have a party that will run off and leave his crop, and in some instances he is prosecuted for the offense criminally; but that is very rarely done.

Q. Sent to jail if he breaks his contract?—A. If he obtains money by false pretense; but his intention is very hard to establish. I have never heard of a man being put in jail for breaking a contract there. Did you ever hear of one, Mr. Adams?

Mr. ADAMS. No; but I think this law makes it a misdemeanor. But under it, if he gives the party notice that he is going to break the contract, the penalty does not apply.

Q. There must be a cause for the enactment of such a law. It must be that the negroes are in the habit of violating their contracts?

THE WITNESS. It occasionally happens, but you have got to establish an intent to defraud before you can prosecute criminally.

Q. Do you find the negro has very little regard for the sacredness of a contract, or is he any different in that respect from the average white man?—A. I should say he regards it as less binding. He has less regard for his contract than the white man, and if he can better himself by going elsewhere, he does not care.

Q. (By Mr. FARQUHAR.) You said you had no strikes among agricultural labor?—A. We have none.

Q. Does not that arise from the fact that agricultural labor is so scattering it could not strike?—A. Largely.

Q. Is not that the reason all over the United States; the fact that agricultural labor is so scattered that it can not inaugurate a strike?—A. I think that is the fact.

Q. Have your people agitated the question of compulsory arbitration?—A. No.

Q. When you were in the legislature was that question ever brought up?—A. No. I think we have no law along those lines.

Q. No agitation for such a law?—A. No. Strikes have been very rare in Alabama. We have had only one serious strike in the mill districts, and that was years ago.

Q. (By Mr. KENNEDY.) What have you to say about the cost of making cotton and the profit there is in it to the farmers at present prices?—A. I remarked that for the last few years the production of cotton has been very profitable and our farmers have been stimulated to put an increased acreage in cotton.

Q. We know what a bushel of wheat can be raised for in certain sections of the country, and we know the profits. Have you any statistics as to cotton?—A. No; I have not.

Mr. ADAMS. Cotton can be made in Alabama for 5 cents.

Q. All above that is clear profit to the farmer?

Mr. ADAMS. Yes.

Q. They have secured a splendid profit with recent prices?

Mr. ADAMS. Yes.

Q. We have had men come here and say that it was one of the curses of the South that they did not diversify their crops and raise their own provisions; that they had a soil on which they could raise grain and other products, but instead of that they were all after cotton and brought their provisions in from the West.

THE WITNESS. Unfortunately that has been the condition in Alabama, but that condition is growing less apparent every year. Directly after the war, when the negroes were turned loose, they, having been slaves, did not know what to do with themselves. They committed depredations on the cattle and the hogs and stole them terribly and discouraged the farmers very much. But after a few years these practices subsided and confidence was restored. The people themselves went to work with some system, and they have been steadily increasing their prosperity every year since about 1890.

As a general thing the white farmers are more thrifty than the negroes. The negro, working for a part of the crop—the share cropper, as we call him—will draw on account probably 100 bushels of corn for his family. He will work 1 mule probably and will draw 150 bushels of corn and takes it and puts it in his crib. There is a country store near by, and if he wants a pound of coffee or a little sugar he sells a bushel of corn to get it; and generally by the 1st of March

he is out of provisions and has to go to his landlord for provisions, etc. Of course, the country merchant knowing all that, is going to sell at any price he can get, and he puts a very low price on the corn. It all goes on the market and gluts the market, and produce drops down below its real value, but as soon as it is out of the hands of the negro it increases in value.

Q. How about provisions and seed and implements that the country storekeeper furnishes to the croppers and planters?—A. The corn is generally bought by the smaller cross-roads storekeeper, and the advances are generally furnished by the larger stores at the towns and villages throughout the country. They are furnished as reasonably as could be expected where a man advances to the illiterate classes, as negroes are. The merchant is human and he takes advantage of those things and gets all the profit he can; but all these things have improved very much and the condition of the negroes has improved correspondingly.

Q. (By Mr. FARQUHAR.) Does the country merchant give credit on the indorsement of the owner of the land or does he take the cropper?—A. He will take a mortgage lien on the cropper's interest in the crop. He will frequently ask permission of the landlord. He will say, "Jim Jones wishes to get advances from me; have you any objection? No or yes. What amount do you think he will be good for?" He just holds him in on advances to a certain amount until the crop shows what it is going to do and then lets him go. As a general thing the negroes are improvident. When they make a settlement at the end of the year they go and buy everything they want—furniture, and guns, and horses, and wagons, and buggies, etc., and they generally get rid of their money very rapidly. If they were as economical as the white people they would absolutely own that country in a few years. It is getting so that in our section in the black belt the most of the lands are rented to negro tenants for the simple reason that they can afford to give more for them than the white man can. I own several plantations and I rent to the negroes because I can get more rent from the negro. He furnishes his own labor and can afford to pay more rent than the white man who depends on hiring his labor done can.

Q. (By Mr. KENNEDY.) What rates do you have to pay for money there?—A. Our bank facilities have improved very much in the last 25 years. Take my county, which is one of the richest in the State, I think it ranks fourth in productiveness. There was only 1 bank in the county 25 years ago, and at that time the farmers borrowed their money from commission merchants in Mobile and Selma, and would pledge the shipments of their cotton to those merchants. Now we have in our county 6 banks, and any farmer who is good and known to be a debt-paying man can go to any bank and give a note for what money he needs at 8 per cent. Frequently money is loaned for less, but the legal rate is 8 per cent.

Q. Is not 8 per cent a pretty high rate when we consider that we are almost on a 2½ per cent basis?—A. I have seen men pay 20 per cent down there. We have a wonderful recuperative country. I have known farmers to make a complete failure in their crops—some fellow running a plantation. He will be sold out by his commission merchant. Some one will get sorry for him and loan him, say, \$1,000 and he will pay him back the first year, and the second year he will be on his feet again.

Q. How many of your banks have been started recently?—A. Five out of the 6 have been started in the last 10 years.

Q. How many in the last 2 years?—A. One.

Q. All national banks?—A. Three are national and 3 private banking institutions in my county. I will state for your information that the cotton-seed industry has greatly improved in our country. I remember 10 years ago, when we had no mills, cotton seed was worth 10 cents a bushel. I have a friend, a neighbor of mine, who has several large plantations and makes about 1,200 bales of cotton. He built an oil mill last year at a cost of \$40,000, and he made \$40,000 profit in the first year, paying for the mill. The dividends of every mill in the State of Alabama have not been less than 40 per cent in the last 2 or 3 years. They have earned enormous dividends.

Q. That makes cotton raising all the more profitable?—A. Yes. The average price of cotton seed in Alabama last year was 80 cents a bushel. You can see the difference over 10 years ago, when the price was 10 cents.

Q. (By Mr. FARQUHAR.) How about fruit raising in Alabama?—A. We are encouraging that industry, and in our last legislature a bill was introduced to prohibit the importation of infected fruit trees. Fruitdale, on the Mobile and Ohio Railroad, near Mobile in Washington County, shipped about 80 carloads of peaches to Chicago last year. They will ship 200 carloads this year from that one place.

Q. Peaches are being developed, particularly as a crop?—A. All fruits do well, particularly peaches. Then we have quite a wine industry developing in our

State—grape growing. We have two grape-growing towns. The town of Cullman is settled by Germans and Bavarians, who came from the old country. There is not a negro in it and there is not a single individual negro in the county. They are entirely German farmers there. That is one of the most prosperous counties in Alabama. They raise everything in the world. I had occasion as the commissioner of agriculture to send my agents to that county and find out what was grown. They raise farm products of every description.

Q. Have you any immigration of farmers into your State—white farmers or foreigners?—A. Very little.

Q. Do you give any encouragement to immigration?—A. Nothing but the homestead rights. We have another place where the grape industry is prosperous, the town of Claiborne. That is settled by people from the Northwest and by Scandinavians. They are growing grapes on about 6,000 acres and are doing very well, indeed. They make several different kinds of wine, and it is very fine, indeed.

Q. Do you think of any general statement that you want to make further?—A. No; except this: I regard Alabama as the most rapidly developing of all the Southern States. Her minerals, her timber, and her agricultural interests and conditions are improving. We have a fine and healthful climate, plenty of water, rich soil, and if our negro labor was a little more intelligent we would be able to use all the improved farm implements. The ignorance of the negro is one great bar to our success. They are much prejudiced against any new ideas.

(Testimony closed.)

WASHINGTON, D. C., April 12, 1901.

TESTIMONY OF MR. M. F. GREELEY,

Secretary of the Board of Regents of Education of the State of South Dakota.

The commission met pursuant to recess at 2.35 p. m., Mr. Farquhar presiding. At that time Mr. M. F. Greeley, secretary of the board of regents of education of the State of South Dakota, was introduced as a witness, and, being duly sworn, testified as follows:

Q. (By Mr. FARQUHAR.) Please give your full name, your residence, and your occupation or profession.—A. M. F. Greeley, Gary, S. Dak.; my business is stock farming.

Q. How long have you been a resident of South Dakota?—A. Between 18 and 19 years.

Q. Where were you farming before going to Dakota?—A. In Waupaca County, Wis.

Q. (By Mr. A. L. HARRIS.) What official positions, if any, are you holding at the present time?—A. I am a member of our board of regents of education and secretary of the board. I am also the editor of the *Dakota Farmer*, the leading farm paper of the Dakotas. I have been for 4 years engaged in farmers' institute work, and for 2 years past have been conducting farmers' institutes in the State of Minnesota and doing some institute work in my own State and in North Dakota.

Q. In your institute work have you been pretty generally over the States of North and South Dakota and Minnesota?—A. Yes; that is, particularly as to Minnesota. I have been all over that State several times in my institute work there and in my own State and North Dakota. I am pretty generally acquainted as an institute man and also as one engaged in the sheep and wool business and general farming.

Q. As a stock raiser, are you engaged in any special line of stock?—A. I have made mutton growing a specialty for about 21 years and have done other things in connection with it, but that has been the leading part of my work.

Q. How extensively are you engaged in sheep raising?—A. I have from 300 to 500 head on my farm as a rule, according to the time of the year, and whether dealing in sheep or not seldom carry fewer than 300 to 400 ewes on the farm.

Q. Are you conversant with labor conditions in the States that you have mentioned?—A. As applied to farming, I think, but not otherwise.

Q. Please state the condition in those States compared with other labor and former conditions.—A. Our average hired men are not quite what they used to be; for some reason we do not get as good men as we did. They are determined to work fewer hours, though they are paid better wages than we used to pay them, or that I used to get when a hired man myself. I think one reason for this change

is the improved machinery. We have introduced so much of that that the work really gives them very little steady employment, as a rule. They can not rely upon employment the year round, and so those who like to have employment steadily go into other things more.

Q. You assign as one of the causes the irregularity in employment?—A. I think it is; the irregularity of employment and not having work the year round.

Q. What are the hours of labor a day in your section of the country?—A. We do not pretend to work a man much over 10 hours, even on a farm. The men seem to expect to work about 10 hours, though there are seasons—haying, thrashing, and other times—when they have to work more.

Q. How many days are they employed in the year?—A. We generally hire men about from 6 to 8 months, more often 6 months than 8, and the bulk of them are hired by the day or short terms through harvest or haying and other busy times.

Q. Is there any tendency on the part of your labor to seek other employment?—A. There is, on this very account, that they do not have steady employment, and this, too, tends to make them anything but thorough, and for this reason we prefer foreign people, as a rule. If we want a good shepherd, we generally try to get a Scotchman or an Englishman. Next to the foreign help we like help from Canada. Help from all these countries seems to be more thorough than our own. They seem to expect to do something for what they get and to do that thing as it ought to be done. They have made a business of mastering some kind of work, and they are proud of it. But our help here does not seem to know anything thoroughly; as a rule, they are masters of nothing, but do some things fairly well, and for that reason they are not the best help, though some are the most capable and intelligent help we have.

Q. What wages do you pay?—A. We are paying now by the month through our country, and largely in Minnesota from \$20 to \$25 a month. It is about \$4 or \$5 higher than it used to be 8 or 10 years ago on an average. Many pay No. 1 hands, tried and reliable, more than this. That includes, board, lodging, etc.

Q. What wages do you pay where you furnish the tenant a house?—A. That depends upon what you furnish besides the house. By the way, this seems to me one of the very best ways of getting reliable labor on the farm. There are a good many things to be said about it, and nearly all in its favor. I could mention a few if you wish to have me. When we employ a single man he is liable to go or change at almost any time; we can not depend upon him nearly so well as we can upon a man who is married, particularly one who has a small family. Then he stays with us willingly the year round. If he has children they have an opportunity of growing up in the country, which means a great deal to children in this country and in these days. Again, his family are valuable help in trying, busy times in the farm work. It is much more convenient for the farmer to employ them than it is to go after other help when he needs it, and perhaps pay very high for it, too, if he needs it but for a short time. Again, he does not have to pay all cash. He can give the tenant farmer a good garden and not feel it at all. He can let him have the use of one cow and not feel that very much, but these things mean very much to a man with a family to feed. Often if he can, in addition, be provided with vegetables and other truck, he can almost live out of what the farmer can give him without missing it on an ordinary Western farm, and still make better help than the man without a family. This is almost the solution of our hired help problem out there, to encourage the tenant hired man with a wife and children.

Q. Has he any advantage over the laboring man in the city or town?—A. Yes; very decidedly. If he has a small piece of land to cultivate he is learning to make bread and butter for himself—learning the great trade of how to get a living out of land. If he has children it is also so much better for them to live in the country; it is so much freer and so much more wholesome and more secure for them. They are more than twice as apt to make strong, self-supporting citizens than if grown up in idleness and crowded in with others in cities. Such a man can lay up more money than the one employed in the city at much higher wages. He can lay up all his wages, excepting, perhaps, a little with which to buy clothing. I know of cases where men who are prudently inclined, whose wives work with them to make a home, who are laying up all their wages. They have a little flock of chickens, which pay the grocery bill, and have possibly two cows. These almost supply the family. I know several families which sell enough butter and eggs in this way to furnish all the clothing and living, and have even more than the wages to lay up at the end of the year. This kind of living and "getting along" also engenders a wholesome independence and self-reliance, which direct wages never can.

Q. Do such persons become owners of land?—A. Almost invariably they do. If there is anything in them they soon see the advantages of having a piece of land

that they can back up on, and from which the world can not drive them. They learn how to cultivate that land, and the children have tastes along that line and experiences, too, which are invaluable to them, and when they get onto a piece of land they are at home and twice as apt to succeed as a man who comes out of the city and knows nothing about the business. It is a wonderful education along a most valuable line and costs them nothing. It is a lack of this very education which so frequently wrecks the beginner on land.

Q. Do they make good farmers and intelligent citizens?—A. Almost invariably. There are very few localities now that I know of where there are not men who have graduated in this way onto a piece of land and into first-class farmers.

Q. Have you personal experience of the things that you mention in regard to the conditions that you have spoken of?—A. To quite an extent. I began as a hired man on a farm, worked for 5 years on farms as a hired man, on both small farms and big ones, and in that way I became pretty well acquainted with these conditions. Then I began with a small piece of land and made a living for myself and family.

There is one more thing which is well worth considering in this connection, and that is help in the farm house. As a rule, unless there are grown-up daughters, there is little help outside of the wife and mother in these homes, and principally because none can be had. Very frequently the wife of the hired man, who is furnished a house and garden, can be induced to help in trying times, and is glad to do so. In this way she frequently and cheerfully earns a few dollars of her own which she can devote to little things and fixings she very much desires but would never think of taking money for out of the hard-earned wages of her husband. The growing girls of such families can also most generally be induced to help at the farm house when needed, when they might think it out of the way to hire out regularly to a strange family. They may, in this way, not only greatly accommodate the overworked wife at the head of the farm house, but may, by the training and experience, become tiptop little housekeepers, cooks, etc., before they are women grown. We have repeatedly seen this thing work greatly to the mutual advantage of both help and helper.

Q. Have you any such thing as crop sharing in your State?—A. We have a little, but not near enough of it, not nearly so much as I think we are going to have, as we are looking into the merits of that way of interesting labor in a number of occupations. The outlook is very promising.

Q. You may give some of the advantages of crop sharing and partnership.—A. I have not had much experience along that line myself. What I know of it is mostly from observation. In my own case my experience has consisted in letting sheep out on shares, as we call it. I find that I can let out a flock of sheep and give a man two-thirds and get more money out of them than I can to let him have them and give him only one-half. When his self-interest is developed, he turns into a better man, a better sheep man, and a better farmer. He will get more wool and more mutton, get more out of his work and work to better advantage. And so it is in crop sharing. There is a great big thing here for those who have large land interests they can not oversee themselves. I think it is better, however, to give the one employed a little cash, crop or no crop. It is better to do this in order that they may feel sure of something; if they can have that, and besides, a slight interest in the proceeds, it gets them interested and they do their very best without urging or overseeing. It is easier working hard when one is interested in the business and its income.

Q. Are many of your people foreigners?—A. Most of our hired help are foreigners, and a great many of my neighbors are Scandinavians or Germans. I am sorry to have to say it, for I am a New England man myself, but in holding our institutes in Minnesota, and they were large ones, averaging about 557 people to the institute for the year, where our audiences were made up largely of Scandinavian people, with perhaps a good sprinkling of Germans and Canadians, we found them its most intelligent and the best farmers—that is, the most practical and thorough ones. Judging from the questions they asked, the interest they took in the business, and the quality of stock they showed us, and the kind of improvements they were making, they were right at the front. This, of course, was in the older sections, where they have had opportunity to become Americanized very thoroughly. There we find our best farmers as a rule, and there we find our best hired men.

Q. Are they intelligent and prosperous?—A. Very intelligent and almost invariably prosperous after they once get the run of the country. Some of them when they first come here, of course, are not in position to take advantage of the country. It takes time for them to get well acquainted with it, and with our language, ways, and customs.

Q. Do they become landowners?—A. With scarcely an exception those whom I come in contact with do. They seem to know what it meant to have a piece of land in the old country, and what it meant there to be caught without a piece. They see the old country conditions crowding in upon us here, and they seem determined not to be caught a second time without a piece of land in an overcrowded country—and they are setting our young Americans a mighty good example in this respect.

Q. Has a greater percentage taken lands than among our native Americans?—A. Oh, yes. The American boys as a rule seem to think they can always get land when they want it, but the foreigner sees plainly that it is going, and that to be sure of it he had better get it before it goes. And that is where he is right. It is pretty hard to get our American boys to become interested in land, although we find a tendency, particularly among our Minnesota farmers and their sons, to stick to the soil more than they did 10 years ago; very much more. It is encouraging, decidedly so.

Q. Is there any disposition on the part of your foreign residents to colonize or to get closer together to preserve their language and habits?—A. There are communities inclined that way, and they are the slowest to Americanize and the slowest to adopt our methods, and they do the poorest for themselves as a rule, but this way of doing is not general. The better class of them prefer to be blended with Americans, and they get a great deal of good out of us, and we get a great deal of good out of them. It is a mutual benefit to come together—we can learn much from them. Where they colonize it goes against them and the country they are in.

Q. What effect has the immigrant had upon agriculture in your section of the country?—A. He has been a godsend to it. The people that have come to our country from Scandinavia, from Germany, and from Canada have greatly helped the agriculture of the Northwest. In some sections to take them out of it would nearly ruin the country. As a class, the Americanized Scandinavian makes the grandest citizen in the Northwest.

Q. Have you any suggestions to make in regard to immigration?—A. I do not know that I have. I believe in letting those who appreciate land have it. I am sorry to see them taking the very best farming land and our American boys drifting into the cities to uncertain and overcrowded occupations, but being sorry does not help it. If our boys prefer to be the hired men and renters of foreign landowners, as they surely will be in the near future, to being independent landowners themselves, let them take their bitter medicine. These landless men love land and understand how to take hold of it; and if they do, and our boys do not, I am glad to see them coming. I would encourage everyone who has no land to come while he can get it and then to cling to it.

Q. (By Mr. CLARKE.) What kind of an idea do you think it would be for the Government to undertake the distribution of immigrants into the agricultural regions, thus preventing congestion in the cities and helping the country?—A. I think if it could do it so as to make the distribution rather general, and not colonize them, it might work well. I should think if anything could be done along that line it would be a mutual benefit for the country and the people you put out there.

Q. Is there sufficient demand in the farming districts of the West for this labor, so that in case the distribution came you would find good places for the immigrants?—A. I think any sober, land-loving man that wanted to have land eventually himself, and who had a little experience in country life, or in farming or stock raising, would have no difficulty at the present time in working into steady employment. I do not think you would have any difficulty in placing about all of that class of people that could be brought into the country.

Q. (By Mr. A. L. HARRIS.) Have you land sufficient yet unoccupied to accommodate a large number of immigrants?—A. Our land is nearly occupied, in the way we use the word "occupied;" but all too often one man has too much in our country, and when he has a great deal too much it is a self-regulating affair. The superabundance will generally ruin him, and then that land will be distributed properly. But when one has not enough to ruin him, and yet has too much, of course, there is another question. When we can get our farms smaller we can take care of a great many people; we can double our population and still be better farmers for it, and more than double the yielding capacity of the land. And, besides, we have a good deal of open land yet, of course.

Q. What is the condition of your public schools as to equipment, schoolhouses, etc.?—A. We are well supplied; if anything, oversupplied. Including our State institutions, and the church institutions, and the ordinary public schools, we have really more schools than we need in many sections of the West just now.

Q. Is the school curriculum sufficient for the wants of the farmers?—A. That is a great big question. I think we are getting too much, if anything, of what we call book learning. That is a hard thing to say in these times, I know, but just the same I feel, and so do a great many, that we are getting too little of the practical in our schools. Too many of our boys and girls leave home and are educated and come back onto the farm, if they come back at all, full of facts and figures but with no muscle—mental, moral, or physical—with which to take hold of the business end of life. The bread and butter part of it is neglected, and they are sometimes almost helpless just as we consider them perfectly educated. I think if there were some way to work a little more of the practical into them—if our girls could know more about housekeeping, cooking, nursing, etc., which now so many of them deem unimportant, in fact, look upon as something beneath them, and if our boys would learn something of how to handle, breed, and feed stock, and how to take care of land to get the most out of the soil and still enrich it by crop rotation, thorough tillage, and that sort of thing—I think it would greatly benefit them. I see the need of this change very much in my work as an institute worker and as a farmer, but I can not tell you how to secure the change. The practical part should in some way be worked in with the other part so that each will make the other more available.

Q. Do you feel your institute work is having a good effect in that direction?—A. Yes; I am sure of it. I can take you into communities where we have held institutes, and right across the line into another State where they have not held them, and where they have held them I can show you better stock, better-handled stock, better-tilled fields, and better-handled crops. I believe I can show you all that and more. I can show you more contented farmers, and more boys and girls who are satisfied with, and proud of, their independent farm home life. As for farmers' institutes, Minnesota is the leading State in the Union, showing much the largest audiences and a correspondingly advanced condition of agriculture.

Q. Is there a local interest taken in your institutes?—A. There is, particularly where we have had them before in such places. We almost invariably have large crowds. Frequently the largest hall or opera house can not seat them. Last winter, as I said before, we averaged over 550 attendance in the institutes held throughout the State, including both thin and thickly settled sections. Minnesota employs in these institutes the best and most practical speakers to be found. It seems to be very difficult to get institute workers of the right type; that is, men who are clean cut speakers on subjects the farmers are interested in, and who have a practical knowledge of what they talk about.

Q. Have you an agricultural course in your agricultural college in South Dakota?—A. Yes; we have what we call an agricultural course, but I am sorry to say that I find that there is a tremendous tendency in most Western agricultural schools to make universities of them almost to the extent of disposing of good blooded stock to establish chairs in Greek. I do not know why that is, but as soon as even what seem good, practical men are put into these places they seem to get after the education part of it so strongly that they forget the practical, and the tendency is to turn them into schools and to make scholars and not farmers of those who go there. That is something we have to meet, and it is a hard thing to meet. The best—the very best—agricultural school on earth for a boy is to spend a year with a thoroughgoing, up-to-date stockman and farmer; to live in daily touch with first-class feeding, breeding, and handling of stock, with No. 1 tillage of the soil, rotation of crops, and the most advanced methods of making and conducting a first-class farm home. This being true, and I do not believe any practical, progressive, and consequently successful farmer will dispute it, the nearer our agricultural schools can come to this—to giving a boy this kind of a life and training—the more successful will they be. Those interested in our agricultural schools must not forget that a university is one thing and that an agricultural college should always and forever be another. I think, too, that all girls' schools—agricultural or otherwise, and particularly all normal or teachers' schools—should never permit a girl to go out from them till she is a thorough housekeeper and cook and well acquainted with plain nursing, and trained to regard these things as among the highest womanly accomplishments.

Q. Have you any further suggestions to make to correct the evil in the schools?—A. I would, as far as possible, work into the various chairs and into the presidency of such institutions practical, successful stockmen and farmers, even if we had to overlook a little more Greek and Sanskrit in their education. The tendency is now to do the reverse. I would do this to start with, and then, if possible, they should be held by the Department here in Washington in some way, right down to agriculture and stock raising, and it should be high treason for anything else

to be let in. If a little is let in all goes, and the student goes into anything but farming.

Q. (By Mr. FARQUHAR.) Would you say that agriculture is simply an optional study in your schools?—A. In some schools it is pretty nearly in that shape, I am sorry to say.

Q. (By Mr. A. L. HARRIS.) It has been advocated before this commission that nature study in the common schools would be a very helpful departure under present conditions. What would you say to that?—A. If nature study is brought into the schools, it is just like bringing agriculture and domestic science into them; it must come in in a very practical form, or it might as well be kept out, and we will have to be very careful whom we employ to teach it. If we employ the wrong person I do not know as it is going to help very much. I do not think it is possible to do very much in this line, but I am glad to know it is coming, and sincerely hope something may come of it.

Q. Have you had much to do with the agricultural college of Minnesota?—A. No; though I had a son there for a time. They are having the same trouble that we are, but still not quite so much so for this reason, perhaps. In our State and others referred to the State university is in one town, the State agricultural school in another, and so on all around; but in Minnesota all are together. This is also true in Nebraska, and for that reason, principally, I think they are a little ahead of us in this respect.

Q. What is the condition of the experiment station in your State?—A. It is doing very hard, thorough work, but largely along lines of little practical value to a large portion of the State, owing, principally, to the fact that it is situated in the extreme eastern part of the State, where there is nearly always ample moisture, and, notwithstanding what land agents and boomers may say, this is not true of nearly two-thirds of our State. We have moisture enough there for certain kinds of stocking and farming, but not like the eastern section.

Q. Is the experiment station looked upon as being valuable by the farmers?—A. By many, and still there is not just the right kind of a feeling toward it by the farmers of the central and western part of the State, particularly that section which, owing to the conditions mentioned, has to turn strictly to stock raising, and I must say that in my judgment that part has just cause for complaint. The school is in the southeast corner of our State in a section of the country very much like Minnesota and Iowa. The experiments are similar to those being carried on in Iowa and Minnesota, and they are of value to that part of the State, but they have very little connection with, and are of very little value to, the larger part of the State; nor is this the fault, to any great extent, of those in charge. If it would not be out of place, I would like to say just a word upon this point; that is, the possibility that there might be a little more elasticity in the interpretation of the law governing the appropriation. Now, we have \$30,000 or \$40,000 sent by the Government, in addition to what we receive for our agricultural school, for this experiment station, but that money benefits two-thirds of our State but very little. Secretary Wilson tells me that he is restricted in reference to the station at Highmore—a drouth-resisting forage substation which we have established to look after the interests of the drier sections of our State. They are conducting experiments there for drouth-resisting forage plants only, those that are supposed to grow without any irrigation, and we are unable to get any money from that experiment fund, although it is a very large one. I talked in person with Secretary Wilson and he told me he would do all he could for the Highmore station, and that he would, if possible, divert some funds to it, but afterwards he said he could not do so, owing to some rule or ruling. Now, it seems to me there might be some more elastic law or ruling whereby they could divert sufficient funds to this drought-resisting forage plant station to make it effective. It seems to me, and to the stockmen of the State, by far the most important experiment station of the two. It is a most vital question to our people how to get drouth-resisting forage crops. It means everything to fully half our State—very much to nearly all of it.

Q. Upon what authority have you established a substation of your experiment station?—A. Several years ago I introduced a measure in our legislature asking for it to be located there. We called it a substation so as to interest the people in the agricultural school and the experiment station, and to make them feel that it was a part of those institutions. They did not feel that way before but just the reverse. Afterwards the Government arranged to give us a man for the station, and allowed it to be under the care of the director of the experiment station at Brookings, and that is about all the connection there is between them. He directs the experiments and pays the expenses of maintenance of one man, and we have appropriated \$1,000 this year in the State. The greatest obstacle we ran against in trying to get that \$1,000 was that they said, "Here, you have \$30,000 or \$40,000

from the Government for experimental purposes; why can not you use that?" We could not make it clear that we could not use that money under the existing law, and for that reason they would not appropriate State funds to do the work they thought the National Government experiment station ought to do. We are doing a lot of work with the little money we have though, and we are going to do more of it if we have to get the money out of our own pockets. This thing must "go" or some of our stock and people must.

Q. The western portion of the State has conditions then that do not apply to the eastern portion?—A. More than three-fourths of our State can not be connected with the eastern part in the experiment work. It is impossible.

Q. Outside of the experiment work have you any suggestions to make that will assist in developing the western part of your State agriculturally?—A. That is another great big question, and I can not perhaps give you anything of much value upon it. I have one idea, however, in regard to irrigating experiments which might interest you. You know that much of our drier country there is underlaid with water. When we reach it with artesian wells it comes willingly to the top and with great force and in enormous quantities. We have, in some sections, by private companies and otherwise, put in lakes, dammed up large open basins, and put up dams and made basins, in which lakes are made from great wells. In some instances trees have been planted around the lakes and fish put in, and in this way most inviting and beautiful spots are made where scarcely less than deserts showed before. It is surprising how little a sheet of water of this kind costs, and how much it will add to the beauty and productiveness of a country. I have driven by these lakes during hot times when the southwest wind was blowing and scorching everything, and the moment I came near one of them on the northeast side—though a distance away—I could feel the difference in a much cooler and moister atmosphere. A flatiron shaped piece of green could be seen stretching away to the northeast from such places; that was one way it showed the effect of the water. I have thought if the Government could recognize this fact and use these artesian supplies of water with which to make great lakes and streams, bring them to the surface where the country needs them and where they belong, and distribute these lakes as frequently as practicable throughout western Nebraska, southwestern Dakota, and other places where these hot winds pass over hot, dry, burned-up prairies, in that way they possibly could give great benefit to the whole country and make it lovely, inhabitable, and healthful, where now at times it is little less than a desert.

Q. That would require Government help?—A. Yes; that would require Government help.

Q. Have you any suggestions to make as to how that assistance should come?—A. It seems to me I have seen a good many hundreds of thousands dollars thrown away to a great extent on our "river improvements," which, with less politics and more statemanship, might be diverted to this most practical use. This may be a difficult thing to do, however. It seems to be a kind of chronic disease with our Government to give that money out for some reason or other, to me inexplicable. I do not know why it is, and it is hard to discover what they do on our Missouri River, for instance, to offset so large amounts. Now, one-half the money that is put into the improvement of that river would give us a great many beautiful lakes, stocked with fish and surrounded with trees, where children and others could go now and then and think they were living. And I believe, too, that enough of them would materially affect the hot winds now so much dreaded. I believe, also, that if that fund could be so diverted, at least a portion of it, our people would rise up and call Congress blessed where now they sometimes do the other thing.

Q. Does your criticism apply especially to the Missouri River?—A. Yes; my observation would be along that line. Still it seems to us, knowing these possibilities and needs, that there are other large appropriations from which a little could be diverted to this much desired end, without materially affecting those who are supposed to be interested in this expenditure.

Q. (By Mr. A. L. HARRIS.) The suggestion is made whether an appropriation could be made in the shape of assistance in the propagation of fish in fish hatcheries.—A. Possibly; I believe to some extent that would be a proper channel.

Q. (By Mr. FARQUHAR.) The Government has already gone into a fish hatchery in Mississippi, and there is no reason why it should not up there in North and South Dakota.—A. I had not thought of it in that way. I know that when we put fish into our artificial lakes, we are surprised to see how they multiply and grow in a short time; but I am afraid such work could not be made sufficiently general. We would be very thankful for every little thing we got in that line, however.

Q. (By Mr. A. L. HARRIS.) Is the earning of capital employed in agriculture in your State satisfactory?—A. When you speak of it in small investments, I

believe it is paying as well as, or better, and is safer than anything I know of; but where it is put into large farms and they are farmed out, inexperienced men owning the capital in the land, I do not think it is.

Q. Does it compare well with capital invested in other industries?—A. From what I know of other capital and the returns it is bringing, I should say it pays a little better. Yet, in estimating that, our average farmers are determined not to reckon what they get excepting the clean cash for the crops they sell in town. They do not reckon what they retain for their own consumption, or the garden truck they raise on the farm and consume, and the cream, butter, eggs, meat, etc. When they reckon those, rent, and everything else, let alone pure air and true independence, it is away ahead. And for certainty of returns it so far surpasses those from the average business investment that there is no comparison.

Q. Would it not be a good idea to keep a cash account and debit and credit for the farm?—A. I think it would be a good thing, but I never do it. I keep run of enough to know I am away ahead of the average city man, though.

Q. The advantage of that would be that many farmers would then realize that they are getting ahead by remaining on the farm.—A. I think it would have that tendency. The only way to cure most of them who get city struck, though, is to have them leave the free farm life and home and live in the city at a fair salary and find themselves in debt every Saturday night and at the end of the year. A few years of this generally sends them back to the farm in a frame of mind to appreciate it, and the independence and worth of it. I have seen lots of them do that; it is being done every day. But the trouble is, too frequently there is no farm to go back to. When a farmer has for his family the best and freshest of all the land can produce, his meat, rent, livery, water, and sometimes fuel, in addition to eggs, butter, cream, milk, and fruit, he would be doing very well indeed, and much better than very many city people, were he not able to show any addition to his bank account, and this also any farmer who at all understands his business should be able to do. The certainty and permanency of his position should also be taken into the estimate.

Q. (By Mr. FARQUHAR.) You speak of the small farms. What information have you about bonanza farming?—A. Well, I should say it is a curse to the country, and to the man who tries it on, from what I have seen of it in North and South Dakota, particularly in North Dakota.

Q. What do you think is the particular evil?—A. In the first place, it keeps thousands of men from having little homes of their own, or will if they carry it too far, after the population gets more dense. Then, again, it employs men in squads, and this method eliminates all the individuality and independence of these men. It un-Americanizes them, and when you have done that to a man in this country you might as well have a wooden man, and you generally do have. Where you see the small farm there is generally a home, and not only is the farmer an independent typical American, as a rule, but the children have something in them that you can never get into them in any other way than for them to grow up on a piece of land. They have room and time to think out things there, to know how to make money, and what money costs. For that reason alone I think it is a bad thing all around to have very large farms.

Q. There is a good deal of changeableness in the hired help?—A. Yes; largely by unmarried men.

Q. How long are they usually on a bonanza farm?—A. Usually until they get paid the first time; but sometimes they will stay the whole season. Then, there is the mixing. Some splendid men come into this kind of employment, and they have to work with the worst kind of men. Then, again, they run out the bonanza farms, because they can not keep them up in any way yet known. They abuse the soil, get all the cream out of it, and then it goes to other people with small holdings for them to build up by careful rotation of crops, stock farming, and better tillage.

Q. Are these farms owned by resident holders or large bankers, etc.?—A. By men largely who spend their money in other cities or other States. The system robs the public schools, and detracts much from the social life of the country.

Q. The profits made on the farm are spent elsewhere?—A. Invariably, as long as they come; but they are sure not to come after a time. I do not know of one very large farm that has been running for some time that is paying to-day, and it is well it is so.

Q. Would you say that bonanza farming is on the increase?—A. On the decrease, in one way at least. But capitalists are seeing that the land is going to be valuable; that the population has caught up with it; that the population will increase and that land will not; and they are buying up small farms wherever they can get them; wherever the owner is so short sighted as to part with them. Wherever they can find a man that is hard up they make a loan and then some of them are

hard hearted enough to try to get the lands deliberately. They are putting on tenants. That is better than the bonanza farm, but it is bad enough. I wish there were some way this thing could be discouraged in this country. I do not know that the Government could take hold of it, but it is a bad thing and ought to be circumvented if there is any way to do it. In the richer portions of Minnesota, the Dakotas, and other States this is coming in in place of the bonanza farming, and coming in alarmingly fast.

Q. (By Mr. A. L. HARRIS.) Are the mortgages on your farms being paid off and released?—A. Yes; in many sections formerly heavily mortgaged the mortgage has nearly disappeared. Owing to pernicious political teaching in nearly every Western community a few can be found who are still looking to legislation, politics, and Presidents to get them out of debt, but this misguided class are fast waking up to the fact that politics and mortgage lifting do not run on the same range.

Q. Do you look upon the mortgage as being a curse, or is it sometimes a blessing?—A. Out West there is too great a tendency to run into debt, and I do not like to say anything that can encourage it. There seems to be something in the atmosphere out there favorable to it. A man, who in the East would not go in debt for 50 cents, after a year in Dakota would unhesitatingly run in debt that many thousand if he could get trusted for the amount. In a good many cases young men who are enterprising, and who have a few hundred dollars laid by, if they know their business, can take hold of a piece of land, put in a little money, and go in debt for the balance and make a home and pay for it; but that is the only case where I could encourage mortgaging.

Q. (By Mr. FARQUHAR.) Have you a regular rate of interest established by law in South Dakota?—A. Yes; 7 per cent.

Q. Is that the highest rate in the State?—A. No; they charge more than that, as a rule; 10 per cent almost invariably, and from that up to 15 and 20, according to how tight a place a man is in or how poor pay he is. That is not all one-sided, either. There is a tendency in our State not to pay debts on the part of a few transient people and some others. We have very heavy exemption laws, and while they are a grand, good thing in some instances and insure fair treatment, as a rule such large exemptions are working us ill. In fact, I sometimes think if the exemptions were much less it would be better for the country and people, and interest rates would be less.

Q. (By Mr. A. L. HARRIS.) Is your method of taxation satisfactory to the farmers?—A. Fairly so. There is a feeling among many of them, however, that they are unfairly taxed, but it is in many instances, and I might say in most instances, largely unfounded. There is this fact, however, that all the farmer has can be seen and will be seen, and for that reason he will pay nearer on what he has than the man who has his money invested in some other way. But if there is any intention that he should be oppressed or over taxed I do not know it.

Q. Is your property taxed at its full cash value?—A. No. The aim in my State seems to be to get about two-thirds the value, something in that neighborhood, possibly less.

Q. Does that basis equalize the farmer with the business man?—A. To some extent, yes. But, of course, where the funds are out of sight entirely we can not say how near it comes to it. Besides, most business men are taxed at about that rate, too.

Q. Outside of the fund that goes to defray the expenses of the State, is the balance expended in the county and townships?—A. Yes.

Q. Is the rate fixed by the local officer?—A. We have an equalization board that regulates these matters and equalizes the amounts after they are all brought in.

Q. After valuation?—A. Yes.

Q. Who fixes the rate of taxation?—A. That is fixed by the county board, and they are equalized by the State board.

Q. For your township, who fixes it?—A. The same authorities.

Q. For the entire county?—A. Yes.

Q. Does the school board have anything to do with fixing the rate of taxation for school purposes?—A. They are represented, but I do not think they have anything special to do with it.

Q. Is there any disposition on the part of your farmers to leave the farm and go to the city?—A. There is; but it is growing less, very fast.

Q. What has been the cause of that?—A. I think one reason is that many people rent farms that are not good land; or they take or buy a piece of land and think because they have done so that they are farmers, and they make failures of it and are discouraged. Then they have the idea that the farmer has to be a drudge; that he must get up early and work later than other people. A good

deal of that is disappearing with our better agriculture and better farming. Our farmers are adopting better machinery and more reasonable hours, and in that way we are getting over that once serious objection.

There was a time, and not long ago, when to be considered a good farmer one had to be up with the whole family at 4 a. m., and to keep himself and them on the jump till 10 p. m. was considered especially commendable. To-day just the reverse of this is becoming true in most of the best farming sections. The man who, after his land is paid for, finds it necessary to get his family out of bed at 3 or 4 o'clock in the morning in order to make a living is not an up-to-date farmer. He generally lacks in management or intelligence or both, or is of a miserly turn and is willing to sell wife and children and his own life for more acres and more money. There is absolutely no necessity for this kind of work or drudgery, and it is not looked upon any longer as indispensable to good farming. There has been reason enough for it, however. I myself have seen more than one worn-out farmer's wife, above whose grave a very appropriate inscription would be: "Stopped doing chores" such and such a time. Many boys and girls are worked so hard on land that forever afterwards the thought of farming is distasteful to them. But this is all wrong, and the advanced agriculture of to-day warrants as much leisure, as tidy, up-to-date homes and living as any other profession. Rural mail delivery, telephones, and better roads and teachings have all much to do with this.

Q. Is there any increase in the price of agricultural products compared with 1 or 2 or 3 years ago?—A. Yes; it is principally in beef, mutton, and such things. Our meat market used to go up and down frequently and violently, but there seems to be a steadier demand and the prices tend upward. I attribute that change to the advance in the value of land. We find that where land is high meat is high all the world over, for it takes land to grow meat. No matter how fine a desk one may have in his office, or how fine a counter in his store, he can not grow mutton, pork, or beef on them.

Q. Do you raise sheep exclusively for mutton?—A. We take what wool we can get, but we raise sheep nowadays for mutton.

Q. You raise a mutton sheep instead of a wool sheep?—A. Yes; we raise but very few wool sheep in our country now.

Q. (By Mr. CLARKE.) What breeds do you have mostly?—A. As a rule we have some of the dark-faced mutton breeds crossed with the average Western sheep. We are working largely toward the dark-faced mutton sheep on farms and for finer wools on the ranges.

Q. Are they of coarse or fine wool?—A. Mostly coarse wool.

Q. How many pounds of wool do you generally shear?—A. I would judge about 7 pounds. We have flocks that do very much better and some that do not do so well.

Q. Is the wool a considerable item in the profit of the sheep?—A. Yes; it is a good big item. Still, with the right kind of sheep and the right kind of care and management we can make a pound of mutton as cheaply as a pound of beef and not take the wool into consideration.

Q. Could you safely dispense with the protection on wool and still find the sheep industry profitable?—A. Where we live, with cheap lands, I think we could; but I would not want to say for the whole country or the whole of South Dakota. Our lands are cheap, and we have some advantages. I think we could still make sheep profitable without the tariff.

Q. (By Mr. FARQUHAR.) You would answer thus provided the present prices of wool were maintained?—A. That would open the whole question. Yes; I would say if the prices were maintained close to the present price. At the same time, we can raise mutton on those cheap lands with very little wool and make it profitable.

Q. (By Mr. A. L. HARRIS.) Have you any protection from dogs in raising sheep?—A. Not very much.

Q. Do they destroy or demoralize your flocks?—A. They have done so to a considerable extent. I have had but little trouble with them during the 21 years I have kept sheep, but they are a curse to the industry, and in some sections they have succeeded in driving the industry out.

Q. Have you dog laws?—A. Some. They change them nearly every 2 years, but they do not work well.

Q. Do they not create a fund sufficient to pay for the loss?—A. No; and then it is so complicated and difficult to adjust the claims that it is almost a dead letter.

Q. (By Mr. CLARKE.) Is there any economic necessity for keeping dogs in your State, and are they of any particular value to the people?—A. No; they are not; none on earth; as a rule they are a great tax upon our people and an unmitigated curse.

Q. (By Mr. A. L. HARRIS.) Is there any increase in the money value of your farm land?—A. It is increasing very rapidly at the present time and has been for the last year and a half or two years; coming up fast—alarmingly so in some sections of Minnesota and the eastern part of the Dakotas—that is, alarmingly so for the young men who have left the land recently with the thought of buying it again some time when they feel like it.

Q. To what do you attribute that increase in value?—A. Principally to the fact that our population has caught up with the land, and the old country conditions are right at our doors; the population keeps increasing while the land does not, and never will.

Q. Does the general prosperity of the country have anything to do with the increase in value?—A. I think money being easy has been a material factor in it. If men have money, they can not make a mistake in buying good lands in competition with those who want to make homes. Those two factors are the cause of most of the advance, in my judgment.

Q. Are your farmers maintaining the productive condition of their soil?—A. A few of them are; too many are not. The very large farms are simply running out.

Q. How do they maintain their fertility?—A. With stock largely; rotating crops and keeping a good lot of stock on the farm. We can not raise clovers to any great advantage in the Dakotas. In Minnesota the clover plant ranks side by side with the stock in keeping up fertility. The rotation of clover with other crops and stock keeps the land up in fine shape.

Q. Is diversification an important factor in your farming?—A. Yes; it is an important factor. Still, in everything else business is tending to specialize, even in the professions; and I do not see why farming should be an exception. I find, too, as a rule, that the farmers who are making a specialty of some line of farming, and then bringing the others in incidentally; studying their own tastes, location, market, soil, etc., and then getting at something to which they are particularly adapted, and mastering that line of farming, either in stock or other things, are getting ahead. They have more time to live, and their sons are more apt to go into the farming business. Specializing eliminates to a great extent the one crying objection which so many young men and women seem to have to farming—the confining, choring part. For years I have made a specialty of sheep and poultry, and consequently the choring part of the work on my farm has been greatly simplified. I think that the best part of our advanced agriculture is the tendency to specialize. I judge by what I see of the best farmers in Minnesota, North Dakota, and my own State. Still it is dangerous to advocate this kind of farming too much with the inexperienced.

Q. Do you find it difficult to maintain the fertility of your soil by special farming?—A. Not when it is in the stock line; but when it comes to raising wheat exclusively, or anything of that kind, we do not consider that farming. Farming means stock on the farm, every time.

Q. Have you turned your attention toward raising stock instead of raising wheat?—A. We have been compelled to—not from preference.

Q. Why was that?—A. Because wheat growing exhausted the land and exhausted the pocketbook. It figured well, but did not turn out so; did not bring the money. Wheat is also more subject to harm from climatic changes. With stock there is sometimes a little less income, but it comes all the time, in spite of dry seasons or hail storms, and the soil is improving instead of going down. That is the principal reason.

Q. Does your country confine itself to the raising of sheep alone?—A. Oh, no; in my case I have cheap rough land. Sheep are adapted to rough hill lands, and so I have made a specialty of them and of poultry. I had to buy cheap lands because I did not have money to buy expensive lands. Besides, I like sheep and poultry. What I get from them is nearly all profit. There is little hired help required in growing them, and it takes no large investment for starting, putting up buildings, or getting machinery. The income, too, is constant, and sheep and poultry do not ruin our land.

Q. Is it advisable for farmers to organize?—A. I probably should not say anything for I do not believe in such organization, as a rule. I do not believe in anything of that kind, and never shall. There are a number of reasons for this position, and the principal one is that organizations tend to eliminate the individuality of the man; they tend to make him lean on somebody else, and he does not develop his own muscle. Besides, these organizations, in my State, have been drawn into politics. The farmer has to work, and can not think as sharply as the politician. The politician has nothing but politics to think about. His harvest is votes, and he will work these organizations in spite of everything. They organize and swear they will have no politics in the organization, but before you know it they have it all through. The farmer who is trained to stand on his own feet, on

his own land, is worth a dozen who have to huddle together in order to stand up at all. There is a growing tendency, too, I am glad to note, among our best farmers to look more to themselves and less to organizations, societies, politics, legislation, etc., for their success. This development of individual resources, this relying upon one's own ability to compel results, begets a manly self-confidence which, when accompanied with good common sense and a fair knowledge of the affairs of the world, makes one's efforts in a chosen line almost irresistible. Just the reverse is the effect of forever leaning upon others and upon each other. The carefully protected and provided for boy never develops into the strong, self-reliant, success-compelling manhood of the father who knew no protection other than his own; no provision he did not provide; no achievement not wrought out by his own tried and willing hands. All this applies strongly to the farmer and farm boys. Our best ones are almost invariably the ones who lean upon themselves.

Q. Have you any social clubs, such as farmers' clubs, or stock associations, or anything of that kind?—A. Yes; we have a few of them. There are a few small clubs in some localities, and they try to make them interesting for the young people, but there is nothing very extensive in that line. Our young people generally manage to have a pretty good time when they get together without being told how. Clubs and associations in the country are apt to have too many rules and regulations about them—too much harness and too little horse. Their success depends much upon the individuals composing them.

Q. You spoke a moment ago of raising wheat being hard on the pocketbook. Did you mean by that expression that there had been an overproduction and low price, or do you mean that your soil does not produce a sufficient yield of wheat to be profitable?—A. Both. We can not make it pay to raise wheat year after year. We lose crops by hail or drought, and if we have a failure from any cause and have no stock our year's income is gone, and we can not risk it on that account. Then again, it exhausts the soil constantly, and we can not afford that. It is not a paying business only as it is brought in incidentally in rotation with stock farming.

Q. How long has it been since you turned your attention to raising stock?—A. I have never raised grain to amount to anything only to feed; but the attention of the whole Northwest is turning to stock more within the last few years.

Q. Will that change decrease the wheat production?—A. It will, a little, for a time; but I know of farmers to-day who are raising more grain than before they put the stock on the farm, because their farms are cleaner and richer. The coming of stock does not mean the going of grain from the farms of the Northwest. With good stock farming it will continue to be as now "the granary of the world."

Q. Has improved agricultural machinery been of benefit to the Dakota farmer?—A. Well, yes. But it has ruined many a man to buy machinery when he could not pay for it though, and perhaps did not need it. As a rule, however, it has been a benefit. If you carry it clear through it perhaps has not been a benefit to the grain grower, because the invention and use of improved machinery has, with the opening up of so much easily tilled prairie land, tended to reduce the price of grain; and in that way it has been harmful, perhaps; but still they have raised more of it with much less labor. When I first worked out it took 5 binders to follow a machine, 1 man to rake off, and 1 to carry the bundles together. Now the hired girl frequently drives a machine that does the whole business.

Q. With the low price, would it have been possible to raise grain with any profit without the use of machinery?—A. No; nor would we have had the low price without it.

Q. Has there been any increase in your transportation rates in the last 2 or 3 years?—A. No; they have steadily decreased. They have sometimes fluctuated a little, but the tendency has been to decrease. We also gain very much in time on stock shipments. We get our stock into the Eastern markets with half the shrinkage we formerly did, and with lower rates. The railroads are using our stockmen very well.

Q. What is the condition of your roads and highways?—A. In South and North Dakota they are excellent, and will be, regardless of work on them, because we have dry climate and a soil that makes good roadbeds. In Minnesota the roads are in some parts so poor that they really detract from the value of the land along them.

Q. Is there any disposition in Minnesota to improve the roads?—A. There is; but they do not get at it with any intelligent understanding of the business. There they leave every district to some one man's ideas, and sometimes they are very crude. They spend enough money on the roads, but they need some instruction on road building. There should be a more intelligent and general supervision in some way.

Q. What do you know about combinations to control the prices of grain in your State or North Dakota or Minnesota? In other words, is there any elevator combine or monopoly that you know of?—A. Yes; it exists all over our State—all over the three States. In some way they have it arranged so that, while I believe, as a rule, prices are governed by supply and demand, at the same time the "line" elevators receive their prices every morning from headquarters, and they are the prices that govern.

Q. You speak of the line elevator. Is that any special kind of elevator?—A. I refer to the kind where one company owns a long line of them. These companies seem to have an understanding with each other, and frequently one man gives the prices for several lines of elevators.

Q. Have you more than one elevator in the same place owned by different companies?—A. We occasionally have two. They seldom multiply much; but sometimes by accident or otherwise there are two representing different lines of elevators.

Q. You may explain, if you please, how these elevators are detrimental to the producer of grain?—A. Principally in the fact that they regulate prices regardless of the demand, and can put them up and down in a way to give themselves an illegitimate margin. Again, when we put in farmers' elevators, as we sometimes do, they sometimes use their power to crush them. They put up the price until that elevator can not do business, and when it quits they make it up with interest. Then, again, if the railroads would keep their hands off, if they would not hold us while these elevators rob us, we would be all right. I do not complain much about the railroads; they have used us very fairly in most ways, much more so than many farmers will admit, but it is a fact that when these elevators undertake to hold up a community they sometimes lend a hand. If they would keep their hands off we would be able to attend to these fellows all right. We could put up our own elevators and do business till they would howl as long and loud as any farmer ever dared to, and howling wouldn't help them, for our buyer's salary would be all the profit demanded. It might take us a little time to find out just how to buy wheat and to do this, but we could do it. But when they come in and will not let us build these elevators, of course we are handicapped. One of the worst things in the Northwest to-day is the tendency on the part of many farmers to believe that they are being imposed upon by everybody and everything. This has a most pernicious effect, and it is largely imaginary, but not without some basis. For instance, in Gary, my own town, we have 2 line elevators. A little while ago we wanted to put in a people's elevator, and another man wished to put in one himself, an independent elevator. Our people held a meeting, called the railroad commissioners there to help us, and the railroad people were notified and came there. They had attorneys and examined witnesses, and finally decided that we could not have the room for the elevator. That they gave us a hearing is true, but the decision was adverse. We know these line elevators are not competing with other farm elevators in prices. There will be lax seasons when they pay the same, but when the wheat is really coming in they do not, and thousands of bushels are diverted to those places where they have the other elevators.

Q. What is the difference in price between places where there is competition and where there is no competition with the line elevator?—A. I can not say only from observation. I should think there are places where we have traced it, where there is a half cent to a cent and a half per bushel, and sometimes a much larger margin—enough to rob the farmer of all the margin of profit he had in some cases. In the case I have mentioned, they heard our case and decided that we should not have the room for an independent elevator. I asked them why it was. They said they had investigated and proved that the amount of grain was not sufficient to demand 3 elevators; that 2 could handle it all right, and they did handle all they got all right, but we could have had a great many more bushels if we had had a farmers' or an independent elevator there, and there would have been better prices.

Q. Did the farmers haul the wheat away from that territory?—A. Yes; I have known of several instances and heard of many more.

Q. Do you know of any other place where the railroad has donated the ground to build the independent elevator upon?—A. I do not know that I could name any. I know of a number of cases where they have had great times over this very thing.

Q. Is that complaint pretty general over the State?—A. It is fairly so, but not so much as it used to be. They have done better with us than they used to do, and seem more and more inclined to be fair with us. Our railroad commissioners have been after them, and they seem to have broader and more liberal men in charge of our local affairs than formerly.

Q. Have you a railroad and warehouse commission in your State?—A. We have a railroad commission.

Q. Do they have charge of the elevators?—A. To a certain extent. They came to our hearing. As the railroads had to donate the place to put the building on, they also came, and they heard it through. But the people have not much confidence in the railroad commissioners. They are about as distrustful of them as of the railroads. They are perhaps too much so.

Q. Are they elected or appointed?—A. Our commissioners are elected by the people. They are put up just as the other officers are and voted on.

Q. Is that method satisfactory?—A. It ought to be. I can not say but our commissioners do well by us as a rule, but in this case we felt there was no reason why they should say whether we should or should not have a piece of land for the elevator. If in our judgment we wanted one and had men there to build one, we felt they should not say us nay. It was exercising a power that they should not have over a free people in such a matter. If we are foolish enough to build too many elevators I can not see why the railroads should insist upon enlightening us. They get all the grain to haul anyway.

Q. The railroad owned the ground?—A. Yes.

Q. Who inspects your grain?—A. I do not know much about that. It is sent out and goes into the regular channels. I am not acquainted with that part of the business.

Q. Who fixes the price of the grain in the line elevator?—A. I do not know. I know that Mr. Vandusen used to send out the price lists. His name was attached to them. They come to our local railroad agent and he hands a copy to each of the line elevator representatives from the same telegram.

Q. Where does he live?—A. He is at St. Paul, I believe, but his headquarters are at Minneapolis. I used to see the prices he would send out.

Q. Was that price fixed by the market value over the country?—A. I do not think it was, but I could not prove that to you; you can judge for yourselves whether it was or not. I have understood they have a board of the representatives of the different line elevators that meet and decide what they will do. Of course it is possible they meet to push the price up just as high as the market will warrant, but if this is the case we have reason to believe the object of their meeting is sometimes lost sight of.

Q. Do these line elevators belonging to different companies work in harmony?—A. We have never seen anything to make us believe they did not.

Q. Do they work in harmony with the independent elevators?—A. They never do.

Q. Are the line elevators managed by residents of the place where they are located?—A. They frequently hire a man to run the elevator from the particular community, but the managers are generally men who have been in their business. Of course, they have to be loyal to their employers.

Q. Do I understand there is no competition whatever between any two line elevators?—A. It sometimes shows up in a mild form.

Q. Do you know whether or not they pool their receipts?—A. We understand they do, but I do not know.

Q. Were they at any time inspected or audited by the same man?—A. I could not say as to that either.

Q. Have you anything further that you desire to say in regard to the elevator question?—A. No; only I wish we might be at perfect liberty to build and buy and ship as we wish to, that is all. The intelligent Western landowner asks no odds in his race with capital, only that he be not handicapped. In an open field he needs no odds in his favor, and the fewer he asks or receives the more successful in the long run will he be, and the grander man and citizen will he become.

Q. Is this complaint against the elevators pretty general throughout the State?—A. The feeling that way is pretty general.

Q. To what place do you ship your grain?—A. It goes largely to St. Paul and Minneapolis.

Q. Have you a pure-food law in your State?—A. Yes.

Q. Have you any suggestions to make as to the advisability of a Federal pure-food law?—A. I am hoping that our Government will take hold of that subject to the extent, at least, of having our drugs and the foods that we eat left alone. Again, it comes clear down to our stock foods, which are, in some instances, it seems to me, the greatest hoax on earth. But it is difficult to handle the question, and our agricultural papers seem to be afraid to take hold of it and say what they think, possibly, in some cases, because the proprietors of these foods advertise extensively. It puts the farmer in a bad place. He ought to know better, but he does not; and there are millions of dollars' worth of stock foods sold that do not amount to anything. Our experiment stations ought to take that question up and publish the facts widely. Again, many of our farm papers do not know and have no

way of knowing how little good there is in some of these foods; some are doubtless good.

Q. Would it not be well to have a law requiring the experiment station to look the matter up and test the quality of the foods?—A. If it could be done I think it would be a good thing if the Government was behind it, but the local laws do not seem to amount to much. The violators of the laws do not seem to fear them. A few far eastern stations are giving this matter attention.

Q. Have you anything to say in regard to the operations of the Federal law or your State law for protecting domestic animals from disease?—A. I am not conversant with any part of it other than that relating to scab in connection with sheep, and that is a very serious thing, a serious loss to the nation. We looked it up very carefully as an association while I was president. I studied it carefully, and from what I could learn in no country where they have local laws, as our State laws in this country, have they ever amounted to anything in driving scab out. England failed in Australia and other provinces until she took hold of it herself and made it a high crime. Now it has been driven out of Australia entirely, at least so from large provinces. In our country we have no general law of that kind. It is a great big loss. We have such large flocks of sheep and so many millions of them west of the Mississippi River that we can not do anything with scab with State laws. Dr. Salmon has done a great deal of good along that line. He has been made all kinds of sport of by some stock journals because he did not do it as they thought it ought to be done, but as a practical sheep man I must say, though he has made mistakes, he has done us a great deal of good. But he ought to be helped by some general law and not be left at the mercy of fault-finders and State laws. Maybe it is something the Government can not do. Maybe the States will insist on meddling with it, as they do with some other things, but it is the only hope I have. Our State laws on such questions do not amount to anything, and I hope the Government will take hold of it.

Q. I understand you advocate giving the Federal Government more power?—A. Yes; absolute power over that kind of thing; also food and drug adulterations, and over all combinations of capital for the regulation of prices of products and transportation. Such control would do much to eliminate the feeling from the farming classes that they are abused; that every man's hand is against them. It would help them to realize that their business is a business; that it is a profession—one to be mastered, one to be thoroughly understood, and one to be proud of, sure in its returns when understood, and sure to be a failure when it is not understood. I think it would go a great ways also in getting rid of this feeling that they must be sustained from the outside by favorable legislation, politics, etc.

Q. Do farmers, as a rule, look very much to tariff for relief?—A. Many of them do, but I do not know as it would be legitimate to enter upon the tariff question here. I am a Republican, and I believe in a moderate tariff, but as a practical sheep man, 21 years in the business, I think if the word tariff had never been in existence our sheep industry would be better off. At the same time many of our people believe that it is necessary to have a tariff put on wool before sheep will pay, and will come to me and offer \$4, \$5, or \$6 for sheep with a tariff on that they would not pay \$2 for if there were no tariff. There is so much feeling of this kind that they slaughter the flocks off every time the tariff is reduced and ruin the market for mutton, and then rush back into the business when a little tariff goes on, till they overdo it. In this way indirectly the tariff has been the cause of harm to us.

Q. Your complaint is in the change of the tariff and not in the tariff itself?—A. Yes. If we could have a moderate tariff and have it permanent it would help the sheep man, but fluctuating it is a detriment to him.

Q. (By Mr. CLARKE.) How can you say they overdo it when the production of wool in this country is still very far short of the domestic demand for wool?—A. We have to get rid of the body of the sheep as well as the wool. If we could double up the amount of wool on each sheep, we could still get around that all right; but we get only about 7 pounds of wool to 100 pounds of mutton, and when we overdo it the 100 pounds of mutton feels it, and when that fails us the 7 pounds of wool will not save us whatever its price.

Q. Is not the market for mutton increasing?—A. Yes; we are getting better prices on the average, but every time the tariff goes off a little bit so many sheep are rushed on the market that mutton men are almost ruined.

Q. Is not the moral of that situation to keep the tariff on, so the sheep will not be slaughtered?—A. Yes; if you will keep it on moderately and not get it so high a majority of the people won't let us keep it on—and then give us a dose of free trade. A moderate tariff seems to me the only safe tariff.

Q. Do you know about the decline of flocks during the free-wool tariff?—A. Oh, yes; our flocks went down enormously and our profits with them. We made

hardly anything during that time, for two reasons. If people who had sheep had not rushed them on the market and dumped the market, we would have been all right. When wool went down we could stand that, but when the mutton market went down, too, and we could sell neither mutton nor wool we had to suffer unnecessarily. Rushing sheep into the market was what ruined it.

Q. Since the enactment of the Dingley tariff there has been some increase in the flocks has there not?—A. Yes; a material increase.

Q. And a fair price for both mutton and wool?—A. A fair price for both up to now. Wool is pretty heavy now to get rid of. It is fully 5 cents lower than a year ago with no change in the tariff.

Q. Do you know what makes it heavy now?—A. I think the holders depend too much on the tariff, and enormous quantities of wool were bought at a higher figure than the situation would warrant. They got this in expectation of getting big figures, but they could not hold it. They are now throwing it on the market and it is depressing prices. Then we have increased our flocks some, and wool is lower all over the world.

Q. Do you know what the importations of wool were during the last fiscal year?—A. No, I do not; but they were a good deal less than formerly.

Q. Do you know whether or not the conditions of which you speak in Dakota have arisen among the wool men throughout the Mississippi or trans-Mississippi region?—A. To some extent; but we can raise sheep so much more cheaply than you can in some places that I do not know that it would be a fair comparison for the whole country.

Q. I understand you to say you were raised in New England?—A. Yes.

Q. What part?—A. I was raised in Kennebec County, Me., but did not grow up there, and I know nothing about their agriculture or stock raising other than from what I have read.

Q. You do not feel competent to speak concerning conditions of sheep husbandry in New England?—A. Not to any extent. I am aware of some things transpiring there, but not from personal observation. I know they are restocking some of the worn-out lands with sheep, and with success.

Q. Is there much cattle raising in your part of South Dakota?—A. Yes; cattle are increasing rather faster than sheep.

Q. Is that industry profitable?—A. It is profitable; more so than anything else, unless it be sheep.

Q. Do you think the farmers realize anything from the duty on hides?—A. I think it helps them materially just now.

Q. They would be loath to have it repealed, then?—A. I think they would, and there is not a sheep man in my State but prefers to have the tariff on wool. It is the uncertainty of the thing that hurts his business so.

Q. They think they get a better price on wool for the tariff?—A. They think so.

Q. Do you think so?—A. I think we have had more money for the wool than we would have had without the tariff, but I am looking for the reaction which has always followed so certainly. I think the agitation of the matter does us harm in the end, or in the long run rather. This same reaction comes to over-encourage mill and factory building.

Q. Do you think there is danger of a reaction unless the tariff is reduced?—A. No material one. There is going to be a little reaction, however, from overprices paid by speculators largely. They bought too much wool at too big a price, and held it, and are now shoving it on the market. Wool has fallen 4 to 5 cents a pound since a year ago, and in my judgment will go lower.

Q. The testimony of wool experts given to this commission is to the effect that at the present rate of increase in the flocks it will still be more than 20 years before we shall grow the wool that we consume.—A. I believe it.

Q. That being the case, would it not seem to you that if the tariff question remained about as it is there would be a good steady price for wool?—A. Yes; there will not be any big prices. We will have to take lower prices than we have taken for the last 8 years, but if we could be assured of a steady tariff, we would not ask for anything better in the sheep business. It is the uncertainties which I refer to as the great drawback to us, and which, it seems to me, nearly or quite offset all the advantages a tariff can bring us.

Q. (By Mr. FARQUHAR.) What was the condition of the sheep business 7 or 8 years ago, when the tariff was changed, in Kansas and southern Nebraska and Colorado? Can you recollect?—A. Just before we had it put on again it was thoroughly demoralized.

Q. Do you know anything about the prices paid in Kansas City then for sheep?—A. No; not in the market. I know something about what we got for ours shipped to Chicago. It was this rush and slump I referred to before as being the outgrowth of a fluctuating tariff.

Q. Do you think a return of better times and the increase in your sheep raising is equal to the normal increase that there would have been if there had been no change in the first wool tariff?—A. No; I think the tariff has helped the sheep man some.

Q. Is it only the refrigerator car in transportation that gives you the advantage of marketing your mutton at wider points than you did 10 years ago?—A. No.

Q. Is there any means of curing or keeping mutton so that it will carry farther and reach a market fresher than 10 or 12 years ago?—A. Oh, yes.

Q. Will you describe to the commission that feature of it, the advantage that mutton now has of reaching a farther market than a few years ago?—A. In the first place we have more rapid transit. Twelve years ago we could not get a sheep to Chicago as we can now. It took one-third more time than to-day from where I live. We have better facilities, better cars, better facilities across the ocean; and we are raising better sheep. We get them ready for the block now and they are taken, many of them, for export. Many sheep go from St. Paul for export where formerly we did not sell one. The refrigerator business that you spoke of is confined more to South American and Venezuelan and Australian flocks. It has seemed to us that if these refrigerator cars had not been invented our American mutton would get across any way and we could get better prices than we do now.

Q. Ten or 12 years ago you had nothing more than a local demand?—A. No.

Q. Now you have a world demand?—A. Yes.

Q. Is there not an increased public taste for mutton?—A. We feel that is one of the good results of free wool. Sheep were sold, in the blind rush out of sheep, so cheaply that everybody ate mutton. The public then acquired a taste for mutton and they can not get over it. It is about the only way free wool did help us.

Q. (By Mr. A. L. HARRIS.) There is one further question I would ask. What remedy have you to suggest for this elevator combine that you speak of?—A. If I could, I would make it a crime to do that kind of business and make the punishment so quick and so severe that it would not be done a second time.

Q. A law of the State or of Congress?—A. Congress every time. As to State legislatures, I have been a member of them two or three times, and I have not a very high regard for what they can do.

Q. (By Mr. A. L. HARRIS.) Under what authority would you invoke the aid of Congress under the Constitution?—A. It is possible that we can not; but it seems as though we ought to be able to do it. If in any way you can get them to take their hands off and let us build our own elevators they can go on combining. If we could build our own elevators and run them, and have an equal show in shipping, I think we could regulate this combine business.

Q. Will the railroads give you equal facilities with the line elevators?—A. We try to think they would. Shippers can give you more information on this than I can. They have always used me "fair and square."

Q. Could not your State railroad and warehouse commission be made effective if there was properly executed a good law?—A. I think they might possibly.

Q. Could your railroad commission do more than it is doing in giving you relief?—A. Possibly, and I think they have tried hard in a good many instances; but for some reason there is so much change in the laws, so many crooks and turns, so many deferred trials that we do not get very quick action or very good results.

Q. Is this complaint you speak of confined to your State?—A. Oh, no; that is the feeling all over—wherever they have control.

Q. Do you find that condition in Minnesota?—A. Yes; excepting where they have grist mills, or local buyers, or other means with which to handle their own business. Wherever those conditions exist they do not feel it and do not say much about it.

Q. Is there anything you have not touched upon?—A. I do not suppose it is possible to help us any in the line of enlarging the field of our experiment stations, making the distribution of the funds more elastic, or anything of that description?

Q. (By Mr. CLARKE.) Now, that that subject is up, I would like to say that I do not quite understand the way the Secretary of Agriculture apportioned that fund for experiment stations. Is it done according to the needs of the State?—A. It does not seem to be; but I do not quite understand myself what influences him. My impression was, from what he said, that the laws regulating such matters are so that he could not do differently; still, he said, that it would open up such a wide demand, should he change the ruling in such things, that he had to hold back on that account. I take it that a ruling has long applied to these funds, which confines them to the single station.

Q. If the law is in the way we could recommend Congress to change the law?—A. Yes; I thought of that, of course, in connection with my suggestion; but I am

not positive of this—I am under the impression only that in some way the Secretary is bound in the matter.

Q. Now, if there are any points or things which occur to you, not yet touched upon, affecting the general welfare and agriculture of the Northwest, with which you are personally acquainted, will you kindly go over them in your own way.

In response to this invitation the witness made the following written statement:

DECLINE IN VALUE OF LANDS EAST.

First, our Western prairies were free from stones and stumps. For this reason, and because of business openings, the people got into the habit of coming west, and they can't stop. Again, all go west for less inducements than they will go east. This seems to be an instinct. The hop vine will not go around the pole from west to east, and can't be made to. Neither will men. The only race that ever tried it on a large scale is the Chinaman, and Uncle Sam stepped in and helped nature out. If the Chinaman had come from the east through Boston and New York, no one would have stopped him. Careless farming made many Eastern farms poor, and the young men preferred to go onto rich lands rather than making poor ones rich. But land will go higher east soon, and stay high.

RURAL DELIVERY.

Rural delivery is going to prove one of the greatest blessings and educators ever brought to the back-country farmer. Its value can not be overestimated. It not only helps to make more contented those already on the lands, but it enables a most excellent class from our towns and cities to make permanent homes in the country who would never think of doing so without regular mail. As an educator, and as an inducement to make landed homes, the Government could well afford all its costs.

POSTAL SAVINGS.

Next to rural delivery, for downright cost value to the common people nothing surpasses the possibilities of postal savings banks. This means much more than the well-to-do can ever know. I have seen many a man working with me in lumber and other camps, on railroads and on large farms, who could not be induced to save or lay up a dollar, because they knew of no safe way of keeping it in small amounts. I have urged not a few young men who were spending every cent they earned in "good times" to lay by a little of it, who promptly showed me accounts with "busted" banks, and swore they would not try again, and kept their word. Nothing could help the common wage-earner more than well-established postal savings banks. I believe this from what I have seen of it.

FIGHT FOR THE FORESTS.

In traveling extensively over the timber sections of the Northwest, particularly northern Wisconsin and Minnesota, as surveyor, lumberman, and riverman, and later institute worker in the newer sections, I have been deeply impressed with the importance of doing something to preserve the young second-growth evergreens, and as much as possible of the evergreen forests now standing. Only a few years ago there were whole counties of pine and hemlock at the head waters of the Mississippi and its tributaries. Under these dark, dense evergreens were deep mosses from 6 inches to a foot deep. I have seen snow and ice in this moss in densely shaded places as late as the middle of June. The snows melt slowly here, and it took months for them to ooze through the moss and deep-surface loams. Millions did not have to be spent there to ward off floods far down the streams. Nor did the streams nearly dry up as they do now. Vast regions thus protected have been stripped of the pine and hemlock, and then these slashings burned over, moss and surface soil often going too, till now one hot March day sends a winter's snow rushing into overflowing streams.

By all means great parks of these evergreens, particularly at the heads of great rivers and on poor nonagricultural lands, should be preserved. Thousands spent this way by Congress will save millions later building dikes to save the country along the Lower Mississippi and then they can't save it. Besides this stripping of the great evergreen forests is showing desert conditions farther east from the mountains every year. On the banks of every lake and stream are proofs of this. The greatest, most blessed thing Congress can do for the nation to-day is to quickly set aside immense parks at the heads of all our great streams to once more hold the snow. It is a dangerous thing to throw nature out of balance.

OLEO.

In my judgment, no very severe oleomargarine law can ever be enforced. It should be made however to sail under its own colors just as drugs and other foods should. We doubt if more stringent laws can ever be kept on the statutes. Many prefer oleo properly made, as it is it possible to have it much cleaner than butter, the milk for which has been drawn and cared for by every kind of a milker, from the cleanliest to a Comanche or a Zulu. It is hard to get clean milk in mixed countries.

(Testimony closed.)

WASHINGTON, D. C., June 11, 1901.

TESTIMONY OF MR. A. H. NAFTZGER,

President and General Manager Southern California Fruit Exchange.

The commission met at 11.02 a. m., Mr. Phillips presiding. At that time Mr. A. H. Naftzger was introduced as a witness, and, being first duly sworn, testified as follows:

Q. (By Mr. A. L. HARRIS.) You may state your full name, post-office address, and your occupation.—A. A. H. Naftzger, Los Angeles, Cal. I am president and general manager of the Southern California Fruit Exchange.

Q. How long have you occupied that position?—A. About 5 years.

Q. How long have you been a resident of the State of California?—A. Sixteen years.

Q. What field does the fruit exchange cover?—A. The Southern California Fruit Exchange is a cooperative organization of fruit growers, engaged in marketing the products of the orchards owned and controlled by its members. It handles or markets only oranges and lemons. I might say citrus fruits, to make the statement more accurate, because it includes grape fruit; but our business is particularly confined to oranges and lemons.

Q. You might outline a little further your mode of operating.—A. The organization is a voluntary association of citrus fruit growers solely for the purpose of marketing their products. It has nothing to do with growing, but confines itself to the purchase of necessary supplies for packing and to the business of shipping and selling. The business is wholly under the control of the growers themselves, and the fruit is marketed for all members alike on a level basis of cost, no profits arising to anybody connected with the organization except salaries to its employees, and the better prices to be obtained for the growers.

Q. You say it is a voluntary association. Do you mean by that it has not been incorporated?—A. It is incorporated; but the Southern California Fruit Exchange itself is a very limited corporation. It consists in fact of 11 members, all of whom are directors. These 11 directors are selected by what we term district exchanges, and having been nominated by these district exchanges, they are elected members of the board of directors, and that organization is purely a marketing agency for these local or district exchanges. In the various sections that grow citrus fruits extensively, we have organizations usually incorporated with a nominal capital stock. In some instances they are incorporated under the cooperative law, but in most instances are regular statutory corporations. When I say the organization is voluntary, I mean that it is so organized that any member may withdraw. If he is a stockholder of course he can sell his stock, or, even without selling his stock, he may withdraw his fruit at some time during any year, usually at the close of the marketing season. He is bound in a contract to the organization to leave his fruit of any one season under the control of the organization to be marketed entirely under the direction and at the instance of the organization itself. In other words, he puts his fruit for the time being or for the season beyond his control.

Q. (By Mr. LITCHMAN.) The object of that?—A. The object primarily was to avoid the disasters of the commission system. Prior to the organization of the exchange, fruit was to a limited extent sold f. o. b. California, either at the packing house or at the orchards; but in a very large number of cases was consigned to commission houses in various cities of the country to be sold on commission for account of the shipper. This proved disastrous to California citrus fruit growers, because of our very long distances from markets and the consequent contingencies that intervene in the way of decay and the impossibility of know-

ing much of anything that was going on in the markets, etc. The organization was perfected for the purpose of taking out of the hands of the middlemen the marketing of the product, and to establish an independent system to take the place of the middlemen, under the absolute control of the growers themselves. This was done chiefly through the establishment of our own selling agencies in the chief markets of the country, where we sell our goods direct to the jobbing or wholesale trade.

Q. (By Mr. A. L. HARRIS.) Have you been able, since your organization, to avoid overproduction or gluts of certain markets?—A. Only to a limited extent. In proportion, of course, as we are able to control the product at that end of the line, we are able to regulate its distribution in the markets. But our association began with about 25 per cent of the crop and we now have 50 per cent. Of course, while there is 50 per cent beyond our control, we are not able absolutely or even approximately to control the distribution, although we are able very largely to regulate it. Being ourselves the heaviest shippers and being able to put a liberal supply at any time into any market, we can exercise a very powerful influence over the conditions in that market; and in proportion as we are getting a larger control of the product we are able more largely to control the fruit distribution.

Q. Do you approach in any way the ordinary features of a trust?—A. No. In the first place, we do not attempt to control the production in any sense whatever. We have absolutely nothing to do with production. Our members have, of course, but as an organization we have nothing to do with the question of how many orchards shall be planted or where. In the next place, we do not attempt to regulate prices—I mean to fix prices. We do attempt to regulate them to a certain extent incidentally. Our business is to try to get the best prices obtainable, but we do not attempt to arbitrarily fix prices. In fact, we have no f. o. b. California prices at all. Our goods are forwarded to our own agents in the different markets consigned to ourselves. We have our own offices in most of the important cities of the United States and we forward the goods to our own order. Upon arrival they are offered by our agent to the trade in the regular course of business and at the best price obtainable.

Q. Do the distributors sell on commission or on salaries?—A. They are usually salaried men. In some auction markets we pay a commission because that is the auction charge; but in almost all cases the salesmen are our salaried agents who have no other employment except for us. In a few instances we sell through brokers, where the market is not large enough to justify a salary and the consequent expenses of an agency. There we use the broker, allowing him the usual 5 cents per box for selling; but that applies, I think, to only 3 or 4 markets in the United States. We have some twenty-odd salaried offices in the principal cities.

Q. (By Representative LIVINGSTON.) You have an organization?—A. Yes.

Q. Then, I understand you to say you have your agents in all the principal cities?—A. Yes.

Q. And still you say you are not a trust?—A. I endeavored to explain why I did not consider we were a trust.

Q. Can the independent producer in California reach the markets of those cities where you have your agents in any other way except through you?—A. Yes.

Q. How?—A. Through the commission man, and through his own agents if he chooses to establish them.

Q. Through his commission agent?—A. Yes; or consign his goods if he prefers.

Q. You would not recommend any man to raise fruit to sell through commission houses?—A. I would not.

Q. That is practically out of the way, then. Now, how can that independent producer reach the markets of Washington, say?—A. A number of them use their own brokers in the city of Washington. They may sell through them in carloads by paying him the usual brokerage. I am not certain but 1 or 2 of them have salaried men here. I can not say positively.

Q. What advantage, then, have you over the independent producer? What arrangement have you with the railroads between here and California?—A. None other than anybody else can get.

Q. I asked what arrangement you had.—A. None whatever, except to pay the rate and make our shipments under the traffic arrangements established by the carriers.

Q. You get a rebate?—A. None whatever. We did at one period; so did every body else.

Q. Who belongs to your association?—A. None but growers of citrus fruits, oranges, lemons, and grape fruit.

Q. It does not include vegetables?—A. No vegetables. No deciduous fruits; no dried fruits. Perhaps I ought to say that some of our agents do, under our direction, sell some dried fruit and some green fruits for other similar cooperative

associations of growers; but the business is not under our control in California. The fruit is sold through our agents, for which we make a charge.

Q. Then, what advantage has your association in California?—A. The advantages that accrue to the producer are that we get our fruits sold at better average prices, and sustain smaller losses than under the commission system.

Q. Is that chiefly due to the fact that you have reliable agents in the towns?—A. Entirely so.

Q. (By Mr. LITCHMAN.) What portion of the traffic does your association cover?—A. About 50 per cent of the citrus fruits.

Q. Is there any objection to other fruit growers joining your association?—A. None whatever. They join as rapidly as they conclude it is to their interest to do so, and they are steadily joining.

Q. Do you encourage them joining?—A. We do.

Q. (By Representative LIVINGSTON.) I do not understand how it is that with such an association back of you you get no reduction in freights. Have you made application?—A. Yes. When I tell you that the initial carriers, the two railroads operating in California, divide the business between themselves and parcel it out to their connections you will perhaps understand why it is impossible for us to obtain anything in the shape of a reduced rate. There was a time in the history of the California business when almost every commodity had its special privilege or rebate in some form. But under the existing order of things, by reason of the arrangements between the carriers, the rate is firm.

Q. Can you charter a car?—A. No; we can load a car with its minimum load of 26,000 pounds and pay \$1.25 per hundred for it.

Q. (By Mr. KENNEDY.) I would like to know whether you consider the arrangement which now prevails, by which all shippers, great and small, receive exactly the same rates from the railroads, as more desirable than the old system under which rebates were given to different shippers?—A. I believe that a steady rate, one rate, is right. While I quite understand that an association as large as ours is very likely to get special benefits under shifting rates, I believe that in the interest of our industry, as well as of good morals, the steady rate is desirable.

Q. You pay the same rate per carload that independent shippers would have to pay, and still you have an advantage over them in that you avoid the commissions and make great savings on account of the system which you have?—A. Yes. There was another evil of the flexible rate. The rate was usually made, or the rebate usually obtained, through a private car line, several of which were operating in that traffic. Speculators, whose sole hope of reward was in the rebate on the car, dipped into the traffic. They would go to the producer and obtain from him, or make with him, a contract for handling his crop on the best terms possible—the best to the shipper usually—and proceed to farm that crop out to the carriers solely for the benefit of the speculator or middleman. The producer was none the better off for that rebate, and usually his crop was very poorly handled. The whole thing was extremely demoralizing to the business. It put the business into the hands of people who really had no right to be there, and who were not prepared to handle the business properly. They were what we called pirates in the business. The establishment of a steady rate eliminates that feature and puts that class of speculators out of the business. I do not, of course, pretend to include all independent shippers in that category.

Q. (By Mr. A. L. HARRIS.) You spoke of two railroads doing your carrying business. What two railroads?—A. The Atchison, Topeka and Santa Fe and the Southern Pacific are the two lines that operate as initial carriers in southern California.

Q. Do the same rates and same classification obtain on both roads?—A. Yes; the same rate. We have a postage-stamp rate on our goods—that is, the same rate prevails at all points east of the mountains on citrus fruits; not on other classes.

Q. (By Mr. LITCHMAN.) Your goods are classed as perishable and have to be expedited in transportation?—A. Yes.

Q. (By Mr. A. L. HARRIS.) What was the condition of your fruit industry before your organization?—A. The fruit was handled in a haphazard manner, largely through commission men. It was sent thousands of miles away to be sold, very largely for the account of the grower, and the method resulted in disaster. Occasionally good prices were obtained, but in very many cases the grower came out in debt; and that sometimes still happens with the grower who enters into a contract with a commission firm. The grower, guaranteeing all charges, including the freight charge, frequently came out in debt, so that he not only lost the entire crop, but was obliged to pay something additional for the charges covering the transaction. It was to avoid contingencies of that kind that we formed this cooperative association. Values were depreciated. The fruit-growing industry

was in a very bad way in every particular, although it was young and the product was very much less than it is at present.

Q. What is the condition of the industry now?—A. The industry is in a healthy and sound condition. It has its fluctuations, like a business in any other perishable product—all agricultural products for that matter—but is in a sound condition.

Q. (By Mr. LITCHMAN.) Does your association take into consideration the perfection of the fruit or the development of special kinds of fruit?—A. No; not as an association. Of course, through the association every sort of information is given to the growers as to what is desirable in the markets, what classes of fruit, what character of package and the manner of handling, and all that sort of thing; and therefore to a certain extent influences are brought to bear on them to do good work.

Q. How long has your organization been in existence?—A. We incorporated in 1895. Previously we had had a sort of compact among growers for a period of 2 years, during which time we operated in the manner known as selling f. o. b. California. At least we attempted to so operate, but with very poor success; and in 1895 incorporated our present corporation and established our own agencies to sell the fruit delivered, as we term it.

Q. How long has the navel orange been developed?—A. The navel orange was first propagated in California in the early seventies, and the product has been increasing steadily ever since. None were marketed to speak of until the middle of the eighties. In 1884 and 1885 the business began practically to assume importance.

Q. Are you sufficiently familiar with the fruit to explain briefly the method by which that orange was developed?—A. No. The first trees were brought by the Department here from Bahia, I think, and sent to Riverside to be planted; and from that beginning the entire navel orange business has been developed. But the manner of its propagation, in the first instance, I am not familiar with.

Q. Are there not now being carried on experiments to try to produce a lemon similar to the navel orange?—A. To a large extent our lemons produced in California are seedless, and that is the particular distinguishing characteristic of the navel orange. A very large proportion of our lemons are seedless. We also have other seedless oranges.

Q. (By Mr. A. L. HARRIS.) What is the capital stock of your exchange?—A. Our exchange is organized with the nominal capital stock of \$10,000. We have no capital stock paid up—no capital paid up except what we have in office furniture and fixtures in our different offices, amounting to a few thousand dollars. We have no reason to require any capital. We buy nothing except packing materials for the local exchanges who pay for them on delivery. We buy for everybody in large quantities, but we have no use for capital. At the end of the month we call upon these local exchanges to pay in what we estimate will be necessary for the current expenses of the month, and those accounts are adjusted at the end of the season, so that all fruit is assessed alike for these expenses, and all at the cost of operating.

Q. Is there another organization in the State of California that deals in prunes and raisins?—A. Yes; two of them. There is what is known as the Cured Fruit Association, which devotes itself chiefly to prunes, although I think they handle some dried peaches and other dried fruits. There is also what is known as the Raisin Growers' Association, which devotes itself entirely to raisins. Their organizations are cooperative, but they differ from ours.

Q. Could you state to the commission the difference?—A. They differ in this particular, that they undertake to establish a price f. o. b. California for their products. It is an arbitrary price fixed by the association at which the product is to be sold. In other respects they are similar to ours—purely cooperative.

Q. What was the condition of the prune trade and raisin trade previous to the organization of these two companies?—A. They were both in very bad condition, very bad indeed.

Q. What is the condition of these industries at the present time?—A. The raisin association, having operated some 3 years under its present form, has done a very good business. They are not without some troubles of their own, but have demonstrated that organization is a good thing. The prune association has had very great difficulty. They began their operation this last year, and the product was very large. There was also a large product in Oregon which they did not control, and rather a large quantity outside of the association, and the establishment of prices f. o. b. California enabled the outside holders to shade the association price and market their product, while the association held a very large proportion of its product. I think it is fair for me to say to the commission that I personally do not regard the attempt to fix an f. o. b. price as practicable, and I think it is

the source of the difficulties that both of those associations have had, it being our impression that we must market these products at whatever price the consumers will pay. We must find out what that is and market the fruits anyway, if not at one price, at some other, and we can only do that by putting them into the market to be distributed through the distributing channels now in existence at the best price obtainable in competition with other products.

Q. Has your association increased the average price of citrus fruits to the consumer?—A. I doubt whether the effect of our association has been at all to increase the price to the consumer. We did not organize with that end in view. We never contemplated that we should increase the price to the consumer, but our object was to save the losses and lessen the expenses between ourselves and the consumer in the handling, and of course to create a wider distribution and consumption of the product. We are obliged, of course, from year to year, to sell our fruit at lower prices. With the increase of the product the level of prices goes lower from year to year.

Q. (By Mr. FARQUHAR.) Have you any market for California fruits in the Asiatic countries?—A. Not to speak of. There is opening a limited market.

Q. Have you in any other of the coast States—Washington or Oregon—a market for your California fruit?—A. Yes; we market at all points in the United States and quite a quantity in Europe.

Q. Do you find a market in Washington and Oregon?—A. Yes; we market quite a quantity of citrus fruits there.

Q. Have you any prospects at all for Asiatic trade for your fruits?—A. Yes.

Q. Have you made an attempt to make a market in the Asiatic countries?—A. Yes; but citrus fruits not extensively. There are some efforts to make a market at Asiatic points. The difficulty in operating there is the long sea voyage. Our fruits don't stand the long voyage as well as the Mediterranean fruits.

Q. Do you can any of your fruits?—A. There are vast quantities of canned fruits going to the Asiatic countries. I had reference more particularly to citrus fruits.

Q. The whole market?—A. Yes; there is a large quantity of California fruits going to the Asiatic market.

Q. During the Boer war have you found a market in South Africa for any of your canned fruits?—A. Without referring to the report of the State board of trade, I should not be able to answer that question.

Q. How extensive are your canneries in California? How much of the product do the canneries take up? The Asiatic trade in fruits, canned and otherwise?—A. The exports of fruits of all classes including canned fruits from Pacific coast ports to foreign countries for the fiscal year ending June 30, 1898, show an exportation of \$1,721,000 worth, but I have not with me the figures showing to what countries these exports were made. I am, therefore, unable to say how extensive our Asiatic trade in fruits is. The total Pacific coast exports of all classes of merchandise to Asiatic countries for the fiscal year ending June 30, 1898, was nearly \$17,000,000, a gain of over 400 per cent in 5 years.

About 10 per cent of our shipments of fruits out of the State are canned fruits. There are about 50,000 carloads per annum shipped out of the State of green citrus, dried and canned fruits, of which about 5,000 carloads are canned. It is impossible for me to say what proportion of the green product those canneries consume, as I am not an expert in canning, and I am, therefore, not able to say what the loss is.

Q. Would the enlargement in the establishment of your canneries also enlarge the possibilities of the marketing of canned instead of being dependent on the green fruit in market?—A. I should say they would; yes.

Q. Is there any Australian market that you know of?—A. I think none except in canned and dried fruits. The transportation rates are against us.

Q. One of the defects you have in the Asiatic trade is the lack of tonnage transportation?—A. Well, we can get to Japan and China, but we can't get to the South Sea countries because the freight rate is against us as compared with the freight rates from England.

Q. Do you know whether there is any market for your goods, canned or otherwise, in Alaska?—A. Yes; there is quite an extensive market. A considerable quantity of our green fruits, especially citrus fruits, is shipped to Alaska. Of course it is not a large quantity, but there is a large canned and dried fruit business in Alaska.

Q. Have you sufficient coastwise transportation for those markets?—A. Yes.

Q. (By Mr. A. L. HARRIS.) You have a topical plan that you expect to follow. You may take up the topics seriatim and discuss them if you wish, and the commission will ask questions as you go along.—A. The first item here is the peculiar conditions on the Pacific coast. We are large producers of cereals, but our chief

industry probably is not staples, after all. Ours is a semitropical country, and we produce so large a variety of fruits that the agricultural and even the horticultural conditions that prevail usually are not applicable to the Pacific coast. The climatic conditions of the Pacific coast are such, as I have already noted, that we produce almost everything. I think I perhaps might say that commercially we produce practically everything except the purely tropical products, so that the conditions that apply as to labor, wages, and questions of that kind, including transportation to other portions of the United States, are not entirely applicable to ours. The Pacific coast, as you are, no doubt, aware, is not a manufacturing country. There is a considerable amount of manufacturing at certain points, as, for instance, in San Francisco, but the whole coast is dependent more upon its minerals, its agricultural and horticultural products, and lumbering than it is upon manufacturing.

Q. (By Mr. LITCHMAN.) Is the manufacturing industry retarded by lack of transportation facilities?—A. Yes. Perhaps I should say by the condition of the freight rates more than the lack of carrying facilities.

Q. Then the fact that you have a comparatively limited amount of manufacturing on the coast is due to other causes than necessity for their existence?—A. Yes; because we are heavy importers. In proportion to our population we are perhaps as heavy importers as any country in the world.

Q. (By Mr. KENNEDY.) Is it an even thing, the exchange of manufactured goods of other sections with your California products?—A. Only within the last 3 or 4 years have our exports exceeded our imports. I think the last 1 or 2 years we have gained very materially, so that our exports have exceeded our imports by nearly 50 per cent. Within the last 3 or 4 years that has been the case, the first time in the history of the Pacific coast. Now, I speak particularly of California as to the volume of the business, but I think the same remark would be applicable to the country north of us.

Q. So, then, you are not in any unenviable condition for lack of manufactures in your State?—A. No. Of course if we were in a situation to produce these things ourselves we would save a big freight bill.

Q. All the grist would come to your mill, and nothing would go away?—A. Largely that would be offset because of the fact that considerable proportion of the raw material would have to be imported anyway, as we do not produce all the necessary raw materials.

Now, as to fruit growing in particular: This industry has grown in the past 10 years to very large proportions. I think I can give you some figures on that. The fruit business, including the product of our vegetable farms and vineyards, has increased about 400 per cent in 10 years. We exported, as I think I said before, about 50,000 carloads of fruits during the year 1900. That was exclusive of about 3,500 carloads of vegetables and probably 7,500 carloads of wines and brandies. These are rail shipments. The sea shipments of fruits and nuts amount to about 3,000 carloads, with a small shipment of the other products that I have named, but comparatively light.

Q. (By Mr. A. L. HARRIS.) You spoke a moment ago of the cereal industry not being developed so rapidly. Could you state what the production is at the present time?—A. Yes, sir. The California wheat crop in the year 1900 was a little over 973,000 tons. I am not sure that I have the other cereals excepting barley. The others are comparatively small, the wheat being the chief cereal. The exports of barley from California in 1900 were 212,000 tons.

Q. (By Mr. PHILLIPS.) You do not raise much corn?—A. Very little corn, so little as not to be counted.

Q. You do not consider your climate well adapted?—A. It is not; no, sir. We have our wet and dry season, and our dry season is the winter and spring when the wheat is growing. The summer is too dry for corn. There are no rains to make a corn crop. There are limited areas of moist lands in certain portions of the State that will produce corn. They are near enough to the water level to produce it in limited quantities. The other portions of the Pacific coast farther north produce quite a quantity of corn, because they have a longer rainy season. Oregon and Washington both produce a considerable quantity of corn, although it is not primarily an important product.

Q. (By Mr. A. L. HARRIS.) Have you any grazing industry in California?—A. Oh, yes; extensive. Our stock interests are quite large, including cattle and sheep and horses. The wool product of the year 1900 was estimated at 27,500,000 pounds. We also have somewhat extensive beet-sugar industries on the Pacific coast, particularly in California. I am not sure that there are any beet-sugar factories outside of California on the coast except in the mountain country.

Q. Can you give the volume of the product of beet sugar?—A. Yes. Beet sugar in 1900 was 30,000 tons; in the year before it was 42,000 tons. The crop

was nearly a failure last year in southern California where there are 2 large factories, by reason of the drought. The beets are grown in moist lands.

Q. Does that mean refined sugar for the market?—A. Yes; refined sugar.

Q. Is it a profitable industry?—A. I think it is regarded as profitable. The farmers who have been engaged in beet raising, I think, with the exception of the dry season, have had uniformly profitable results.

Q. (By Mr. FARQUHAR.) Can it compete with Hawaiian sugar?—A. It does.

Q. Is your beet sugar pretty much for the home market, or do you send it East?—A. A good deal is shipped out.

Q. (By Mr. A. L. HARRIS.) Will you please state the firms operating in the beet-sugar business?—A. There are, I think, 6 or 7 factories in California. There are the Chino and Oxnard establishments, both operated by the Oxnard company; the Alamitos, owned by Senator W. A. Clark; the others, the Watsonville, Spreckels, Alvarado, and perhaps Crockett are, I think, all owned by Spreckels. I am not positive of that, however. They are farther north and I am not so familiar with them.

Q. Is there a sugar combination in your State?—A. I do not know; I am inclined to think there is, but I am not prepared to say advisedly that there is.

Q. You spoke of nuts a moment ago. What is the extent of that industry?—A. About 700 carloads last year of about 12 tons to the carload. They are chiefly English walnuts, although there are some almonds. That industry is growing quite rapidly. The product is increasing; it is a very profitable one.

The WITNESS. I have a topic here, "The cost of land," following the suggestion, I think, in the topical plan your commission sent me. Probably nowhere else on the continent are the prices of land so variable or divergent as they are in California. They run from very low to very high. We have, of course, a vast area of mountain lands, broken and hilly, and also a large area of desert lands that are practically worthless and on vast areas of which there is no price whatever. From that, of course, it ranges up through the grazing lands to the highest priced fruit lands.

Q. (By Mr. PHILLIPS.) Can there be sufficient water obtained to irrigate those arid lands to any considerable extent?—A. Yes; I should say that there can be. By extensive dams and reservoirs large portions of them can be irrigated, but probably never anything like all of the land or even approximately all of it.

Q. (By Mr. A. L. HARRIS.) Where is the title of this mountainous land and hilly land?—A. Much of it is in the Government of the United States, some of it is railroad land, and some of it school land, two sections in a township being school land. The Southern Pacific Company owns large bodies of land in these deserts and mountains, included in the grant made to promote the building of the road; but the larger proportion of it, I should say, is Government land. Then there are some regions that are covered by Mexican grants which are now in private ownership. Somewhat extensive these are, amounting in some cases to very large districts. Then there are some other very large estates.

Q. (By Mr. PHILLIPS.) Do they pay any considerable tax on these large estates, mountain and desert?—A. The desert lands are valued at a very low rate, extremely low, although I think they are usually taxed in proportion to their value with other property.

Q. (By Mr. A. L. HARRIS.) These large holdings are under the Mexican grants to this Government?—A. Yes; distinctly. Those are being cut up to a considerable extent. Especially where there is water to irrigate them or water obtainable, they are being put into diversified farming, fruit raising, etc., to a considerable extent. Very large areas of these grants, however, are grazing lands. They were originally granted about a pool or a spring, or a stream of water, and the prayer for the grant was to cover so many leagues in this direction and to "a stone" or "a tree" in the other direction and, of course, they swept over the country and took in grazing districts as well as watered lands. Those that have water possible for use for irrigation are generally used for that purpose.

Q. Are these land grants an inheritance on the part of the United States from Mexico?—A. I think entirely so; I so understand.

Q. (By Mr. FARQUHAR.) You say these Mexican claims are being gradually broken up, you think?—A. Yes; where there are waters for use for irrigation they are being broken up.

Q. Are the owners of these Mexican reservations residential owners or are they nonresidents?—A. Oh, they are seldom residents upon the lands. These large grants are usually held by San Francisco people who do not live on them.

Q. Is it a fact that some of these large grants are really hypothecated to rich California people?—A. Oh, yes, oh, yes; they are largely owned now by people who have acquired them by foreclosure and other cheap methods, even cheaper

than that in some instances. The original holders being Mexicans were improvident and really squandered them for riotous living; that is about the way of it.

Q. (By Mr. A. L. HARRIS.) You did not state in dollars and cents the value of the land.—A. Grazing lands are worth from, say, \$2.50 to \$10 per acre. Lands upon which cereals can be grown are worth from \$15 to \$50 per acre. Fruit lands with water are worth \$100 to \$400 per acre, dependent on the extent and reliability of the water system and supply, and upon the nearness to markets, quality of the soil, character of the fruit they will produce, freedom from frost, and things of that kind.

Q. (By Mr. LITCHMAN.) Do you grow any other crop on the ground beneath the fruit trees in the orchard?—A. Not to any extent; no.

Q. (By Mr. FARQUHAR.) Where is your best fruit-growing section in California?—A. That depends on the kind of fruit grown. For instance, probably about the best prune section is the Santa Clara Valley, which runs southward from San Francisco in the region of San Jose. The best raisin district is in the upper San Joaquin Valley about Fresno. The best pear district is on the Sacramento River, between Sacramento and the bay. The best orange and lemon district is south of the Tehachapi Mountains in the southern tier of counties.

Q. (By Mr. LITCHMAN.) In the vicinity of Los Angeles?—A. Yes; but the interior valleys back from the seacoast are really the better districts for citrus fruits. There they are freer from the scale and the effects of sea moisture.

Q. (By Mr. FARQUHAR.) What effect has the California fog upon your fruit growing?—A. It has the effect on the citrus fruits of producing a scale, particularly a black scale, a snout which, although it is a fungus, flourishes particularly in damp weather and in foggy periods. It propagates very rapidly. When the hot summer comes on it almost entirely clears itself. Then, again, it is found that the citrus fruits grown in the interior valleys are somewhat more firm in their keeping qualities; that is, will carry long distances with greater safety.

Q. (By Mr. LITCHMAN.) Will you state the fruit-gathering season?—A. The deciduous fruit is gathered from May to October. They are now beginning actively the green-fruit shipments out of California. The cherries are gone, and peaches, apricots, and plums are now coming forward, particularly the peaches and apricots. The plums and pears and grapes follow right on, the peaches continuing, of course, through to September. The drying of the same class of fruits is going on at the same time. The raisins are cured in September and October. They are made out of the same class or, at least, one of the varieties of grapes which are shipped to market in the green state, although that particular variety is in a rather limited quantity used in the market. The citrus fruits are shipped from November to July chiefly, although some oranges are shipped every month. The lemons are shipped continuously, but chiefly from the 1st of June to the 1st of November.

Q. (By Mr. A. L. HARRIS.) Have you been troubled with insect pests?—A. Yes; we have had a good deal of trouble. First we had the cottony cushion scale; afterwards the red scale, and then this black scale. The black scale is, however, less detrimental to the orange trees than the others. Those are the pests that particularly affect the citrus fruit trees.

Q. (By Mr. KENNEDY.) What is the one they call the San Jose scale?—A. That affects the pears, peaches, plums, and prunes, and that class of fruits. I am not familiar with the San Jose scale particularly, as we are not annoyed with it in southern California. The others affect our citrus fruits. But we have almost or to a large extent gotten rid of the cottony cushion scale, it having been destroyed by the Australian lady bug, which was imported and propagated in California. The only satisfactory protection so far against the red scale is fumigation.

Q. (By Mr. LITCHMAN.) Are oranges and lemons grown in the same orchard?—A. Yes.

Q. No effect from one on the other?—A. None whatever; lemons are slightly more sensitive to cold than oranges, and consequently the aim is to put the lemons on the ground that is as nearly as possible immune from frost. The tree is a little more tender and the fruit a little more sensitive than oranges.

Q. How near the ripened condition is the fruit when picked?—A. Oranges are entirely ripe—that is, except at the beginning of the season we ship some fruit for the holidays that is not ripe, when they simply have some color on them. The demand for the fruit causes it to be sent forward. But from, say, the end of January on, the fruit is ripe, all of it in perfect condition. Lemons are sent forward regardless of color. They are not presumed to be colored. They are presumed to look green when they are picked. They are picked when they are of proper size and are cured to a certain extent before shipment—that is, they are sweated down in a cool place. The green fruits, such as apricots, pears, and prunes, and

that class of fruits, must be picked in a rather immature state. They are not at their best when picked—that is, if for long shipment.

Q. (By Mr. KENNEDY.) Is the Agricultural Department giving you any valuable aid looking toward the extermination of the scales?—A. Yes; the Department has rendered us assistance, although the chief work has been done by our own horticultural commissions established by the State. We have sent men abroad to study the pest destroyers of almost all fruit-growing countries.

Q. (By Mr. A. L. HARRIS.) Is your State law ample for the commission?—A. Yes; we have a very effective State law on the subject of pests and the power of the State to subdue them.

One more word on this question of irrigation. For the growing of citrus fruits irrigation is absolutely indispensable; consequently the question of water and of an irrigation system is of very great importance to that industry. The water itself is the chief element of cost, the land being of small value without the water. Of course the land and water together are of very considerable value.

Q. (By Mr. A. L. HARRIS.) Can you state also whether the irrigating is done by private corporations or by the public?—A. It is done almost entirely by private corporations and individuals.

Q. How do they obtain their right to the water?—A. Chiefly by appropriation. Under the riparian law, the general riparian law with the modifications that are made by the States, the individual who finds a water source or a stream, or has lands upon which he can take it for irrigation, appropriates so much as he may think he requires for his land, and if he proceeds to distribute it and use it, will hold so much as he uses against adverse claimants. It is, in other words, a prior appropriation.

Q. Does that right, then, run with the land?—A. Yes, in some cases. Of course, waters are developed by artesian wells, and the water is sold to individuals and becomes, in some cases, an easement upon the land. Sometimes the lands are sold with the easement running with them. Sometimes they are sold separately. It is a matter in cases of that kind largely of contract.

Q. (By Mr. KENNEDY.) Are artesian wells where the water is impregnated with minerals beneficial or otherwise to the land?—A. The water is seldom detrimental to the soil. Of course, if it should be salty it will not do for irrigation; or if they are strongly impregnated with alkali it is not suitable. But that is seldom the case with artesian water. It is true frequently of surface waters, but true very seldom of the artesian water or the deep waters. They are suitable usually for all crop growing, as well as for domestic purposes.

Q. Are artesian waters being used for irrigating large tracts of land?—A. Yes; there are some quite extensive artesian belts where the water is obtained, where there are flowing wells of large extent. Of course, there is a vast amount of pumping done also. Where the water is abundant below and will not rise to the surface powerful pumps are employed. I think it was estimated that within the last 2 years more than 30,000 inches, miners' inches, of water were developed in southern California by pumping. That, of course, would irrigate a large area.

Q. (By Mr. A. L. HARRIS.) If the Government should inaugurate a general plan of irrigation, would that interfere with the riparian rights already obtained?—A. I hardly think so, because the Government's undertakings would probably be in undeveloped sections and would be more probably in the nature of storage by reservoirs, dams, etc., because the larger proportion of the streams that could be used by individuals or private corporations are already appropriated, although that is not in every instance the case. I hardly think there would be any material conflict anywhere.

Q. Now you may proceed.—A. The labor conditions in California, like the other conditions I have mentioned, are rather peculiar. The crops are coming at all seasons. There is practically no season when the fruit harvesting or the grain harvesting, one or both, are not going forward. Until recently we have had an ample labor supply. A considerable portion of that, of course, is made up of Chinese and Japanese labor employed chiefly in agricultural pursuits of every kind, in fruit gathering and packing. More recently we have had a shortage of labor. The wages are variable, according to the character of the work. Fruit packing is, to a certain extent, skilled—that is, it requires skilled labor. In order to put up fruit in the best shape and in merchantable condition it requires some skill. This work is largely done by girls and women during the fruit-packing season. The farm labor is chiefly by Mexicans and white men.

Q. (By Mr. KENNEDY.) Are the Chinese and Japanese getting into the industry?—A. Only to a limited extent in general farming. They are getting into the fruit growing.

Q. I mean into the fruit growing.—A. Yes; into the fruit growing, especially into the deciduous fruit-growing business and the making of dried fruits. They

are not engaged to any extent to speak of in the citrus fruit growing. In central and northern California they are tenants of very considerable tracts, of a very considerable number of farms and fruit orchards.

Q. How are they viewed as farm laborers and landowners?—A. For fruit growing they are regarded, I think, generally with favor, due in part, I suspect, to the fact that there is but little difficulty in obtaining help of that class, and it is very difficult to obtain any other. The man who has a large fruit ranch, as we call the farms in California, is not obliged when he wants Chinese help to go and hunt men around the street corners and pick them up one by one. He goes to a Chinese labor bureau, or to one of the Six Companies usually, and hires the number of men he wants for a given time and period; that is, to begin with a given date and to continue for so long as he may require.

Q. They show an aptitude in this work?—A. Decidedly. They are the best fruit packers we have. Fruit growers in central California tell me it would be practically impossible for them to harvest their fruit crops without the Chinaman. They can not find other people that will properly do the work.

Q. How do the fruit growers of California view the Chinese exclusion act?—A. I think they are generally in favor of the law as it stands.

Q. Would they be in favor of a continuance of it at the time of the expiration?—A. I think so. Under the present condition of things, I think it is regarded as in the nature of a safety valve.

Q. Do you believe the Chinese and the Japanese would ever be treated on a social equality?—A. Never. They show no inclination, so far as I have ever observed, to desire to be.

Q. They would always be viewed as inferiors socially by the people of California?—A. They are not regarded differently from the Indians or Mexicans of that country in that particular. They have no social status whatever.

Q. Regardless of their value in your industry at the present time, do you believe that it is desirable to our civilization that they should come into this country?—A. I do not.

Q. (By Mr. A. L. HARRIS.) Who receives the pay when these Chinamen are employed?—A. Usually the head man—either the party or the bureau that contracted for their employment or the foreman that they send out. When they go out in squads there is usually some fellow that is the foreman, and he probably gets the pay. Of course, there are many cases in which Chinamen are employed as domestics or employed singly about farms, and they are hired separately.

Q. (By Mr. KENNEDY.) Where they are engaged in that wholesale way and one man is paid the wages for all, do you consider they are in a condition of practical slavery?—A. I do not think so. I think it is a purely voluntary arrangement among themselves. I do not pretend to know how that is, of course, but I do know that the Chinamen so engaged always have money at night or on Saturday to gamble all the night or all Sunday with. They are great gamblers, and they all have money.

Q. Can you say anything about the diet and the cost of living as farm laborers?—A. It is extremely cheap. They live usually for the most part on rice. When they go into the city, of course, they are meat eaters and fish eaters, and particularly pork eaters; but when they are out engaged in contract work or ranch work they invariably feed themselves, and usually rice is the chief article of diet.

Q. (By Mr. FARQUHAR.) Do you know of any Chinese companies there that hire gangs of men and work them?—A. Yes; that is exactly what I have mentioned. The Six Companies are always prepared to contract for any number of men.

Q. In California, your first opposition to the Chinese was political, was it not?—A. I think it was.

Q. What is the present frame of mind in California with respect to this Chinese labor?—A. I think there is comparatively little friction there at present. I think, for the most part, the fruit growers, packers, canners, and people engaged in various other lines, regard the Chinese as almost a necessity, because of the insufficiency of other labor and the indisposition of other people to labor. I have been told by canners that it would be impossible for them to run their canneries without Chinamen, under the existing order of things; they would be harassed continually by strikes and shortage of labor that would make it impossible to get the work done. The people of California like to have it easy; they are not fond of more work than is necessary. I do not mean by that that farmers, ranchers, and fruit growers are not workers, because they are. I mean the class that usually is found to do odd jobs, are unwilling to do much of anything in that country.

Q. If the question could be put to the people of California in a body, do you think they would vote for or against the extension of the Chinese exclusion act?—

A. I think they would be for the extension. I do not believe the people of California or the Pacific coast have any desire for an increase of the Chinese population. I think the vote would be decidedly in favor of the continuance of the exclusion act. They have no disposition, however, to force out of the country those that are there. They are a peaceable people; they are very seldom disturbers of public order.

Q. Have those that have been some time in California ever taken up the form of the family and become permanent settlers?—A. In a few instances only, and they are confined entirely to the cities. The Chinamen that are scattered over the country, in many cases, have become owners of fruit ranches themselves, and are industrious and frugal; but they live alone in a crude manner with no family relations whatever.

Q. (By Mr. KENNEDY.) Have the people of California any dread of leprosy or the bubonic plague and like diseases from these Oriental people?—A. I think not. There is some little dread in San Francisco, it is true, but outside of that city there is practically no fear of that kind.

Q. (By Mr. A. L. HARRIS.) What is the average wage that Chinamen demand?—A. About \$1.25 a day for work in fruit growing and packing and like work. Sometimes the work is done by the package, but, as a rule, the wage is about \$1.25 a day, when the white man's wages would be \$1.50 to \$1.75. That is about the relative wage, but wages have recently advanced, and I am unable to say what they pay the Chinamen now. We have to pay other common laborers for fruit picking and things of that kind \$1.75 a day.

Q. With or without board?—A. Without board when it is by the day. By the month, the year round, we pay from \$25 to \$40 for farm and ranch laborers. We call an orchard a ranch.

Q. (By Mr. KENNEDY.) You say you pay the Chinamen on an average \$1.25 a day. Will he live on as little as 25 cents a day?—A. I think so.

Q. So that he will have a saving of \$1 out of his wages?—A. I would say a Chinaman has \$1 saving out of his \$1.25.

Q. Can an American supporting a family compete with such labor at all?—A. Hardly; although, as I say, the American gets more wages. The American will get about \$1.50 to \$1.75 to the Chinaman's \$1.25. When these contracts are made for large numbers of Chinamen on certain classes of improvements, I think they get them as low as \$1 a day. Chinese domestics get from \$1 to \$1.25 a day, cooks and those doing general domestic work getting from \$30 to \$35 and as high as \$40 a month.

Q. (By Mr. A. L. HARRIS.) Are these Chinamen employed by railroads?—A. The Chinamen do more or less contract work. Then they are, in some instances, section men on the railroads. They are employed in no other capacity, so far as I know, except as cleaners or something like that. They use more Mexicans for railroad section work.

Q. (By Mr. KENNEDY.) As domestic workers do you mean they do the general housework that would be done elsewhere by female labor?—A. Yes.

Q. Is that a general thing in California?—A. I should hardly say general, although it is very common. Many people prefer the Chinamen as domestics, because as a rule the Chinaman will do more than any woman, and he does not object to any part of the work. He is usually faithful, and seldom cares to run about much. With many people he is really a rather desirable domestic.

Q. (By Mr. A. L. HARRIS.) Have you anything else in mind?—A. The matter of transportation and the freight rate are very important to us. It is a very long distance that our products must be transported, and over a country that produces no local traffic, and over mountain ranges where railroads are expensive to operate. Our products must find a market by going long distances, and as the bulk of them must be shipped by rail (although we have an extensive sea coast), the freight rate is a very important factor. It is a very important factor to us in both directions, because much that we consume must be hauled over these same mountains and deserts.

We have experienced to a certain extent an insufficiency of transportation facilities that has been particularly marked in the last 2 years. Last summer the green-fruit shippers were unable to market all of their product for want of transportation. We have been unable this year to market all our oranges. The railroad people themselves have given me the estimate that we lost 3,000 carloads of oranges for want of transportation facilities. I am myself gathering statistics on the question, but have not yet completed them. I give these figures as the estimate of the railroads.

Q. (By Mr. PHILLIPS.) Did you lose any at the place of loading?—A. We lost some at the packing houses, and thousands of cars probably fell on the ground in the orchards, and could not be shipped at all.

Q. When the fruit is delivered do you generally get prompt shipment of it?—A. Not by any kind of means prompt shipment, and in some instances none. In some instances the fruit was packed in the boxes ready for shipment, and in some cases it was repacked, and in other cases it was thrown away entirely.

Q. Had you no redress for that loss?—A. We are not certain of that. We are trying to figure that problem out right now to see whether we have or not. The conditions grew out of several circumstances. The particular difficulty this year was a shortage of motive power, and inability to haul the fruit. We ought to have out of southern California, from the middle of January to the 1st of May, an average of about 300 carloads per day going out. The railroads were entirely unable to haul that quantity. They hauled an average of about 150 cars per day during a portion of that time, and some of the time fell down to an average of about 120 cars. A part of that difficulty at least was apparently due, or was so claimed by the Santa Fe railroad, to a coal strike on their line. I am willing to concede that that was to a certain extent a correct explanation, but it did not account for the condition entirely, as the road was short of engines to haul the trains.

Q. (By Mr. A. L. HARRIS.) Are the railroads making an effort to supply this deficiency?—A. Yes; I think they are. I recently had an interview with the presidents of both the roads—President Hayes, of the Southern Pacific, and President Ripley, of the Santa Fe, and they both assured me that we should experience no more difficulties of that kind; that they would make ample provision for the transportation of our product. I may say, however, that we have had some previous trouble and have had some good promises in the past; but I am inclined to think that in this instance they will make a vigorous effort to provide the necessary engines.

Q. (By Mr. KENNEDY.) Part of the difficulty, you say, was a strike on the Santa Fe system. Did they also inform you that it was partly due to the general prosperity of the country which taxed their transportation facilities?—A. Yes; they said that was the state of the case, which I have no doubt was true, although we are not prepared to admit that as a very satisfactory apology, because they had ample notice that this crop would be presented to be moved.

Q. (By Mr. FARQUHAR.) Was there any better paying freight than the fruit crop?—A. Most of the other classes are hauled at a much less rate, and some of them on equally good time. Of course, they claim that our fruit has to be hauled on expedited trains, and consequently is very expensive to transport. But one of the difficulties we experienced this year was that they were not able to haul it on any expedited service.

Q. (By Mr. LITCHMAN.) How long does it take to get a carload of fruit from California to New York?—A. Ordinarily in previous years it would take about 12 days. This year it took as high as 20 days and 25 days, and much of the fruit arrived rotten.

Q. Do you think that delay was purposely done?—A. No; I do not think it was purposely done, but I think a measure of it was due to indifference.

Q. (By Mr. FARQUHAR.) What kind of cars are mainly used in the transportation of your fruit?—A. Refrigerator cars entirely. That is one of the factors in this problem. These refrigerator cars are under private ownership and are operated under contracts with the carriers. The initial carriers have entered into these contracts with the private car lines, and the carriers get the cars at practically no cost to themselves, in lieu of which the car lines are permitted to make a refrigeration tariff that is excessive and the carriers collect it for them out of the shipper. It is proper to say that we attacked this condition of things before the Interstate Commerce Commission, and we have a case pending there now for decision.

Q. (By Mr. LITCHMAN.) Have you been able to discover any identity of interest in the ownership of the railroads and of the car company?—A. I can not say that I have.

Q. (By Mr. FARQUHAR.) Do you know what length of time these contracts last?—A. The contracts expire in the autumn of 1902, and we have the promise of the railroad management that they will not be renewed.

Q. (By Mr. A. L. HARRIS.) How many refrigerator car companies have you?—A. During the life of the present contracts there have been 3; the Santa Fe refrigerator line, which is more or less under cover of the Santa Fe Railroad itself, they owning a part of the cars and leasing part of them; the C. F. X. line, which was owned by Edwin T. Earle, who was also the head of the Earle Fruit Company operating in the fruit business; then the Armour car lines, known as the Fruit Growers' Express, the cars belonging to Armour & Co.

Q. (By Mr. PHILLIPS.) What does C. F. X. mean?—A. California Fruit Express.

Q. Do I understand these refrigerator cars are used to carry both fruits and meats?—A. No. They are operated in the fruit and vegetable business exclusively.

Q. Then they must return empty?—A. They return to a certain extent empty. They hold them for west-bound freight, and up to last year very few of them went West empty. Then we had a scarcity of cars, because they held them for west-bound loads, but this year a good many have gone West empty. However, the freight business west bound, especially since the Spanish war, has been very large, so there has been some class of freight almost all the time to load a very large percentage of these cars with when west bound.

(Whereupon the commission took a recess at 1 o'clock until 2 o'clock p. m.)

Q. (By Mr. A. L. HARRIS.) What have you to say in regard to your Japanese labor, its efficiency and desirability?—A. I think the Japanese labor is in less favor for common work than the Chinese. The Japanese want the light jobs, and the house places, and things like that, although some of them do the other work, such as fruit picking and packing. There are fewer of them with us, of course. They are classed much the same as the Chinese. They want to live in a little better style, and they are more particular about the class of work they do.

Q. (By Mr. LITCHMAN.) Do the Japanese adopt American habits more than the Chinese?—A. Yes; more than the Chinaman.

Q. American dress?—A. Oh, yes; many of the Chinamen do that, many of them, except that of course, they are distinguished for their cues; they double it up under their hats, but many of them wear American clothes.

Q. The Japanese discard them generally?—A. Yes. The Japanese dress exactly like Americans, and their habits are about the same.

Q. Is there any appreciable number of Japanese or Chinese born in this country? They have been here long enough for that, have they not?—A. I should say the number of births is comparatively small. In San Francisco and in Los Angeles there are a few Chinese women, and they bear children, but the number is not increasing at all rapidly. Outside of San Francisco there is not a large number of them.

Q. (By Mr. A. L. HARRIS.) Are the Mexicans desirable?—A. No; the Mexicans don't want to work at all, and they will not work so long as there is a little of anything in the house to eat, or their stomachs are full; that is the rule. I do not mean to say there are no exceptions to that, but the Mexican is chronically indolent and indifferent. I speak now of the Mexican pure and simple. I do not speak of the Spaniard, because he is a somewhat different type.

Q. (By Mr. LITCHMAN.) Please give us something more concerning the refrigerator cars and the use of them under contract between the railroads and the car companies?—A. Under those contracts, as I said, the refrigerator lines agreed to furnish to these initial carriers a certain number of cars, and a certain additional number if called upon to do so. The initial carriers pay nothing for those cars for carrying the deciduous fruits, the green fruits as we call them; they pay nothing in the way of rentals or mileage. The car companies maintain the cars, keep up repairs, pay insurance and taxes, and get no mileage until the cars reach the terminal of the Southern Pacific or a corresponding point on the Santa Fe. In the citrus-fruit traffic they get three-quarters of a cent per mile, which is the usual refrigerator mileage, one way, to these same points. Of course after leaving those points or getting on to connecting lines, they have the usual rate of mileage. I think I said that the refrigerator companies must have their compensation somewhere, and they get it out of an excessive refrigerator tariff, which the initial carriers collect as a part of the expense bill and pay over to the refrigerator companies.

Q. (By Mr. KENNEDY.) Can you say how often a car should be rerefrigerated in going from Los Angeles to New York in a 12 days' trip?—A. Say it is going by the Southern Pacific, it would first be refrigerated at Los Angeles, again at Truckee or Boca, up on the mountains; at Ogden, and once between Ogden and Chicago, according to the line it went over, or at or near Chicago, and possibly once between Chicago and New York—not certainly—it depends upon the amount of ice that is in the bunkers at Chicago.

Q. (By Mr. LITCHMAN.) And somewhat, I suppose, upon the weather?—A. Yes; a good deal on the weather. If it is comparatively cool weather one or two of these icings may be left out.

Q. Can you give the expense of refrigerating a car?—A. For 3 years, I think, we operated cars for our own benefit—leased them—and I had charge of the operating for the benefit of our organization. It enabled us in that particular to compete on a level basis with the Earle Fruit Company, which had a car line, and

with another fruit company, which was understood to have the benefit of Armour's line. We found that the average cost of refrigeration in our business was about \$46 per car.

Q. From California to New York?—A. To destination. The Chicago rate is \$75 per car. We found on that \$75 rate it cost about \$46 per car; on the \$90 rate I think it cost about \$50 per car to refrigerate; the balance was profit.

The deciduous fruit, or the summer fruit, costs more. The weather being hotter more frequent refrigeration is required; and the rates are much higher than on citrus fruits. As it now stands the refrigerator rate, the maximum rate, to Boston is \$95.

Q. I do not quite understand what that \$95 covers?—A. The \$95 rate covers Boston, Hartford, Portland, Me., Providence, St. Johns, Quebec, and all New England points.

Q. Well, you say \$95 for what?—A. For the refrigeration—for the icing of the car. Formerly the rate to these points the refrigerator tariff was \$90, and on that \$90 rate, as I now recall, our cost of operating was about \$50 per car, leaving the balance profit.

Q. Will you go one step farther in that same connection and tell what the freight rate per car was to the same point?—A. The freight rate to the same point per car is approximately \$325. It is \$1.25 a hundred on a minimum of 26,000 pounds. Of course, if we put more than 26,000 pounds of fruit in a car it is \$1.25 on the additional, but the 26,000 pounds will make \$325 and odd cents, I believe.

Q. That is to say, it costs you \$325 even if you do not fill the car?—A. Oh, yes; we can't get it at less than the minimum charge, no matter what we put in. If we only put in 20,000 pounds we must pay on 26,000. I will say something of the minimum a little later.

This refrigerator tariff which these car companies make and which the carriers enforce is graduated. The first rate covers Denver, Leadville, Ogden, Portland, Oregon, Pueblo, and Salt Lake—that is, a \$50 rate, and it then is increased up to the maximum of \$95, covering the New England territory. The territory we are in now takes the \$90 rate.

Q. (By Mr. KENNEDY.) Is not Salt Lake less than half the distance from Los Angeles that Portland is?—A. Portland is in the \$50 rate.

Q. Why should both be in the \$50 rate, Salt Lake being a less distance from Los Angeles?—A. The distance is about the same for transportation. You see from Sacramento it is about 700 miles to Portland and it is about the same distance to Salt Lake.

Q. Well, it is 300 miles at least farther to Pueblo. Pueblo is 300 miles farther away.—A. Yes; Pueblo is 500 miles farther, but they cover territory which they consider practically the same expense to them.

Q. (By Mr. LITCHMAN.) It is a sort of application of the zone system, is it?—A. Yes; they district the country. Both President Hayes and President Ripley have said to me within a few weeks that they considered the rate excessive and that steps would be taken to reduce it.

Q. (By Mr. KENNEDY.) Does that mean they are going to put on refrigerator of their own?—A. They did not say so, although that I believe to be the policy of the Santa Fe. They own now a good many hundred refrigerator cars. The Southern Pacific owns none, and the Southern Pacific is getting its equipment much cheaper than it could own it.

Q. (By Mr. LITCHMAN.) You have already said that these refrigerator car have not to any great extent been used for return freight. There is no objection to such use if the proper selection of freight is made, is there?—A. Not at all. They do use them. They use them as much as they can, and somebody in the Santa Fe operating department told me a few days ago—I think it was the general manager, perhaps, of that end of the line—that up to last year they carried I think he stated, less than 10 per cent of the cars west bound empty. They held them at various points for loads, and all the lines, Eastern connections, that bind their stuff westward by the Santa Fe have it hauled usually in those cars. The will transfer it out of other cars. In other words, if a car is delivered to the Santa Fe railroad at Kansas City, or by the Frisco at Burton, or by any line along its course, they will transfer out of whatever car the load is in into one of those refrigerator cars in order not to haul west bound empty.

Q. If the cars are used both ways does it enable the road to carry one way cheaper?—A. It certainly does, because they must pay the mileage on these cars up to a certain point, and they would have to pay mileage on the foreign car they hauled that. In other words, we will say the Missouri Pacific gives them a carload in its own car; they will have to pay the Missouri Pacific mileage to it from California, or at least to California, which they save in this other method.

Q. (By Mr. FARQUHAR.) Could you give the commission any idea how far this excessive freight enters into the cost of an article to the consumer, say, of a box of lemons from Los Angeles to New York City or Chicago?—A. The freight on a box of lemons is \$1.05, and the refrigeration would be 30 cents—exactly 30 cents to New York. There are 300 boxes of lemons in a car. Lemons are heavier than oranges, and the box is larger.

Q. What would a box sell at in New York?—A. California lemons bring about \$2.50 in New York.

Q. (By Mr. LITCHMAN.) How many lemons to the box?—A. Three hundred. Of course the number is variable; 300 is the number when the lemons are of the standard average size.

Q. A little less than 1 cent apiece wholesale?—A. A trifle less than a cent apiece. Of course later in the season they will bring a little more than a cent apiece.

Q. (By Mr. FARQUHAR.) What proportion of the selling price do the railroads get?—A. The freight and refrigeration are \$1.35 a box, and if a box sells at \$2.70 they get half of it and we get the other half, less the cost of packing. I think it is safe to say that the carriers get at present, approximately, half the gross proceeds of California fruit sales of citrus fruits.

Q. (By Mr. LITCHMAN.) Is there any disposition manifest on the part of the railroads to apply as a tariff all the traffic will bear?—A. They have never shown any other disposition in the California business so far as I am aware.

Q. (By Mr. FARQUHAR.) Are you able to lay your fruit down in the New York market as cheaply as the Florida fruit growers can?—A. By no means.

Q. How is it with Mediterranean fruits?—A. The Mediterranean fruits stand now about on a par with us, because they have to pay about 70 cents a box duty, and 30 cents freight, which makes a dollar a box on their lemons as against our \$1.05, unrefrigerated. If we refrigerate of course there is just that much differential against us. There is about 5 cents differential against us, and 30 cents more is added if we refrigerate.

Q. (By Mr. LITCHMAN.) Is there any preference as to the quality of the Mediterranean fruit as compared with California fruit?—A. That is a question that we are trying to settle on certain comparative tests. Of course we claim that our California lemons are better than theirs; they dispute that. The California lemon has this advantage over the Mediterranean, that ours are mostly seedless; theirs have a great many seeds. One chemical test was made recently and was decidedly in our favor. We made a shipment to New York at the request of the Italian chamber of commerce just before I left my office for a comparative test. The Italian chamber of commerce requested it, and we sent by express 4 boxes of selected lemons for the purpose.

Q. Which has the thickest skin?—A. Theirs have rather the thicker skin, because they do not cure their lemons; we sweat ours down after taking them from the trees; the Italian lemons are taken from the trees and shipped immediately I am told.

Q. Which is the larger size?—A. I should say that ours will run on an average larger than theirs. We aim, however, to get all our lemons three-hundreds and three-hundred and sixties. It is seldom they get larger and we seldom ship them smaller. The Italian lemons are many of them shipped much smaller than the three-hundred size; what I mean is 300 to the box, the standard size.

Q. Do you mean by sweating down the process of ripening?—A. It is not the process of ripening, but of curing. We take lemons from the trees as soon as they are a proper size. Where the grower is up to date, he sends his picker into the orchards with a ring in his hand to test the lemons. He is required to apply the ring every little while to see that he is keeping under the size. As soon as the lemons get that size they are removed from the trees, and if course if the market is strong they are shipped soon; if the market is weak, they are held. We are now holding a good many hundred cars of lemons in our packing houses in California, many of which were clipped in November and December. They are put into a cool dry place; they are handled carefully, and laid into the box and covered over; usually the box is lined with old newspapers or something of that sort, and the lemons are carefully laid in and the boxes set on top of each other in a cool dry place. Any sort of a building that is cool and dry will answer, and they are kept there until there is a market. If there is a market in 2 weeks they are shipped in 2 weeks; if there is a market in 4 months they are shipped in 4 months, assorted, of course, and then wrapped and the bad ones thrown out. The lemons that were put in in November and December are now extremely thin skinned, very fine, very full of juice. The only difficulty with them is the difficulty in transportation; they are very tender and very ripe, the highest grade of lemons obtainable.

Q. (By Mr. PHILLIPS.) Does the time of picking make any difference in the acidity of the lemon?—A. It makes but little difference as to the quantity of acid, unless the weather gets too cold. If the weather gets very cold, although the effect may not show in the texture of the fruit, it does to a certain extent affect the lemon, but the best of lemons we have at present are the November and December goods, because we had some pretty cold weather after that.

Q. The weather being cold, if they grew beyond the size of which you speak and became ripe would they be better?—A. No; they are not so good; they are not so desirable for market; the skin is thicker, and the tendency is to pithiness and puffiness. The ripe lemon from the tree is not desirable. We never let lemons get yellow; we never let them get that color on the tree.

Q. (By Mr. KENNEDY.) You spoke of lemons picked last November still being in your storehouse. I should like to ask you how account is kept with the fruit grower, for instance, who may have sent you last November 1,000 boxes of lemons, his lemons not yet being marketed? When does he get his returns?—A. He gets his returns when they are sold. If he has no storehouse of his own he may take his boxes to the common storage house of his association; they are his boxes and they are stacked up and marked as his boxes. When the time comes to pack those out they are graded and culls thrown out.

Q. Does he do that or do you?—A. The packing house does that and charges it to him. After the culls are thrown out the remainder are weighed up and he gets credit for them, and he gets his proportion of the whole pool. For instance, most of our associations have what they denominate a Christmas pool of oranges, or a monthly pool of oranges or lemons, although some associations pool for the whole season. That is a matter of local regulation among the members of that association as to whether they will pool for the season or pool periodically. If it is a monthly pool the manager of that association will send out notice to the growers who are members of the association. I am speaking of local associations, not our organization.

Q. (By Mr. KENNEDY.) Subordinate to you?—A. Subordinate to us. He will send out notice to bring 10 per cent of his crop, or 15 per cent of his crop, as the case may be. That is brought into the packing house and a ticket is issued for it. The fruit is culled and graded as to whether it is fancy or choice or standard, and he gets credit for that amount. All the fruit of that month's pool being marketed, the money is distributed pro rata among the growers who had fruit in that pool, if it be for the season or if there be several pools during the season, so that the man gets the credit for his fruit after it is culled and graded.

Q. Is everybody in this association treated so absolutely fairly that there are no complaints ever of favoritism or discrimination?—A. I would not like to say there are never complaints, but they are few. It is frequently the case that the foreman of the association is a disinterested party; not always so. Sometimes he is a grower himself; but the system is built upon the theory that every man is treated absolutely alike. Every man gets the opportunity to go into every pool and get the advantage of all markets at all seasons on a level basis. They may agree among themselves as to separate pools, and they may even agree that each man's fruit shall be handled for his separate account, if they desire to do so, but that is a matter of their mutual agreement. If a man is dissatisfied with the method in his association, he can file his complaint and have it investigated, or at the end of the season he can go to another association if he desires. But we have very little complaint of that kind.

Q. (By Mr. KENNEDY.) Would you have any advantage in shipping to the Atlantic seaboard if there were an isthmian canal; could you ship oranges that way?—A. Yes.

Q. And at cheaper rates?—A. We certainly could.

Q. Can you say what the sentiment of the fruit growers in California is with respect to the isthmian canal?—A. Unanimously in favor of the canal, so far as I know.

Q. (By Mr. PHILLIPS.) What would be the difference in time coming in that way as compared with the route by rail?—A. The Hydrographic Office of the Navy Department has given out the figures that a steamer would go from San Diego, our nearby port in southern California, to New York in 10 days and to Liverpool in 14 days. That is less time than we are now making by rail.

Q. (By Mr. KENNEDY.) The cost of refrigeration on a vessel would be considerably less than it is now?—A. I should say much less, much less.

Q. So it would make a great difference to you and to the consumer in the eastern part of the United States?—A. It certainly would.

Q. (By Mr. A. L. HARRIS.) Under the present arrangement, where the Southern Pacific Railroad has more than one line, have you any control over the line

that your cars pass over?—A. None whatever, except that the initial carriers take into their own hands the routing of our business to destination, and they give it out to their connections to suit themselves with only this liberty granted us, that they will give us any given terminal which we may request. They forward from one point to another. We can divert our shipments in transit; that is, we can have them forwarded at the original rate. We can ship a car to Kansas City, divert it to Chicago, divert it to Buffalo, divert it to Boston, the same rate applying to Boston that applied to Kansas City, and they will give us the terminal we request usually at any of those points.

Q. You spoke of having a case before the Interstate Commerce Commission. You say you treat that under the head of remedial legislation. Can you state that case now?—A. Yes. The case was a complaint against both the initial carriers for discrimination in favor of one shipper over others, this one shipper having under his ownership and control a line of refrigerator cars not only for his own benefit, but into which we were forced to put our shipments, and therefore our shipments were made under the notice and to a certain extent the surveillance of our competitor in business. We also complained of the refrigerator rates, I think. We made a general complaint of the tariffs themselves. We also denied the right of the carriers having published tariffs—through tariffs—to take the routing of the business into their own hands. Those are the main points of our case now pending for decision.

Q. How long has it been pending?—A. The briefs were submitted, the last ones, I think, in October. We complained of the whole private car system, our contention being that the carriers had no right to farm out the business to other corporations or individuals; that it was their duty to furnish us equipment, proper cars, and enough of them under their own control and not subject to any other individuals or corporations. We believe that the refrigerator rate is excessive because of this combination. Formerly, as I think I stated this morning, we were able always to get some reduction from the rates; whether it affected the freight rate or the refrigeration rate alone, it was usually made with the car line, and prior to the time when the initial carriers reached an agreement for the division of the business between themselves and for its division between the refrigerator car lines, shippers were able to make a special contract with the refrigerator companies for a reduced refrigerator rate usually of anywhere from \$10 to \$20 or \$25 per car. After this agreement was entered into between the initial carriers and the car lines, that opportunity was cut off and the rates, both the freight tariffs and the refrigerator tariffs, have been firm and arbitrary. We also complained to the Interstate Commerce Commission of the increase of the minimum carload weight. In earlier years the minimum carload rate for citrus fruits was 20,000 pounds. It was then increased to 21,000, then to 24,000, and more recently to 26,000 pounds. It has worked a hardship to the shippers, because many of the cars were unsuitable for carrying so heavy a load and caused a great deal of loss by decay, and for the further reason that many Western markets that would take a small carload could not take a larger one, and it limited our markets to a certain extent. In other words, it converted a wholesale market into a retail and jobbing market, and made it necessary for certain small towns to get their supplies through other cities secondhand, instead of getting them direct in car lots. Of course they were obliged to sell them at higher prices, and that limited the consumption and demand.

Q. (By Mr. A. L. HARRIS.) Before you pass to remedial legislation, if there is any subject that you have omitted, we should be pleased to have you take it up.—A. I think I may say before passing that we consider the existing freight rate too high. It was perhaps not too high in the earlier history of the orange business in California, as the prices were high then and the product comparatively limited. Now our citrus fruits reach about 25,000 carloads and are steadily increasing, and we must and do sell them much cheaper. Consequently the margin between the selling price and the freight tariffs is rapidly diminishing, and we believe that to-day the freight rate is excessive, considering the conditions.

Q. (By Mr. PHILLIPS.) About what percentage of the fruit is sold on the Pacific slope above the orange belt, for instance?—A. About 5 per cent of it, I should say. Another 5 per cent is sold probably in what we call the mountain territory. What we call the Missouri River points take about 18 per cent; Chicago and other Mississippi River territory about 17 per cent; trunk line territory, such as Cincinnati, Pittsburg, Cleveland, Buffalo, and that country about 15 per cent; Buffalo and east about 38 per cent, and the balance is scattered through the South. I have not the exact figures.

Q. (By Mr. A. L. HARRIS.) What are the freight rates to Mississippi River points?—A. \$1.25 a hundred after passing mountain points, Denver, Pueblo, Trini-

dad, Cheyenne, Salt Lake, and Montana points; those points \$1.12½ a hundred; all points east of that \$1.25 a hundred everywhere.

Q. Everywhere?—A. Yes; postage-stamp rate.

Q. (By Mr. LITCHMAN.) Would you prefer to have substituted for that postage-stamp rate, as you express it, a mileage rate?—A. That is a very hard problem. We have given that a great deal of consideration, and there are about as many reasons on one side of it as the other, although I suspect that it will come to a graduated rate. I am inclined to think it will come to that. It is of considerable advantage to us as it now stands. If we controlled all of the product, in other words, if the whole product were under one control for distribution, I think I should prefer a graduated rate. Then we would put into the cheaper territory of the West and Northwest the cheaper class of fruit and put it where it would stay and avoid the necessities of continual forwarding to other markets. There are a great many points, however, involved in that question.

Q. (By Mr. A. L. HARRIS.) Have you any remedial legislation to suggest?—A. Yes. First, I think the powers of the Interstate Commerce Commission should be enlarged. I think it should have power to determine what are reasonable rates and to classify the rates. I am speaking now more on this last phase of it, particularly with reference to all of our Pacific coast interests. It is quite well known, of course, that where the carriers are forbidden to increase the rate without the consent of the Interstate Commerce Commission, they accomplish the same result by changing the classification. It is my understanding that the pending bill, known as the Cullom bill, gives the commission authority for the determination of what is a reasonable rate and also power to classify and to enforce their orders.

Q. Would you have the order go into effect at once, subject to the right of appeal?—A. I would.

Q. (By Mr. FARQUHAR.) How can a body like the present Interstate Commerce Commission find out and know what a reasonable rate is?—A. I was about to say that on the question as to whether the commission itself should be changed or enlarged, I do not know that I care to say anything. I assume that Congress, perhaps, would find a way to make the commission what it ought to be to obtain the necessary information. I simply mean that there ought to be a tribunal of that kind that would pass upon these questions. I do not think, however, that it is so extremely difficult to ascertain what is a reasonable rate. The carriers claim that their combination is necessary—the combination among themselves into what they call a community of interest—is necessary in order to maintain rates, and it seems to me that the admission that carriers have found it practicable to reduce the rate is at least some evidence that they can stand a lower rate. I concede that the fact that a freight rate is cut is not always proof that it was too high; but the fact that carriers are willing to take the business year in and year out at a lower rate is certainly *prima facie* evidence that the rate is high. When that state of things exists, it seems to me it is not very difficult for the Interstate Commerce Commission or some commission properly constituted to inquire into it and compare rates, one part of the country with another, one class of freights with another, water competition, and all those factors. To us on the Pacific coast it hardly seems reasonable for the carriers to say that in competition with water rates they can haul goods from New York or Chicago to the Pacific coast for 50 cents a hundred, but can not afford to haul the products of California out for less than \$1.25 up to \$1.60 a hundred. If the water competition makes the business unprofitable, it would seem reasonable that they would let it go to the water; and the margin is so wide that there seems small opportunity for an argument as to whether all the rates are equitable.

Q. (By Mr. FARQUHAR.) Is it not a fact that your transcontinental freight or mountain freight is really twice the cost that it is on the prairie roads of the West in hauling?—A. I should think so; very likely.

Q. And is not that one of the greatest reasons for high rates?—A. I think that is one of the reasons.

Q. The immense cost of road, equipment, maintenance, and the light trains they are able to haul?—A. Yes; I think that is a fact; we concede that it is; but we do not admit that one class of freight in competition with the ocean traffic should be hauled at 50 cents a hundred and another class that has no water competition should be charged \$1.50 a hundred. Again, the bulk of our traffic is free from a large proportion of the expenses connected with transportation. If we compare the rates per ton per mile over the country, we will find that a very large percentage of the cost of operating is in the handling of the freight itself. Now, the carrier never handles our freight at any time. He never puts it into the car and never takes it out; so that when he is figuring on the freight rate per

ton per mile, he is including every class of freight on short hauls as well as long hauls, small lots as well as car lots, and there is there a great difference.

Q. Have you any idea how many it takes in an ordinary railroad of a thousand or twelve hundred miles in the department alone of freight, the freight office proper itself, in taking care of the changes of rates, making the pro rate and other rates in connection with through bills, and everything of that kind?—A. No.

Q. How much of a clerical force it needs?—A. I know it requires a large clerical force; I know that.

Q. Taking all the railroads of this country, how many would be employed in the Interstate Commerce Commission in making up the rates?—A. The bulk of that clerical service is not in making up rates, but in the correcting of billing and making out of expense bills themselves, and not in rates. I think you will find that almost every large carrier, large railroad, has comparatively few men who have to do with the making of rate sheets, tariffs; in other words, very few men that have to do with making tariffs. There is a large number of men who have to do with the collection of the charges and with making up the bills and records and accounts and keeping accounts with other roads; but that has not to do with the rate making itself. It does not enter into the question of the making of the rate to any point.

Q. Do you think any body of 5, 7, 9, 11, or 13 men sitting in Washington could take up a reasonable rate and know the reasons for the reasonable rate when they did not know the conditions of the roads at all in the country?—A. I would not undertake to say that a body sitting in Washington could take up all these questions at one time and settle the whole question of freight rates all over the United States.

Q. For instance, suppose you had any trouble in California and you had to wait 1 year or 2 years to get it rectified by a body sitting in Washington; how would your business stand? Wouldn't you rather trust the railroads than the commission?—A. We have to trust the railroads now and we think they have made an unreasonable rate. We think there ought to be some tribunal to review that rate. There are 2 railroad companies operating in California. They have agreed to divide the traffic between themselves. I know they will probably deny that statement. It is true, nevertheless. I feel perfectly safe in saying that it is without, unless I am asked, giving my reasons for believing that.

Mr. PHILLIPS. Do you desire to hear the reasons?

Mr. FARQUHAR. I do not know as we do.

The WITNESS. I do not care to go into the reason unless it is asked for, and then I will; I have no objection to it at all.

Q. (By Mr. KENNEDY.) It seems to me that Major Farquhar's questions to you are on the supposition or assumption that you would have the Interstate Commerce Commission make all the rates. I would like to know whether that is your idea, or that they should pass upon rates which are said to be unreasonable, sitting as a court to judge them?—A. That is exactly what I mean; that I would have them have power, as I said in my first answer, I think, to determine what are reasonable rates.

Mr. FARQUHAR. That is right.

The WITNESS. I assume that the rates would be determined on hearing. In California we would complain of the rate and would state our side of the case, and I would have the Interstate Commerce Commission have power to pass upon the case and say who was right. As it is to-day nobody has any power except the carriers, who agree among themselves. They have eliminated the competitive features of the traffic. There is no competition whatever, the carriers agreeing between themselves, and we are powerless. I say, therefore, that I would have the Interstate Commerce Commission, or some proper tribunal, investigate the facts, look at our statement and at the carriers' statement, and say whether the rate was reasonable. If it is, we must submit until the court has reviewed the finding of the commission, if there should be any power of review.

Q. (By Mr. A. L. HARRIS.) I would like for you to give the reasons for believing there is an understanding between the railroads?—A. The reasons are that in entering into these contracts with the refrigerator lines the 2 initial carriers make contracts for precisely the same amount of equipment, and they have kept it precisely the same on both lines ever since. They have refused repeatedly to permit fruit to be loaded on one line and forwarded on the other line, because the line over which the shipper desired the fruit to be forwarded was already ahead in the shipments. They have repeatedly asked the shippers to even up the shipments between them. They have refused to allow fruit to be hauled from the vicinity of one road and loaded on the other line and shipped out. They have insisted under circumstances of that kind upon billing the car out over the road near whose line the fruit

was grown, and stated that it was unfair to their competitor to permit the grower to haul his fruit over to the other railroad. These are the reasons that I give why I say they have agreed on a division of the traffic. I hardly think they will seriously deny that they have.

Q. Have you any complaint to make in regard to the delay of getting a final hearing under the present law and organization of the Interstate Commerce Commission?—A. We think, of course, that it is extremely slow, but what the circumstances are that lead to that delay we do not undertake to say. There is probably too much business for the commission in its present form, although I do not know about that. I have no specific complaint to make.

Q. If a case is taken to the court, do you know anything about delay there?—A. I know it takes a good while to get a hearing and determination.

Q. Do the conditions sometimes change before the hearing is had?—A. Yes; I have known cases in which the causes for complaint had been removed before the decision was rendered.

Q. A vast amount of expense and time had been used substantially to no purpose?—A. I do not undertake to say that what has been done is to no purpose. The commission have remedied a number of our complaints, simply because the complaint was filed. They forced the party who was in the double capacity both of shipper and car-line operator out of business as a result of our complaint to the Interstate Commerce Commission. No doubt about that.

Q. (By Mr. LITCHMAN.) Have they really done it or merely done it on the surface?—A. So far as appearances go, they have actually done it. I believe they have in this instance. I think the party is out of the business.

Q. (By Mr. A. L. HARRIS.) The Interstate Commerce Commission is then of some benefit?—A. I think it is, most decidedly. I think its powers should be enlarged.

Q. And with its powers enlarged, it would be of benefit to the shipper?—A. Most decidedly.

Q. (By Mr. FARQUHAR.) How would you enlarge its powers, as an economic body or a judicial body?—A. I have stated I would give it authority which it does not now possess, to pass on the reasonableness of tariffs where a showing is made, I do not undertake to say I would empower the Interstate Commerce Commission to make tariffs, but to say whether they are reasonable on a proper showing.

Q. What is the difference between a declaration on the part of the commission as to the reasonableness or unreasonableness of a tariff and making the tariff itself? What is the difference? If they have judicial power to declare a tariff unreasonable and to name a reasonable rate, what is the difference between that and having the power to make tariffs?—A. There is no difference as to that particular tariff. Still, it does not follow that they make tariffs because they are to pass upon the reasonableness of a tariff after it is called in question. One of the strongest points upon which the carriers argue the reasonableness of their tariffs is that under the present tariffs covering the Pacific coast traffic, they are scarcely able to pay their dividends. Nobody, I think, would object to the payment of their dividends on anything that ever went into the construction of the railroads, but what we object to is the attempt to pay dividends on enormous amounts of bonds and stocks for which nothing was ever done.

Q. (By Mr. LITCHMAN.) Do I understand that you believe the establishment of this power would have a deterring effect upon the railroads in the fixing of their rates primarily?—A. Most decidedly. If they knew there was some authority that could review these tariffs and investigate them, I have no doubt that knowledge would have a salutary effect in the fixing of the tariffs themselves.

Q. How do the tariffs of the present time compare with those of 10 years ago?—A. Our tariff is exactly the same as when the traffic was in its beginning, and certainly the cost of operating is not so great as it was then, because the traffic of every kind has increased along the line.

Q. Does that statement apply generally to other traffic as well as to the fruit?—A. I think it applies generally to the Pacific coast traffic, except such as is under the influence of water competition. The bulk of our products are fruit, for which we need rail transportation. The cereals of course go by water to Liverpool, and they are not affected.

Q. (By Mr. FARQUHAR.) When you speak of water transportation, do you mean transportation via the Isthmus or around the Horn?—A. Both.

Q. What is the difference between the water rate that you can get around by the Gulf and the Isthmus to New York or Liverpool and the charge of the Southern roads?—A. I am not able to say because I am not personally interested in any traffic that is in competition with the water transportation.

Q. Do not the same parties own the Pacific Mail Company's line that own the Southern Pacific?—A. Yes. A considerable portion of the freight shipments to

California have water competition and come there at half the rate we pay on our fruits. There are some commodities that are carried to California at 50 cents per hundred, and I think there have been rates even lower than that.

Q. (By Mr. LITCHMAN.) You are speaking now of water transportation?—A. No; by rail in competition with water rates, in competition with the clipper ships.

Q. (By Mr. A. L. HARRIS.) You can not at the present time enjoy that benefit on account of your fruit not keeping for a sufficient length of time?—A. No; we can not use that transportation for our business because the time is too long. If we had the isthmian canal we could send our citrus fruits and our dried fruits, nuts, and all sort of thing to market by water, or by rail in competition at the water rate.

Q. (By Mr. LITCHMAN.) How large a proportion of your fruit products are exported to foreign countries?—A. A comparatively small portion except canned fruits. There is a good deal of dried fruit; just how much I am not prepared to say. Of the green fruits and citrus fruits but a small quantity goes abroad. We are increasing the shipments of oranges to Liverpool and London, and will continue to do that. So far it is comparatively small business.

Q. (By Mr. A. L. HARRIS.) Have you anything to say in regard to national quarantine along the line of the Wadsworth bill?—A. Yes. We are distinctly in favor of the Wadsworth bill as it stands. It is my understanding that it failed because the nurserymen of the East objected to the provision in the third section which subjects trees, plants, nursery stock, etc., to the quarantine laws of the State to which the shipment is made.

Q. (By Mr. FARQUHAR.) Please give the number of the bill and the House in which it originated?—A. It is House bill 96, Fifty-sixth Congress, first session. The nurserymen objected to the provision that after the nursery stock had an inspection at the point of shipment it should be subjected to another inspection at the point of destination. We were given to understand that the bill probably could be passed if we were willing to consent to strike out that provision, which we were not willing to do. We very much need a quarantine bill on the Pacific coast, particularly against importations; not so much against interstate business as against the importations from abroad, particularly from Mexico. Mexico is liable to have its orange orchards destroyed by what is known as the orange worm, the Morales maggot, which infests the oranges of Mexico in nearly all districts.

Q. (By Mr. PHILLIPS.) It works on the orange itself?—A. It burrows in the orange and lives there. I have seen as high as 15 in one orange. We have none of them in California, and very much desire a quarantine against it. We also desire a quarantine for our deciduous fruits against all infections of every kind.

Q. (By Mr. LITCHMAN.) Have you investigated and ascertained if there is any legal objection to the quarantine established by the State itself?—A. We have a vigorous quarantine law and apply it. Our apprehension was that if the Wadsworth bill should pass with that clause stricken out, shipments could be forced into the State without further inspection. I believe the lawyers consider there is more or less question on that point, but we were anxious to be safe.

Q. Do you mean the young trees?—A. Yes; all sorts of bulbs and nursery stock, young trees, and everything of that kind. Our idea is that if they are grown in Florida or Louisiana or Iowa or any other State, and it is sought to ship them into California, they should be subject to inspection at destination.

Q. (By Mr. A. L. HARRIS.) What have you to say in regard to the protective tariff for your country?—A. We think the existing duties should not be reduced either by legislation or treaty.

Q. (By Mr. LITCHMAN.) Reciprocity treaties you mean?—A. Yes.

Q. (By Mr. FARQUHAR.) Of the reciprocity treaties which do you find the most oppressive to you?—A. The Jamaica and French treaties both would work a hardship, to our fruit interest particularly.

Q. Does the French reciprocity treaty give California any advantages at all?—A. Yes; there is an advantage on several items, on its wines, olives, raisins, prunes, walnuts, and almonds.

Q. (By Mr. A. L. HARRIS.) Do I understand it is for or against you?—A. As the duty stands it is in our favor; the modification was to reduce the duty, and would militate against us. We therefore object to the reduction of the duties either by legislation or the ratification of the reciprocity treaties which have been prepared.

Q. (By Mr. FARQUHAR.) If the French treaty was ratified would it work to the advantage or disadvantage of California generally?—A. To the disadvantage. We do not see any form in which it would be to our advantage.

Q. Is there anything in the French treaty particularly to the advantage of the United States that the people of California in any shape desire, in silk goods or

whatever else?—A. I can not say as to what the modifications are on silk goods. We very much prefer to have to pay the price for the silk and let the fruit grower get the price for his products. If he can not get anything for his products he can not wear silk, and he doesn't have to.

Q. (By Mr. A. L. HARRIS.) Do you favor the preservation of our forests?—A. We do, most decidedly. The preservation of our forests on the Pacific slope and particularly in California, because that is not so much true in the north where they do but little irrigating, and in certain portions of which they have too much water, is of vital importance. The destruction of our forests destroys the water storage. We have found by the most careful investigation, measurements of water, etc., that under the same rainfall where our forests have been burned away or otherwise removed the water for irrigation is greatly reduced. It not only has that effect but it reduces the rainfall itself. We believe that the forest reservations should be transferred from the Interior to the Agricultural Department, where they will have proper attention. We do not question the motives of the Interior Department, but we do say the Agricultural Department is in touch with our interests and has shown itself to be interested and in full accord with our undertakings. And we have no doubt if the forest reservations were transferred to the Agricultural Department we would have a very much better patrol system, and a system that would actually protect the forests. As it is now the patrol system amounts to very little.

Q. Has there been any scientific tests made as to the conservation of moisture by the continuation of our forests?—A. There have been repeated tests of that character made, and I am told by most competent engineers that there is no question whatever about the decrease in our rainfall where the forests have been removed. Take southern California, for instance, where irrigation is so important and where the forests are so necessary, we find this: Our rainfall comes of course, as it does everywhere, from the contact of the counter currents. The clouds move up from the sea against the mountains and comes in contact with the cold moist air arising from the forests, and immediately rain is precipitated. The very same mountains, after the forests or even the undergrowth is burned away, are practically rainless. The fogs and clouds come up from the sea, but there is no moisture in the earth—no undergrowth that holds the moisture and sends it back to form a cold current—and the clouds simply dissipate or pass over. That phenomenon has been witnessed and carefully investigated to show beyond any reasonable question that the preservation of our forests is absolutely indispensable to the perpetuity of our irrigation systems in that region.

Q. You spoke of having a wet season and a dry season in California which is detrimental to the growth of corn. I think you did not state whether or not it is advantageous to the growth of wheat.—A. Yes. The rains usually begin in November, sometimes even earlier, but in central and northern California, where they grow cereals, the rainfall usually puts the ground in condition for seeding by November, and the sowing continues to midwinter. The rains continue at intervals through to April. Once in a while we have a little rain even later than that date, but we expect very little after April, if at all. That puts the wheat ready for harvest by the 1st of June. There is no subsequent rain, and the wheat cures on the stalk and is harvested from June on to September. The harvesting there is all done with one machine at one time, the wheat curing on the stalk. Those winter rains, of course, are absolutely necessary to the growth of the cereals. We raise a good deal of barley also. Our food for work animals is largely barley hay. In some sections alfalfa is grown, but that is more particularly for stock feeding—for cattle.

Q. Will alfalfa do well?—A. Very well, when there is enough water. Alfalfa must be irrigated in order to produce repeated crops. It will not produce more than two or three crops in a year without irrigation. With irrigation it will produce a crop every 30 days.

Q. How many tons of hay per acre will it produce in the course of a year?—A. Good, well-watered alfalfa will produce $1\frac{1}{2}$ to $2\frac{1}{2}$ tons at a cutting, and it can be cut from 7 to 9 times during the season. Of course it is not cut in the winter because it would not make hay then.

Q. (By Mr. KENNEDY.) Speaking of remedial legislation, you would recognize a law of Congress which should provide for the construction of an isthmian canal as remedial legislation in the interests of your industry?—A. We certainly would.

Q. (By Mr. FARQUHAR.) Do you think it would be worth while for the American people to undertake the building of a canal at an expense of more than \$100,000,000, and have no American tonnage pass through it? Ought we to build a canal for the world and have no tonnage of our own?—A. I suppose that abstract question would be solved by whether you charge enough to make it pay. I believe

we need the canal. Whatever other people may desire in the premises, I believe the interests of the Pacific coast, not to say anything about our acquisitions, justify the building of the canal.

Q. Even if the amount of our tonnage engaged in the deep sea trade of the world is about 11 per cent?—A. I can not undertake to say how soon it will be more than 11 per cent.

Q. (By Mr. PHILLIPS.) Is it not a fact that all shipyards are busy now building?—A. I believe they are.

Mr. FARQUHAR. Building fighting ships?

The WITNESS. I believe they are, but if the Government was justified in the first instance in appropriating, as I believe it did, about 26,000,000 of acres of land for the construction of the Central Pacific Railroad, and a great many more millions for other transcontinental lines, I believe it is equally justified in further developing the Pacific coast by, among other things, the construction of the canal.

Q. (By Mr. FARQUHAR.) Yes; but it is American tonnage and American traffic that go over our transcontinental lines, but the Nicaragua Canal would carry 80 per cent foreign tonnage.—A. Possibly so.

Mr. PHILLIPS. Is that testimony?

Mr. FARQUHAR. I asked the question to bring out a comparison in the matter of the land grants to the roads, and the money to be spent in building the canal.—A. I do not know. I think that a very large percentage of the tonnage through that canal would be American tonnage.

Q. (By Mr. KENNEDY.) Coastwise?—A. Yes; although I am not prepared to say what percentage of the whole tonnage that would pass would be American.

Q. (By Mr. PHILLIPS.) All coastwise tonnage would have to be American?—A. Yes.

Q. (By Mr. KENNEDY.) Regardless of what kind of bottoms, foreign or American, that the fruit might go in, in the event of the construction of the isthmian canal, the fact is, as you say, I believe, that the people of the East would get the fruit at a very much less price than they do now?—A. I think they would. I not only believe that our California products could be sold to the consumer, most of whom are Americans, at less price, but I believe our other industries of the Pacific coast would be largely benefited and developed.

(Testimony closed at 4.15 p. m.)

WASHINGTON, D. C., June 12, 1901.

TESTIMONY OF MR. THOMAS TURNBULL,

San Francisco, Cal.

The commission met at 10 a. m. At 2.04 p. m., Mr. Farquhar presiding, Mr. Thomas Turnbull, No. 1403 Montgomery street, San Francisco, Cal., appeared as a witness, and, being duly sworn, testified as follows:

Q. (By Mr. A. L. HARRIS.) Mr. Turnbull, you may state your name, your residence, and your occupation.—A. My name is Thomas Turnbull; I reside in San Francisco, Cal., and I am engaged in the real estate business.

Q. What is your address in San Francisco?—A. No. 1403 Montgomery street, San Francisco.

Q. How long have you resided in California?—A. About 12 years.

Q. Have you been connected at any time with the agricultural industry of the State?—A. Yes.

Q. How long have you been connected with that industry?—A. Four or 5 years—I have been farming about that length of time.

Q. How long has it been since you left the farm?—A. About 6 years.

Q. Have you any interest in agriculture at the present time?—A. Indirectly only.

Q. How long have you been in the real estate business?—A. About 12 years.

Q. Are you authorized by the board of trade to represent the different industries of the Pacific slope before this commission?—A. I was selected by a committee of the State board of trade to represent the State of California before this commission. I have here their commission, if you care to have it read.

(Reading:)

“SAN FRANCISCO, CAL., September 12, 1899.

“The undersigned committee of the State board of trade, appointed to recommend to the Congressional Industrial Commission a witness from this State to represent its industrial needs and conditions, does hereby designate and commission as such

witness Mr. Thomas Turnbull, and request that he be called to appear before the Industrial Commission.

"GEORGE C. PERKINS.

"JOHN P. IRISH.

"N. P. CHIPMAN.

"W. H. MILLS."

Q. Have you a prepared statement, Mr. Turnbull?—A. I have a brief statement.

Q. You may proceed in your own way to make that statement as to the industrial conditions on the Pacific slope.

The witness read as follows:

"INTRODUCTION.

"Renewed interest in our State has been awakened by the momentous events of the past 2 years, which have given to California and to her metropolis special and unusual importance. The prediction has been made by some of the wisest and most far-seeing observers in this country of the movements of population and commerce, that San Francisco is destined to become a great commercial emporium and is to be to the western part of this continent what New York City is to the eastern part; that a large population will center here to engage in the new and rapidly growing commerce which must enter or pass out of the Golden Gate; that a greatly enlarged and more profitable market must necessarily be created for the varied products of our State by reason of our new relations with countries of the Orient; that the completion of the isthmian canal will remove many obstacles hitherto standing in the pathway of our progress, and that the Pacific coast will rapidly become the home of many millions of people. California is already feeling the impulse of the great change taking place in the commerce in the Pacific Ocean. I have undertaken in the present report to briefly outline the attractions which our State offers to the home seeker, the capitalist, the tiller of the soil, the manufacturer, the miner, the lumberman, in short, to all who wish to engage in this new and promising field of enterprise.

"I shall not attempt to conceal an intense affection for the State of my adoption, but I wish to assure your honorable commission that this partiality shall not tinge the facts which I present; they, at least, shall have the foundation of absolute truth. The love of Californians for their State, which is proverbial, is not devoid of justification. What other country presents such inspiration of love and devotion? In what other country is there broader freedom of thought and action? In what other country are the alluring prophecies which attend young life more certain of fulfillment? In what other country do the higher blessings of peace and plenty minister to the comforts of age? Are there other countries in which honest industry achieves higher respect, or in which labor earns a higher meed of profit and honor?

"Looking backward we see a history founded in the romance of adventure. In the present we are laying the foundations of a noble commonwealth by the establishment of permanent industries. If, therefore, the manifestation of love for our State may sometimes appear boastful or provincial, let it find apology in the consideration that provincialism is an expression of local patriotism, and that with the people of California it is the inspiration of high endeavor, which, when duly chastened, will ripen for our beloved State its growing harvest of hope.

"LABOR IN CALIFORNIA.

"The great advantages enjoyed by the laborer in a newly settled community, especially in the line of high wages, are seldom lasting. They were probably greater and of longer duration in California than in any other part of the Union, enduring in large measure until after 1870. This is partly due to the absence of railroad connection with the East before 1860. There are still not a few lines of industry, particularly those requiring considerable skill, and in which all the work must be done on the spot, that offer the worker better rewards than he could obtain in the same trades in the Eastern States. The explanation of these high wages and the general prosperity of the laborer in such a 'new country' during the first few years after settlement is of course a simple one. These advantages have been frequently discussed by economists, and are continually used to illustrate various theories of wages, of interest, or of rent. The explanation is found in the fact that in such newly and thinly settled communities the first settlers enjoy, with less restrictions than elsewhere, the assistance of nature in their labor. The mere 'labor of appropriation' is in such cases slight compared with the product obtained thereby. Land and nature's other resources are abundant and obtainable at comparatively little cost. The reward obtained by their use is very large. The same fact also explains, in part, the uncommonly large returns that capital obtains in such

places. So long as there is still untilled land at the disposal of the State, or for sale at a reasonably low price, there is no question that wages in that vicinity must be as high as the returns which that labor could obtain if applied to the cultivation of land. For California, of course, the explanation is incomplete, unless we include also the effect of the possibilities in mining. So long as there were many unclaimed placer mines easily available the rate of wages in other lines of industry had to be, naturally, high enough to offset the advantages to be found there.

"The explanation of the causes which so rapidly reduce the wages of labor in these same communities to a level which, although not altogether so low as that in other longer settled communities, is yet so low that the differences are no longer very important, is not so generally understood. For California there are a number of explanations of this change which are advanced, sometimes singly and sometimes together. Sometimes we are told that the explanation is to be found in the fact that the land has all been withdrawn from the market or is held at speculative prices so high in proportion to its real value that its purchase would confer no greater advantage than a similar purchase would in an older community. There is some force in this explanation. Yet it does not seem to me to apply in like degree to all the different kinds of labor in this State. Nor is it yet true of California that most of the lands and natural aids to production are held at prices which would prevent the thrifty settler from realizing great advantages from their use. Another suggestion, and one that grows directly out of the foregoing and, in a measure, presupposes its acceptance, is that which maintains that many would-be settlers of small fortune have flocked here under the mistaken impression that there are still lands to be had on terms commensurate within their moderate means. Finding themselves disappointed in these hopes, these persons have gathered in the cities, and there, by competition in the few lines open to them, have forced down the wages hitherto received. This explanation, which was the one favored by Mr. Meriwether, the special agent of the United States Labor Bureau, who made an investigation into certain labor problems here in 1887, seems plausible enough. There are some facts that seem to warrant it. It presupposes, however, what we have just seen was not quite true, namely, that land and other natural advantages are no longer to be had on reasonable terms. There has been from time to time a temporary accumulation of immigrants in the cities who, from lack of means, found themselves unable to realize the extravagant hopes which they had entertained. But they have never been sufficiently numerous to have any permanent effect on wages, and generally soon found the way of at least partially realizing their ends.

"Another and still more popular theory is that which finds the whole explanation of the lowness of wages in California in the competition of the Chinese and Japanese. That the presence and possible increase in numbers of a class of laborers willing to take certain kinds of labor at any price and unable through ignorance of our laws, etc., to acquire much advantage from the possession of land, and not, like the rest of the population, looking and hoping for influence, but more than content with a low wage, would seriously affect the wages of all labor of the same grade and possibly reflect unfavorably on the wages of other grades of labor, is undeniable. But there remains the stubborn fact, preventing us from attributing this purely to race characteristics, that, whenever one of these hated Chinese or Japanese succeeds in acquiring skill, as, for instance, in the case of the Chinese cooks, his labor commands a price so high that he at least can not be said to depress wages. It is the incompetence of the unskilled Chinese that is the chief cause of the low wages they receive. Here, as well as elsewhere, wages depend upon the value of the product. The increased output of the product of unskilled labor at a decreased cost, the cost being estimated in terms of a lower standard of life, causes a fall in the value of the product and necessarily a fall in wages. But, as usually applied, the argument from the presence of the Chinese is made to explain too much. The reasons for the change in the conditions, even of unskilled labor in California, to one closely conforming to that in the East, are not summed up in this one. Had the Chinese not come, a similar fall in the wages of unskilled labor, though possibly not quite so great a one, would have taken place. The presence of the Chinese only aggravated and intensified the effect of forces already at work.

"The chief error of all these explanations arises from the attempt to find a single cause for a phenomenon that is complicated in its nature. We must examine the conditions of different classes of labor separately.

"The first class to be considered consists of those skilled laborers producing goods for a market broader than the State of California. The extraordinary distances to be traversed in bringing these goods to market has its greatest effect here. Such industries can only live when the natural advantages enjoyed by producers equal or exceed the advantages enjoyed by the other members of the competing

group, plus the excess cost of transportation. And California wages in these lines can only exceed wages in the same line elsewhere by just as much as the natural advantages, less the increased cost of transportation are greater. As these natural advantages are more and more appropriated, they lose their influence on wages. As soon as it is no longer possible for the laborer to be an independent producer, if the wage offered him is not sufficient, and thus obtain a larger return, lower wages will have to be accepted by those who choose this line of work. That is, the wage-earner can no longer receive rent as well as wages. The chief constituent element of this group is the body of skilled labor engaged in the production and preparation of fruit and wine. The wages of such laborers are as a rule still higher than those of the same grade elsewhere. Here, too, belong the miners, but for these, of course, the cost of transportation is no hindrance, and they receive correspondingly higher wages still. Here belonged formerly the wheat raisers of the State. But as Mr. Horace Davis has so ably shown, wheat raising in this State is no longer a profitable industry, for reasons peculiar to that industry, and so exceptional as to justify us in omitting further consideration of it here.

"The second important group that we will consider is composed of those industries which compose goods competing in the local market, directly with goods that can be imported from outside the State. It is easy to see that in all of these lines of industry the only absolute advantage that the laborer has in California is measured by the cost of transportation. There is a slight advantage arising from the fact that the nearness to the market enables the producer here to gauge more accurately the demand as to kind, quality, and amount than the more distant producer. And again, if the commodity is one in the manufacture of which a large amount of the raw product can be drawn from this State, there is another slight advantage accruing from that source. These two latter advantages, however, do not, so far as my observation goes, more than offset the higher rate of interest on the capital employed, and consequently the laborer can obtain little from that source. So that, in the main, the difference in the rate of wages in favor of California in these lines of industry can not be greater than the cost of transportation. As soon as the needs of the community call these industries into existence the rate of wages will be in close conformity to the rate in the East. And this I have ascertained to be the fact. This group of industries stands at one extreme. In them wages never were high; they were mostly late in coming into existence, and only rise into importance where the weight or bulk of the goods is so considerable as to increase the cost of transportation.

"At the other extreme stands a group composed of those industries requiring skilled labor and in which the whole of the labor must be rendered on the spot. These, as we should naturally expect, came early and partook in the highest degree of the natural advantages which the new country afforded. There wages are to-day higher than in the first group. The first report of the bureau of labor statistics of the State contains some figures which appear to show that the wages earned in California in that year (1883-84) were very much higher than those in the same trades in New York and Chicago. The difference in the rates of wages quoted for these places is astonishingly great. A close inspection of the list, however, shows that it is composed almost entirely of trades of this third group, namely, trades which from the nature of the work done had to render all their services on the spot, and which as skilled labor would not be apt to feel directly the competition of the Chinese or of disappointed immigrants. The list contains bricklayers, masons, carpenters and joiners, gasfitters, painters, plumbers, slaters, blacksmiths, bakers, shoemakers, cabinetmakers, coopers, printers, tinsmiths, and brassfounders. As will be seen, the list contains those industries that have all the advantage which location here can afford, and was well calculated to deceive. It was probably not chosen with any intention to deceive, being composed of those industries which had been longest established, and these would naturally be of this favored class. Only one or two of the industries belonging to the other class are included in the report, and they were so because they were already becoming important. They are the tailors, the coppersmiths, and the cutlers, and all of these, as might be expected, show none of the peculiar advantages as to high wages which the others enjoyed. It is in this third class that the effect of the two first causes of the three commonly alleged would be most plainly seen. But in this those theories are not sustained, since the higher wages still paid in these lines of work do not show the effect of the excessive competition that is claimed is the result of holding land at speculative prices. Although the wages of labor of this class still compare favorably with the best wages paid the same kind of labor elsewhere, yet there has been a decided fall since the report of the bureau of labor statistics above cited. This can be explained, of course, in the usual way by the movement of labor toward that class, a movement which during the last decade has had time to accomplish in part the inevitable equalizing.

"To this group belong the railroad employees. The report of the Interstate Commerce Commission for the year ending June 30, 1894, contains statistics of the wages of railroad employees all over the United States. These statistics are based upon averages of so large a number of persons, and covers so long a period as to be truly representative. It would be natural to suppose that on account of the greater "mobility" of railroad employees local advantages would have relatively the least effect upon their wages. But the careful statistics of the commission show that even this class of skilled labor partakes of the advantages of the favored locality because it must be rendered on the spot. According to this showing the wages of all employees, except those classed as general officers, were for 3 years, 1892, 1893, and 1894, higher in California than in any other part of the United States, and, in most cases, very much higher. We select for comparison the commissioners' Groups II, III, and X. Group II includes New York, New Jersey, Delaware, Maryland, and most of Pennsylvania; Group III includes Ohio, Indiana, and southern Michigan; Group X includes all the States and Territories west of the Rocky Mountains, which are sufficiently homogeneous to be representative of the conditions in California, particularly so in view of the fact that a large part of the railroad system is under one management. To these 3 we add the general averages for the whole country. Other groups might have been selected which would have shown more marked contrasts in favor of California, but in them the lower rates are due to exceptional circumstances. No such circumstances can be urged against the two Eastern groups selected.

"The following table presents a comparative summary of average daily compensation of railway employees for the years ending June 30, 1894, 1893, and 1892:

Class.	Average daily compensation in dollars.											
	United States.			Group X.			Group II.			Group III.		
	1894.	1893.	1892.	1894.	1893.	1892.	1894.	1893.	1892.	1894.	1893.	1892.
General officers.....	\$9.71	\$7.84	\$7.62	\$11.09	\$7.93	\$7.35	\$10.20	\$8.58	\$8.89	\$9.16	\$7.78	\$8.15
Other officers.....	5.75			7.05			5.76			5.42		
General office clerks.....	2.34	2.23	2.20	3.49	2.93	2.79	2.30	2.40	2.44	2.30	2.12	2.08
Station agents.....	1.75	1.83	1.81	2.40	2.49	2.54	1.71	1.75	1.69	1.67	1.59	1.69
Other stationmen.....	1.63	1.65	1.68	2.36	2.33	2.36	1.63	1.68	1.69	1.56	1.59	1.66
Enginemen.....	3.61	3.66	3.68	4.42	4.52	4.66	3.49	3.55	3.42	3.47	3.50	3.57
Firemen.....	2.03	2.04	2.07	2.52	2.53	2.61	1.95	2.00	1.96	1.91	1.94	1.98
Conductors.....	3.04	3.08	3.07	3.62	3.87	3.81	2.87	2.91	2.85	2.97	3.01	3.01
Other trainmen.....	1.89	1.91	1.89	2.61	2.73	2.58	1.84	1.88	1.82	1.92	1.97	1.93
Machinists.....	2.21	2.33	2.29	3.13	3.17	3.15	2.05	2.24	2.20	2.13	2.23	2.18
Carpenters.....	2.02	2.11	2.08	2.89	2.96	2.86	1.96	2.04	1.97	1.89	1.99	1.96
Other shopmen.....	1.69	1.75	1.71	2.45	2.49	2.44	1.57	1.69	1.56	1.65	1.62	1.63
Section foremen.....	1.71	1.75	1.76	2.29	2.46	2.41	1.73	1.77	1.83	1.58	1.61	1.63
Other truckmen.....	1.18	1.22	1.22	1.55	1.55	1.56	1.16	1.21	1.18	1.17	1.25	1.24
Switchmen, flagmen, and watchmen.....	1.75	1.80	1.78	2.72	2.77	2.65	1.54	1.58	1.52	1.80	1.81	1.80
Telegraph operators and dispatchers.....	1.93	1.79	1.93	2.87	3.04	2.97	1.87	1.89	1.93	1.76	1.80	1.74
Employees' account floating equipment...	1.97	1.96	2.07	2.51	2.64	2.82	2.02	2.11	2.05	1.47	1.52	1.59
All other employees and laborers.....	1.65	1.70	1.67	2.53	2.81	2.73	1.51	1.58	1.54	1.55	1.53	1.57
Unclassified.....		1.64	1.57			3.63		1.95	2.15			

"The figures presented in the table bear out the conclusions reached above. It is the highly skilled men that have the largest proportional advantage, while as the skill required for the different positions diminishes, the advantages enjoyed in the way of higher wages grow less. The only part of the country which shows anything at all approaching these advantages is the commissioners' Group VII, including the comparatively new country of Wyoming, Montana, Nebraska, and parts of the Dakotas and Colorado, where the conditions are similarly advantageous to energetic, skillful men. If the commission's report were continued for 1895, it would probably show that a large part of the advantages have been lost. The ill-advised strike and the depression have caused much rough adjusting and many heavy reductions and discharges.

"We come now to a fourth group of laborers, that is everywhere the most discouraging to study and everywhere the most poorly paid, viz, the unskilled. In newly settled communities this is the class of labor that first gains relatively most, from the cheapness of land and the favorable terms on which nature's bounties can be had, and which, on the other hand, first feels the movement toward a state of affairs more nearly in accord with conditions elsewhere. A fall in the wages of this kind of labor is to be expected when laborers of this class become in the

least excessive in proportion to the amount of land still available. Being in the highest degree inert, and never very competent, this class early becomes excessive, even though its numbers appear small. The suggestions commonly offered in explanation of the fall in wages apply here if anywhere. Here the competition of the Chinese is most keenly felt. There has certainly been at times a glut of this kind of labor. Mr. Meriwether seemed to think that this glut was only felt in the cities. He cites, as evidence of the absence of such a glut in the country, the fact that in rural districts the economical farmers take the children out of school in the season to pick fruit that would otherwise decay. But this does not support his contention. For since the children had to be supported anyway, and the labor in this case is light, a very slight earning would be ample recompense for their labor. The value of such fruits when picked is in many instances sufficient only to pay for the cheap labor, and would probably not pay at all for the dearer labor of adults. The correct explanation of the fall in the wages of unskilled labor in California is that there is no longer lines of industry which can give employment to unskilled labor with any greater advantages than elsewhere. Could unskilled labor produce here (as it did at first) a commodity, which, for special reasons had a high value in proportion to the amount of labor employed, wages would never have fallen in spite of the advent of the Chinese.

"To sum up: For the unskilled labor the rate of wages in California already conforms to the rate paid elsewhere: First, because the natural advantages which could be used by such labor are mostly monopolized; second, because a large part of the unskilled labor is peculiarly inefficient. A few lines of skilled labor employed in industries exploiting peculiar natural advantages still earn large wages. Many lines of skilled labor, of such a sort that the work is done on the spot, obtain slightly higher wages than prevail in the East, and will do so as long as the advantages enjoyed by the first class of skilled labor are not all appropriated. The rate of wages enjoyed by skilled labor producing commodities which compete in the California market with commodities manufactured outside are higher by part of the cost of transportation, and this will be the first class of skilled labor to lose the advantage which it enjoys.

In this connection the following tabular statement may be instructive:

Trade.	Nominal wages.	Actual.
House carpenter.....	\$3.50	\$2.90
Mill carpenter.....	3.00	2.50
Mill hand.....	2.50	1.50
Laborer (in mill).....	2.00	1.25
House painter.....	3.00	1.75
Machinist.....	3.50	3.00
Laborer (in machine shop).....	2.00	1.50
Iron molder.....	3.50	2.75
Blacksmith.....	3.00	2.40
Brass finisher.....	3.00	2.50
Tinsmith.....	3.00	2.75
Baker.....	1.60	.90
Compositor.....	3.00	2.00
Gripman (cable car).....	2.25	1.75
Conductor.....	2.50	2.00
Cooper.....	2.50	1.50
Upholsterer.....	2.50	1.75
Cabinetmaker.....	2.75	2.25
Tanner.....	2.50	2.00
Shoe cutter.....	3.00	2.40
Harness maker.....	2.50	2.00
Cigar maker.....	2.00	1.50
Bookbinder.....	2.50	1.75
Tailor.....	3.00	2.00
Shirt maker.....	1.15	.75
Laundryman.....	.75	.55
Saleswoman.....	1.50	1.25
Bag maker (jute).....	1.00	.80
Box maker.....	2.00	1.50
Laborer (miscellaneous, city).....	1.25	.....
Farm laborer (with machines) ¹	1.75	.....
Farm laborer (without machines) ¹.....	.75	.....
Farm laborer (Chinese) ¹.....	.75	.....
Fruit canneries (men) ¹	2.00	.....
Fruit canneries (women) ¹	1.00	.....

¹ Work intermittent, and often paid by the piece or job. The average per year is unmeaning.

DOMESTIC SERVANTS.

White cook.....	per month..	\$20.00 to \$30.00
White maid.....	do.....	15.00 to 25.00
Chinese cook.....	do.....	25.00 to 40.00

ORGANIZATION.

"That the laborers of California have felt in their turn the same need of organization that was felt in the other States is natural since the conditions of labor have become or are rapidly becoming the same here as elsewhere. The movement in the direction of organization did not make much ground until about 10 years ago—that is, about the time when the extraordinary advantages at first enjoyed had disappeared. There were, to be sure, a few trades unions before that time. The Hat Finishers' Union of San Francisco is said to date from 1853. There are six unions in San Francisco that were formed during the Kearney movement. Most of those before 1880, however, partook more of the character of social or political clubs than of trade organizations for strictly trade purposes. At first the movement spread slowly. Probably the fact that it was so generally discountenanced by the employers, between whom and the employees there existed frequently an unusual intimacy, and the general distrust of the public as well as the comparative weakness of the trades, had something to do with this slowness of growth. But the main reason was that wages were high and the conditions of labor extremely good. As the conditions changed, trades unions came in more rapidly. In the years 1884–1890 show the greatest increase in numbers and strength of these organizations. Although the increase since then has not been so rapid, the results of the period of formation have been quite permanent. This is rather surprising when we consider the rapidly changing character of the population of the State and of all its industries. Of course many of the older unions have passed away; many were not strong enough from the very beginning to hold their own, but those that have survived have grown generally stronger and more efficient, and the number that survived, together with the natural growth, is large enough to form a very appreciable factor in the development of industry and of the State's resources. Each important city in the State now has a large part of its various trades organized into local unions, most of which are affiliated with or are branches of associations running throughout the United States and Canada. These unions of different trades in the same city or county are then for the most part united in local federations, and these federations then send representatives or delegates to the recently organized coast convention, the first step in the direction of a still broader organization.

"It is not easy to ascertain the exact numerical strength of the unions. Partly because of the lack of any impartial investigations, partly because of the boastful misrepresentations of the unions' officers, and in other instances on account of the desire to conceal who are members, or how strong the union is. Nor would it be very instructive if we were able to ascertain the number of members accurately, because it is constantly and rapidly changing, as the conditions of labor change and as the different industries prosper or fail. Old unions die out and new ones take their place, which may in turn live or die within a year. Sometimes a great wave of excitement will swell the numbers rapidly. In 1888 the bureau of labor statistics estimated there were about 20,000 members of labor unions in the State. A conservative estimate places the members from 40,000 to 45,000. There are but few, if any, important industries that are not at present organized, and many organizations exist of the unskilled. Even the Chinese are organized into unions called 'Tongs,' but on account of the extreme secrecy trustworthy information concerning them is impossible to obtain.

"It is not necessary to give a full description of the organization and purposes of the unions in California, for they are, of course, practically the same as elsewhere. Some points in which they differ slightly, or which are necessary for comparison, have been selected. The dues that are imposed on the members are generally quite small. They differ too much to allow of any average being drawn. The initiation fees vary from 50 cents to \$10; the monthly dues from 10 cents to \$5, the bulk of these being below \$2. The members are reconciled to the payment of the dues and assessments in most cases by the fact that they thus form a fund out of which they are entitled to certain benefits. Both of them are for moderate amounts, owing to the smallness of the sums collected. The general principle in regard to the payment of assistance to the sick seems to be that the weekly payments shall be approximately one-half of the regular wage set by the union. The funeral benefits generally aim to secure a decent burial, but are in some cases a little more. They vary from \$50 to \$250. Some few of the unions provide also that a member who is out of work through no fault of his own shall receive stated assistance from the union. This dangerous loophole for drones is, however, not left in many of the constitutions, and is generally hedged around with various safeguards. The amount of 'strike pay' is generally smaller than that to be paid in cases of sickness.

"The federations that unite the unions in each city or county vary in their form

from a loose confederation, with no power to enforce any legislation over the unions of which it is composed, to a strong body, to which all important questions are referred. Many important functions are performed by these bodies. Their offices and quarters often serve as the center for the unions, and sometimes they own or rent the rooms where the meetings of the unions are held. The officers of the federations sometimes relieve the officers of the unions of a part of their more formal and clerical duties. The office of the federation, which is generally open all the time and centrally located, serves as a general means of communication between the different unions and sometimes as an intelligence office for those out of work. The rules of most of the federations do not allow the unions of which they are composed to declare a strike without the consent of the council of the federation. A local union therefore that desires to strike has first to convince the other unions of the justice of its intention and obtain the sanction and indorsement of the federation, and then in most cases also submit the matter, with the approval of the federation, to the central authority of the association of which it is a branch. There have been many instances where the necessity of thus showing the reasons for a strike has, together with the conciliatory attitude of the officers of the federation, prevented serious trouble.

"The organization of the Pacific Coast Council of Trades and Labor Federations" is extremely simple. There is little more than is necessary for parliamentary action. This association is as yet very weak. It is supposed to meet once a year and to be composed of delegates from all the unions on the coast. But the expense of sending delegates to meetings of the national trade organizations, which are held for the most part in the East, is so great that the unions hesitate to incur the additional expense of sending men to this convention also. Its aim is to care for those interests of the unions that are peculiar to the whole of the Pacific coast, such as the regulation of the hours of labor by law and the like. That a need of such an organization should be felt is a mark of the economic isolation of the States lying west of the Rocky Mountains.

"The aims and purposes of the unions, and the methods by which they hope to achieve them, are practically the same as those of trades unions everywhere, and can not be considered here. In the matter of making formal preparations for the adjustment of disputes between the employer and the workmen there is nothing to be noted that is peculiar to California. As in all the other States, there is a growing tendency among the unions to provide either in their own constitutions or in some other way, as for example, in their federations, for a board or a committee of arbitration. Practically this board is nothing more than the spokesman of the unions in cases of dispute. The State board of arbitration is almost useless, because it can not move until it is called upon by the parties to the dispute, which rarely happens. There is in San Francisco a strong branch of the Socialists Labor Party. It carries on a continual but moderate agitation, and sometimes influences the unions in their policy. Like all similar organizations in this country, the unions have been the favorite field in which the advocates of infallible nostrums for the cure of all the diseases of the body politic have sought a market for their wares. These persons have from time to time gained the ears of the workingmen, and from time to time the unions have seemed to give their indorsement to some of these measures. Sometimes a newspaper run in the interest of some of these hobbies or of some political party has been chosen as the organ of the unions. Sometimes one has proclaimed itself such without the direct sanction of the unions. Sometimes the unions have given their sanction, because the paper then formed a convenient medium for the circulation of their notices. But it is seldom that these papers really represent the thinking of the members of the union. These members are for the most part sober-thinking, conservative men, who are little likely to believe that all the ills of society can be cured by one dose of any political medicine. Many of them, too, are property owners. The constitutions of many of the unions contain clauses which forbid the discussion of any political or religious view at their meetings, a prohibition which, I am told, from many reliable sources, is pretty generally enforced. Whatever views the members may hold, the unions as such do not often enter politics. The organized trades have not always been happy in the choice of their leaders. They have here, as elsewhere, too often abused the powers which they possess, and have been more arbitrary than any employer, but these excrescences are apparently passing away.

"The importance of the movement that introduced trades unions into California can not be well over-estimated. Not only do the results already attained warrant this statement, but the possibilities that are inherent in them both for good and evil are enormous. In the first place, the establishment of unions has brought the California workmen into touch with the movement of labor elsewhere. Whether this has been by actual affiliation in organization or not there is as a

result the closest affiliation in thought. This adds materially to the forces that tend to break down the economic isolation of the State. That too close an affiliation with the Eastern unions in the case of those which, as I have shown, enjoy peculiar advantages from being located here, is at the cost of the California union, is clear. The Western workmen have in these industries an advantage which is likely to make them the heaviest contributors to any cause calling for financial support. On the other hand it is clear that if the unions are strong enough they may retain for California, for a longer period than would otherwise be possible, the peculiar advantages of a new community. But in the main the unions have had little power to retard the gradual change in the conditions which we studied in the first part of this paper."

Now, as to the condition of the workmen, the deposits in the savings banks will show to some extent in the paper that I am reading now.

Q. (By Mr. KENNEDY.) Now, you are passing from the labor question to something that does not peculiarly relate to labor.

MR. LITCHMAN. He is taking that up to show the prosperity of the labor people.

THE WITNESS. I am showing the prosperity of the labor people now as compared with years ago.

(Reading:)

"During the year 1892 there was deposited in the savings banks of California the sum of \$95,546,196.03; during the same period there was withdrawn from the same banks the sum of \$83,304,726.35, there thus being deposited \$12,241,469.68 more than was withdrawn."

Q. (By Mr. FARQUHAR.) You say \$95,000,000?—A. No; I say \$95,546.13, the net deposits of the workmen then. I think it should be \$95,000,000.

"During the same period there was withdrawn from the same banks the sum of \$83,304,726.35, there thus being deposited \$12,241,469.68 more than was withdrawn. That is a gain. During the year 1894 there was deposited in the said banks \$97,496,712.51, and there was withdrawn \$104,155,474.06, or \$7,658,761.55 in excess of the amount deposited."

Q. Some of your local unions carried that?—A. Yes.

(Reading:)

"In 1894, or rather during the year 1894, there was deposited in the said banks \$97,496,712.51, and there was withdrawn \$104,155,474.06, or \$7,658,761.55 in excess of the amount deposited.

"In 1899 there was deposited in the said banks \$77,572,588.06, and withdrawn \$71,867,176.16; there being thus deposited, in excess of the amount withdrawn, \$5,705,411.90.

"The savings banks of a State or of a nation are the workers' depositories, and by the rise and fall of deposits therein the workers' comparative prosperity can be measured as by a barometer."

Q. (By Mr. KENNEDY.) Is that the end of the labor feature?—A. Well, yes, partly.

Q. You say, speaking of the Socialistic Labor party that, "Like all similar organizations in this country, the unions have been the favorite field in which the advocates of infallible nostrums for the cure of all the diseases of the body politic have sought a market for their wares." I should like to ask you if the workmen afford any more a favored field for the sellers of those nostrums than the farmers or any other class of people?—A. I think in California they are rather more so because of the fact that they are not quite so well educated as the farmers. I think that they are more susceptible to the teachings of such leaders than are the farmers. That would be my impression.

Q. Where do the nostrums of the Populist party find the greatest support, among the workmen or among the farmers?—A. That I am not able to say. I think, however, they get some support from both parties, both organizations.

Q. You think that it is applicable to one class of people any more than another, that the workmen are any more susceptible to the wiles of these people who have these peculiar nostrums to peddle than anybody else?—A. I do not know as I could hardly charge them with that, but then we sometimes think that is the case.

Q. You do not come here as a representative of the workmen or labor organizations, do you?—A. No; I do not.

Q. And you are not therefore able to speak for them?—A. No; I could not very well speak for them in that respect.

Q. You say the chief cause of the cheapness of Japanese or Chinese labor is its incompetence?—A. Yes; the unskilled.

Q. You said its incompetence. I should like to ask you if the fact that the Chinese can live very much more cheaply than the American workmen can is

also a factor in accounting for the cheapness of Chinese labor?—A. I think so; yes.

Q. Is it a greater or less factor than that of incompetence?—A. I think it is rather a greater factor. A Chinaman can learn very readily if he has the opportunity. He is brighter than the Japanese as a general thing, as far as learning is concerned and in adapting himself.

Q. (By Mr. LITCHMAN.) Have you ever visited the shoe factory in Chinatown in San Francisco?—A. I have been through it, but not to give it any special attention.

Q. Is it not true that the workmen there use the same improved machinery as the large factories of the East?—A. Yes; I presume so.

Q. Are not the superintendents men educated in the shoe factories of the Eastern States?—A. I have no doubt they are, but I am not aware of that fact.

Q. Is it not a fact that they turn out just as good a shoe for the grade of shoe made in that shoe factory as they do in any shoe factory in America?—A. I have no reason to doubt that fact.

Q. How does that fact coincide with your suggestion that the Chinaman is incompetent?—A. Oh, I spoke of the unskilled Chinaman. The skilled Chinaman is just as bright as any man.

Q. (By Mr. KENNEDY.) Is the sentiment of Californians generally in favor of continuing the restriction of Chinese immigration?—A. I would say so, as a general thing.

Q. Without regard to party?—A. Yes; both parties indorse that principle, I think.

Q. What is the cause of this sentiment among Californians?—A. The Chinese are undesirable.

Q. Are they desirable as citizens in any way?—A. We do not consider them as such.

Q. Would the people of California treat them as social equals?—A. I think not.

Q. Would they under any circumstances treat them as social equals, do you suppose?—A. I think not—under present conditions at least.

Q. Do they ever adapt themselves to the customs in this country?—A. They do not seem to do so. They seem to wear their own dress—that is, the dress peculiar to their country—and they do not assimilate or associate particularly with the other classes of people with us.

Q. Will they ever, in your opinion, conform to the political institutions of our civilization?—A. In my opinion, not.

Q. Then, in view of those facts would you say that they are desirable citizens or that it is desirable to have them come to this country?—A. No; I would not.

Q. For any purpose?—A. I would say to exclude them as far as possible, and I will add this fact, that the 35,000 Chinamen give the police of San Francisco more trouble than all the remainder of the city put together. They cost the city more because they are gamblers—they are noted for that—and for that reason and a great many other reasons that might be stated they are a very undesirable class of people.

Q. You know, I suppose, that the Chinese exclusion act will terminate on the 1st of May, 1902?—A. I understand so; yes.

Q. Is the sentiment of California in favor of extending that law?—A. Yes.

Q. Is the sentiment overwhelmingly in favor of it?—A. I think so. I think it is very generally so. I think that any man that came up for office would have to advocate that extension to be elected on any ticket, either the Republican or Democratic ticket. He would have to take that stand or he would be defeated.

Q. (By Mr. FARQUHAR.) In discussing this Chinese labor feature in your paper, there were two reasons given for the small wage of unskilled labor and that was, as I take it, the scarcity of that class of labor in the State and the inefficiency of the Chinese part of the labor. Now, are both these reasons good for the small wage that you have among unskilled labor, scarcity and the inefficiency of the Chinese?—A. While labor was scarce, a white man would command larger wages than a Chinaman, even if labor was scarce.

Q. He does at any time?—A. Yes; he does at any time. It would make a difference of from 50 cents to 75 cents a day on the same class of labor. For that reason I think the Chinaman would receive smaller wages always.

The witness then concluded the reading of his paper, as follows:

"The story of a national calamity is told in the showing above, that in the space of 2 years the tide of the worker's condition had changed to an extent that decreased his earnings in this State almost \$20,000,000. An excess of withdrawals over deposits speaks eloquently of employment lost and not regained during long months of idleness and waiting for better things. Fortunately, we can say that the reverse is the condition now.

"In connection with this whole subject of the condition of the labor of the State now, as compared with 4 or 5 years ago, and in regard to the benefit which labor receives from the generally better condition of industries of every description, it is not uncommon to hear the questions: 'Granting that conditions generally are more prosperous, is the individual worker better off? Does he receive more pay? Is the wage rate per diem increased?' To all of which we reply:

"The condition from 1894 to 1896 left an enormous percentage of the wage-earners without employment of any kind. Of those who had employment some few escaped reduction of pay. In cases where direct reduction was not made, it was made indirectly in the way of working less than full time. When the tide turned the first result was not of course increase in pay, but absorption of the vast amount of idle labor, and working on full time once more. The next effect was increase in pay in isolated cases, and from that to more frequent cases, until, at this time, demands on the part of labor for more pay and fewer hours of work per day are heard in all directions, with the pleasure of hearing in addition, in most cases, that the demands are granted.

"In concluding this article, one more phase of the subject of the present condition of labor in this State should have attention, especially in connection with what has just been said, and that is in relation to increase in cost to him of the necessities of life, coincident with the increase in prosperity generally as spoken of.

"It may be said in general, that the cost of groceries in this State now averages in price about the same as in 1896; some being a little cheaper and some a little dearer.

"Hardware, stoves, and house-furnishing goods are about 15 per cent higher than in 1896.

"Meats are about 10 per cent higher.

"Drugs and medicines are from 5 to 10 per cent higher.

"Clothing is about 10 per cent higher.

"Dry goods are from 5 to 10 per cent higher.

"Fuel: Coal is the same as in 1896; wood is from 15 to 20 per cent higher.

"Rents: As to houses usually occupied by wage-earners, the same, or from 5 to 10 per cent lower. Newer and better classes of houses are some little higher.

"From all of the foregoing it would seem that the contention that the condition of the wage-earner in California compares well with the condition of the wage-earner in any other place that can be named, is well sustained, and that in fact California, in this respect, leads the States of the United States, and the United States in turn leads the countries of the world."

Q. (By Mr. FARQUHAR.) You have stated in your paper about this scarcity of unskilled labor and also the inefficiency or incompetency of the Chinese labor. Is not that latter statement the one that really explains your small wages?—A. It is just possible.

Q. Is it natural in California that there should be more money in wages to unskilled people than the product itself could afford?—A. No, I think not.

Q. Now is it not a general complaint in California that white labor will not accept employment in unskilled lines?—A. To a certain extent that is true.

Q. Is it not a pretty general condition in your State?—A. I would say so.

Q. But is it not a fact that the two features of the cheapness of this Chinese labor actually shuts out the unskilled labor of other nations?—A. Yes; I think that is true to a certain extent.

Q. And provided there is a sufficiency of the Chinese labor, there is no opportunity for the unskilled labor of other nations or of Americans?—A. No.

Q. Is the presence of the Chinese as a laborer, a misfortune to the body of the people and to the welfare of your State, or is there any benefit in this cheap labor?—A. They produce as a class very little. They assist in manual labor and some well-paid labor. Chinese cooks are in a pretty good demand and they command good wages. But the unskilled Chinaman is very undesirable.

Q. How does he expend his earnings?—A. I do not know, but it is charged they gamble among themselves. I do not know how they live, but they are not a desirable people at all.

Q. Out of their earnings, there is not much returned to the body politic?—A. I do not think so.

Q. Do they hoard and send money to China, or spend it in gambling among their own people and make rich their own gamblers?—A. I understand they send a large portion back to China, and of course they spend a certain part among themselves, what part I could not say.

Q. Can you give the commission any idea of the average time a Chinaman spends in California before he returns?—A. I haven't the information at hand.

Q. Could you give us an idea of the proportion of Chinese that earn this money in America and take it to China with them, out of the something like 35,000 in San Francisco?—A. I should say in an offhand way that they remain about 15 years in California and then go back home. Some might stay longer and some not so long, but an average of something near that time.

Q. (By Mr. A. L. HARRIS.) In what industry is the Chinese labor found mostly?—A. It is diversified; the skilled labor is employed among different trades—tailors and shoemakers and different kinds of manufacturing establishments which they have in a small way; of course the unskilled do any work they can get.

Q. Is there any Chinese labor found on the farms?—A. Yes; a considerable portion of it in fruit picking time and in the sugar-beet industry.

Q. Are the Chinese valued as farm laborers generally?—A. They are quite steady. They are there Monday morning, and a good many white men are not so punctual. They stick close to their work.

Q. Are they preferred to the white men on that account?—A. In some degree in some classes of work it might be they are, but not in a general way.

Q. Is that preference on account of the cheap labor or on account of their ability?—A. I think it is on account of the cheapness of their wages.

Q. Do they work on the railroads as section hands or in the construction of railroads?—A. Yes.

Q. Are they considered valuable in that respect?—A. I do not know how valuable they are, but I guess they work right along.

Q. Is the number increasing?—A. Not very rapidly. I think the exclusion act keeps them from coming in very rapidly.

Q. Where do they get in now and how?—A. I am not able to state. They are smuggled in if they get in at all, except the merchants that are entitled to come in. They have no trouble in landing in San Francisco; but as to those not entitled to come, I do not know where they get in.

Q. Do they increase by birth?—A. Yes; to a limited extent.

Q. Are there many of them females?—A. There are quite a number females.

Q. Are they married?—A. I think a great number of the females are held in slavery, as we call it, for prostitution.

Q. Slavery?—A. We call it slavery.

Q. In what way?—A. A man brings a Chinese woman to San Francisco and he sells her, may be for \$2,000. She is kept in a house of prostitution, and the man who buys her gets all that she earns.

Q. Does he hire her out?—A. Yes; the authorities have been trying to suppress this for the last year or so.

Q. Is this sale an open sale?—A. I do not know how open it is, but that transaction has repeatedly occurred.

Q. Has proper effort been made to suppress it?—A. Yes; the United States Government authorities took hold of it about 3 months ago and are making a desperate effort now to close it up.

Q. How long has that practice been in vogue?—A. For the last 10 years at least.

Q. Is it not very demoralizing?—A. Certainly; it could not be otherwise.

Q. Have you laws sufficient to meet it?—A. The law has been avoided in many ways, but the United States authorities took hold of the evil about 3 months ago and we think now it will be suppressed.

Q. Are the most of the females that come to this country in that condition?—A. I should say quite a number. I could not say what proportion, but I should judge nearly half.

Q. Are they still coming in that way?—A. They are coming as far as they can. The exclusion act prevents them to some extent.

Q. If the exclusion act is rigidly enforced, what opportunities have they to come?—A. They come in this way: A merchant is entitled to bring his wife. He often brings one of these people over as his wife and then sells her for gain. They do a great many things not proper to do.

Q. (By Mr. FARQUHAR.) Have the Six Companies anything to do with the importation of these prostitutes?—A. I could not say they have. I do not think personally they have.

Q. Have any officers connected with the Six Companies anything to do with it?—A. They may have. It certainly is a well-known fact in San Francisco that there are numbers of these Chinese prostitutes and this prostitution is openly carried on.

Q. (By Mr. A. L. HARRIS.) What is the social condition in Chinatown in San Francisco?—A. It would not be worth speaking of. Morally, it is very bad; it could not be worse. It is almost dangerous to go through there in the daytime unless you are well armed or have a policeman with you. It is not safe.

Q. (By Mr. KENNEDY.) Have you any knowledge of Chinese spending any of their earnings in this country except for the bare cost of living and clothing themselves?—A. That is about all they spend, that which they need, and very little of that. They live so very cheaply that the white men can not compete with them at all in the matter of labor. It is said one of them can live on 10 cents a day; I do not know how true it is.

Q. Is their presence degrading to our civilization on the Pacific coast?—A. I would consider it so.

Q. (By Mr. A. L. HARRIS.) Then, if the Chinese exclusion act is not extended, the white labor of the Pacific coast will come in competition at once with this Chinese labor?—A. Yes; with the labor of about 600,000,000 of them. We would be in a very bad shape indeed.

Q. Would that condition of affairs be to the industrial interest of California?—A. I think that would be against the industrial interests as well as the other interests of the State.

Q. You may now take up your next subject.—A. It will be the sugar beet.
(Reading:)

"SUGAR BEET.

"The beet-sugar industry is one of the most important branches of our agriculture and promises great development. It is claimed that experience and scientific experiments, as well as the natural climatic influences existing here, attest the superior merits of our State for sugar-beet growing. Briefly summarized, the advantages are: Earlier maturity of the beet; earlier opening of the campaign; long season for harvesting; long run of the factory; greater yield per acre; greater per cent of saccharine; immunity from frost and immunity from rain at critical periods. Sugar-beet growing is of such present and future importance as to justify placing before you the following statement from the American Beet Sugar Company, of Oxnard, Cal., which shows the growth of the industry in the State:

Beet-sugar products, 1888-1899.

[Tons of 2,000 pounds.]

1888.....	1,910	1894.....	18,615
1889.....	2,457	1895.....	23,827
1890.....	3,351	1896.....	31,815
1891.....	3,074	1897.....	35,290
1892.....	6,887	1898.....	18,086
1893.....	9,888	1899.....	32,445

NOTE.—The output for 1899 should have exceeded any previous year, but it was cut down by drought where facilities for irrigation had not been provided. The yield hereafter will show a marked increase.

"The tests for the percentage of sugar are made at the factory for each load or from each car as delivered, and the farmers at Oxnard are allowed to employ a check chemist to verify these tests. The company furnishes the seed at 12 cents per pound, which is cost, and the amount is deducted from the first delivery of beets.

"The company has in its employ a number of agricultural experts, and advertises to give the growers the benefit of their knowledge as to the proper handling of their lands, planting, thinning, harvesting, etc.

"An average crop on good land is from 12 to 15 tons per acre. Many growers, of course, obtain very much higher results than this. The average cost to raise an acre of beets, including seed and when all the work is hired done, is \$20 to \$25, delivered on board the cars or at the factory. Should the grower do all or part of the work, this amount is correspondingly reduced.

"Experience has shown that it is advisable to plant one-fourth to one-third of the land to beets every year, rotating with whatever other crops are best adapted to the soil. Crops grown after beets have the advantage of the beet plowing and thorough cultivation necessary for successful beet growing, and it is the common experience that larger yields are obtained from other crops when rotated with beets.

"Some of the benefits derived from beet farming.—Beet farming is not only beneficial to the land in increasing the depth and physical condition of the soil on which the crops are grown, thus enlarging their yield, but also the beet tops and pulp furnish a valuable feed for sheep and cattle. A yield of 15 tons of beets leaves on the field 6 to 8 tons of green tops, and for the same 15 tons of beets delivered at the factory the company will give 7½ tons of pulp, as the company gives to the grower one-half the weight of his beets in pulp at 10 cents per ton, when taken on

board cars at the factory or when hauled away by teams from the factory loading chute. One acre of beets, therefore, yields to the grower from 6 to 7½ tons of pulp, at a cost of from 60 to 75 cents per acre if taken at the factory, in addition to the returns received from the beets delivered to the factory and the beet tops which he retains.

"The following table shows the value of different feeds compared with beet tops and pulp:

Feeding stuff.	Value per ton.	Value per acre.
Alfalfa hay	\$8.00	\$48.00
Barley straw	5.00	9.00
Barley grain	15.00	18.75
Barley hay	9.00	18.00
Beet pulp	1.85	10.12
Beet tops	2.59	15.54

"Therefore, 15 tons of beets will bring to the grower \$15.54 worth of tops and \$10.12 worth of pulp per acre, less \$1.75, price of pulp at factory, an increase of over 40 per cent on the beet crop, figuring 1 ton of beets at \$4, which can be taken as a low average price. It is remarkable how stock will improve on these two products from beets, which, up to the present time, have been a loss to the growers.

"The beet tops are best utilized by bringing cattle or sheep upon the beet fields as soon as the beets have been carted away. Especially sheep will do surprisingly well on beet tops and fatten quickly. The droppings of the animals remaining on the land will contain almost all the mineral plant food of the tops, so that it is, for the fertility of the land, the same, whether the tops or the droppings are plowed under."

Q. (By Mr. A. L. HARRIS.) How many factories have you in California?—A. We have 8.

Q. What amount of money is invested in your factories?—A. Something over \$10,000,000 in the 8 plants.

Q. Can they manufacture sugar in competition with Hawaiian sugar?—A. I think so.

Q. There is no uneasiness, then, on the part of your California producers on account of the competition of Hawaii?—A. There does not seem to be. The greatest uneasiness we have is to get a good crop. Some years we are short of water and do not get a good crop.

Q. Is the industry increasing in magnitude?—A. Yes; 10 years ago we had only 2 factories.

Q. Are they in competition one with another?—A. Not that I know of. There is no particular competition between them. They all seem to want to make as much sugar as possible.

Q. Is there a combine between the factories, that you know of?—A. Not that I know of.

Q. Do they use American or German machinery?—A. Part of it is made here and part is imported. I think Mr. Spreckels imported a part of his machinery, but just what part I am unable to say.

Q. Is his one of the older mills?—A. Yes. That is, one of the largest, Claus Spreckels's.

Q. Is the output refined and ready for market?—A. Yes.

Q. (By Mr. FARQUHAR.) What is the commercial grading of the sugar produced from the beet?—A. I think it ranks about the same as the cane sugar. I think they give 1 pound more of the beet sugar for a dollar than they do of the cane.

Q. Is that in the case of the granulated or loaf sugar?—A. The granulated.

Q. Is there much difference between the cane and the beet sugar in color and attractiveness?—A. The two look very much alike; they are very similar in point of appearance and quality.

Q. Is most of the beet sugar used in canning and other processes of that kind?—A. A large portion of it is, and quite an amount of it is shipped out of the State into other States. It is consumed in the market in San Francisco to a considerable extent. I presume a great deal of it is used in canning also.

Q. Are the parties in interest in Hawaii and California practically the same men?—A. Some parties in California are interested in Hawaii. There may be others interested there that are not interested here.

Q. Are there independent establishments in California that have nothing to do with the Hawaiian product?—A. I think there are.

Q. Is it a product itself that any farmer can engage in that buys the seed from the association and plants it and brings his product to the factory? Is the business open to all?—A. It is open to everyone; no restrictions.

Q. (By Mr. A. L. HARRIS.) Are your beets rich in saccharine matter?—A. Yes; I think they are the richest beets in the country.

Q. (By Mr. TOMPKINS.) What is the least sum of money required to build a sugar factory?—A. I think it would be something like a half million dollars.

Q. You have 8 factories and \$10,000,000 invested. That would indicate an average of more than \$1,000,000?—A. Yes.

Q. And you had 2 of those 10 years ago?—A. Yes.

Q. And you produced about 3,000 tons of beets 10 years ago?—A. Yes.

Q. Then you had over \$2,000,000 invested at that time to handle 3,000 tons of beets?—A. Yes.

Q. Is it possible to operate profitably with so large a capital and so small a quantity of raw material?—A. I do not know how it was at that time, because I came to California about 13 years ago, and I did not understand the conditions then as well as I do now; but I presume the plants just starting in, with new machinery and everything, would have a greater expense than later on.

Q. Even at the present time you make about 35,000 or 36,000 tons of beets do you not?—A. I think so.

Q. That would be in the neighborhood of 4,000 tons for each mill?—A. Yes; in 1899 we had 32,000 tons.

Q. How much sugar does a ton of beets make?—A. I do not know exactly. It varies according to the percentage of saccharine matter. The beets run from 12 to 14 per cent sugar.

Q. (By Mr. FARQUHAR.) You may proceed with your next subject.—A. The next subject will be commerce, manufactures, and shipbuilding.

(Reading:)

“COMMERCE, MANUFACTURES, AND SHIPBUILDING, SAN FRANCISCO.

“Our commerce, manufactures, with some exceptions, and our shipbuilding center at and around the city of San Francisco, the leading commercial emporium of the Pacific coast. The scope of this report does not admit of details as to the manufacturing industries of the State. There is much more done in this direction than is generally supposed, for the list of manufactures embraces many important articles and the value reaches a large sum. Still, California can hardly yet be classed as a manufacturing State. The conditions, however, are in many respects most favorable, and with the increasing trade of the Orient and the enlargement of population manufactures must attend the great change that is about to take place.

“We have already attested our capacity for and adaptability to the important industry of shipbuilding. All the raw materials are found on this coast to meet the expanding demand for ships built in the waters where they are to operate. There is every logical reason for assuming that around the bay of San Francisco the future will witness shipyards employing many thousands of workmen. The Union Iron Works is an establishment known throughout the world for its splendid examples of shipbuilding it has turned out. Iron ships built in this climate of little temperature variation need no readjustment; witness the splendid performance of the battle ship *Oregon*.

“But it is to the increasing commerce of the Pacific we must look for State growth and development commensurate with our high expectations. The subject has seemed to justify some statistics illustrating the present condition of the commerce of this coast. The tables which are hereto appended were prepared by Hon. E. W. Maslin, deputy naval officer at this port, and are compiled from Government records. (See exhibits.)

“The first table shows the imports into and the exports from Pacific ports for a period of 10 years to and from all countries. It shows that while our imports have increased in the period only \$2,800,000 our exports have increased over \$38,700,000.

“The next table is designed to show in detail the imports from and the exports to Asia and Oceania, the countries with which we now have new and important relations. The statistics are for 5 year periods. Our imports from countries of Oceania have fallen off about \$3,000,000 and the exports have increased about \$3,000,000. Our imports from countries of Asia have increased over \$3,700,000 and our exports have increased about \$13,000,000. For the whole period our imports have exceeded our exports by about \$12,000,000.

"The table showing the relative importance of Pacific coast ports for the fiscal year ending June 30, 1898, will be examined with interest.

"It shows that the imports at the ports in California amounted to \$43,497,665 (of which \$42,821,945 came through the Golden Gate) while all the other Pacific ports (including \$1,754,422 credited to Arizona) received but \$8,523,548. Of the total exports (\$74,528,934) \$40,709,851 went from San Francisco; \$17,882,355 from Puget Sound, and \$13,880,314 from Oregon ports. The exports from Puget Sound are largely of lumber. The flour trade, also, with China and Japan has increased, and accounts in part for the export trade of Washington and Oregon.

"The tables showing the various articles imported and exported to and from Pacific coast ports furnish an interesting study, and it is believed for the first time are tabulated and published. The items do not necessarily indicate that they were produced here; for example, the item of cotton, of which we exported \$5,071,424, which came to Pacific coast ports from the Southern States and was reshipped, but the intelligent reader will readily note the articles of coast production.

"There is and will continue to be a sharp rivalry between Puget Sound ports and San Francisco for the controlling influence in the commerce of the Pacific. There are large transcontinental railroad interests centering at Puget Sound; the Canadian Pacific is also in the field for its share of the business. There is a large and rich agricultural country tributary to Puget Sound. We concede to our sister cities in the North great energy and enterprise, and we do not doubt that they will become, and we hope they may, prominent centers of a large and important trade with the Orient. In the nature of existing conditions this must be so. There was room and there was opportunity on the Atlantic coast for Boston, New York, Philadelphia, and Baltimore and many smaller cities, but there is one and can be but one New York City. So on this coast Washington and Oregon will build up large and important cities. The business that must develop in the extensive country lying to the east of that coast and the development of those two coast States will make large centers of trade a necessary result. All this conceded—conceded, too, with the spirit of pride that is so to be—we claim that San Francisco is destined ever to be, and it now is, the queen of the Pacific coast in America.

"In the first place California is capable of sustaining a population equal to that of Japan, with about the same square miles of area. The wealth-producing power of the State, which I have attempted briefly to show, is in itself sufficient to command the commerce of the coast, as it is to be its greatest contributor. San Francisco already has an accumulated surplus capital sufficient to throw at once into the avenues of trade all that may be required and as rapidly as may be demanded.

"San Francisco has the most accessible and the largest available harbor on the Pacific coast. Puget Sound is a vast body of deep water, but it can not be said to be an equally vast or available harbor, and the ports lie far away from the seacoast. Ships can anchor in safety in almost any part of the 460 square miles constituting the bay of San Francisco, including the tributaries of San Pablo and Suisun. This bay has a broad entrance, but 1 mile wide, and lies within 91 miles of the shortest sailing route from the Isthmus of Yokohama, and within 200 miles of the shortest sailing route from the Isthmus of Hongkong and our possessions in the Philippines. A glance at the map, constructed according to Mercator's projection, disputes this; but Lieutenant Maury and Captain (now Admiral) Sigbee long ago showed, the rotundity of the earth's surface considered, what I have stated to be true. Mr. William H. Mills, in the presence of this board, recently made a clear demonstration of the fact. The principle upon which this fact rests is stated to be that the shortest line between two points upon the surface of a sphere is the line which would cut that sphere into hemispheres. This is what is nautically known as "great circle sailing." Lieutenant Maury's discovery revolutionized the sailing charts of the globe, and its significance to us lies in the fact that San Francisco will be a way station for all steam sea-going vessels bound through the canal (soon to be) to and from Asiatic ports. Here will be a great depot for the supplies needed on the voyage and for coal, and to discharge and take on cargo.

"San Francisco is already a large city and is fully equipped for a large volume of business. It has extensive and commodious wharves which required time and much money to construct; and it has large trade connections already established throughout the globe.

"Whatever may be said of the policy, permitting them to come or to stay in this country, there is now a large and wealthy Chinese population in this city, which controls and brings here, and will continue to do so, a large part of the China trade.

"While the overland traffic, originating in the West along the parallels of latitude corresponding with Puget Sound, may come to the Pacific or pass east from the Pacific along these lines, the vast domain of the United States and the Republic of Mexico, lying far south from the overland roads from Puget Sound, must find inlet and outlet from and to the Orient through the Golden Gate. The trade of those regions will never go as far north as Puget Sound to ship for Asia.

"Travelers and traders from the South Sea Islands will seek the earliest port for disembarkation, where they can soonest escape the confinement of the sea voyage, and where, if they are merchants, they can supply their wants, or whence they can journey east across the continent or to Europe. San Francisco is that desirable point of escape from the monotony and perils of the sea.

"San Francisco is the best drained and most healthful city in the world, and withal picturesque and beautiful in its location. Not only its own attractiveness but the attractions of the State will bring people this way. Then to the climate of San Francisco is a distinct and positive economic advantage possessed by no other city on the globe. I know that many find it too stimulating and invigorating and resent the necessity for warm clothing the year around. But from the standpoint of general comfort to one not a confirmed invalid, and from an economic standpoint the climate is of incalculable value in the building of a great city. Seldom below 40 degrees or above 80 degrees, the temperature is such and the atmosphere so stimulating that physical exhaustion never comes from extremes of heat and extremes of cold are unknown. This is an important feature to the laborer, the artisan, the man in the workshops and in the factory, as well as to the man who toils with his brain or who lives for the mere pleasure of living.

"It is no part of the purpose of this report to describe San Francisco in detail, however much it might interest the commission. Departing from my resolve not to deal with localities there seemed to be justification for what has been inadequately said of our chief city in the fact that our State and its commercial metropolis are so closely interwoven and interdependent that at least some broad facts concerning our hopes for its future greatness were demanded. I should like to speak of San Francisco's people, of the architecture displayed in their homes and business houses, of the places of amusement, art galleries, libraries, the Golden Gate Park, the streets, facilities for getting about in the city, its picturesque surroundings, the exquisite beauty of the bay and its islands as adding to the charm of the city, the suburban attractions which add so much to life in a city, the historic seal rocks at the Cliff House, the unique features of Chinatown, the churches and general moral tone of the people, the influence the two great universities are having and must continue to have upon our intellectual life and growth, of the state of society here, of the general spirit of contentment and happiness pervading all classes, and a hundred other things which go to make up or express the civilization of this wide awake, energetic, restless, ambitious, and altogether hopeful population."

Q. (By Mr. A. L. HARRIS.) Before you pass to something else, what kind of manufacturing interests have you in California?—A. We have the shipbuilding manufacturing, and the beet-sugar manufacturing, and we have a great many other smaller manufactures in San Francisco.

Q. Have you mills for the manufacturing of flour?—A. Yes; many of those. We manufacture a large portion of our wheat into flour and ship it to China.

Q. Is your oriental trade increasing?—A. Very rapidly; it has almost doubled in the last 3 years.

Q. Do you look forward to a still greater increase?—A. Yes; it would seem so. The flour merchants are very sanguine; their trade was growing rapidly and they think will continue to grow.

Q. What are your shipping facilities?—A. The water route. The ships are the main freight route between us and China.

Q. Have you elevators for loading grain?—A. Yes; along the railroads and along the wharves there are elevators to store the grain.

Q. At what point are your grain elevators situated?—A. Most of the grain elevators are situated on the bay at the edge of the water transportation. We have rail or water transportation.

Q. Is your grain finding its way West now in place of East?—A. It is going in all directions, going to Europe, going to China, and to the East generally.

Q. Could you give the commission an estimate as to the comparative cost of producing wheat in California, as compared with other States?—A. Yes. I have not that data at hand, but it is thought by our expert men who are in the business that we can not raise wheat at a profit in California. It seems to be an unprofitable industry, and those largely in wheat raising have discontinued and are cutting their farms up and putting in fruit.

Q. Is that general or is it done in localities only?—A. It might be said to be general, although the change is not coming so very rapidly.

Q. Do you know the number of bushels your soil will produce to the acre?—A. Yes. We count our wheat there by the hundred—by centals. The best yields would be about 80 centals per acre, 80 sacks or 80 centals to the acre on the lands of the Sacramento bottoms. That is an unusual crop; it is a very large yield.

Q. What would you say would be the average?—A. I should say about 15 to 16 centals would be a good average for a fair year.

Q. Do you harvest and thrash at the same time?—A. Yes; our machine starts in cutting 100 acres a day and we sack it and put it in the warehouse ready for shipment.

Q. Is your land more valuable for raising other crops than wheat?—A. Yes.

Q. Even then at that good average production you find that you can not raise wheat?—A. We do not get that average every year. There is one thing peculiar about California. We need water; we get only two good crops out of five, and those are the two that I speak of. The others would be much lighter, probably be not one-fourth as great, so we would run 3 years at a loss and 2 at a profit, and, taking the 5 years, we find that wheat costs more than we get out of it.

Q. Do you raise any corn?—A. Very little. In some portions the people raise corn, but it is not general. It is not a corn State.

Q. What kind of grasses grow at a profit?—A. Alfalfa is the best grass we have for productiveness.

Q. Is California a good grazing State?—A. Yes; the mountains and the rough lands are very good for grazing.

Q. How far north can you raise oranges?—A. As far as Redding, 250 miles north of San Francisco.

Q. At a profit?—A. Yes.

Q. How large an area of the State, then, is suitable for the growth of oranges?—A. I should think about one-quarter of the State at least.

Q. Does that estimate apply to all kinds of citrus fruit?—A. Generally so. Where the orange will grow most any other citrus fruit will grow.

Q. How large a portion of the State is suitable for the production of deciduous fruit?—A. I should say about the same proportions—about one-fourth of the State. Of course there is about three-fourths of the State not suitable to raising any kind of fruit. It is too mountainous, too rough, but the suitable land would be something about my estimate—about one-fourth of the State.

Q. What kind of fruit is most profitable?—A. The oranges and lemons, I think, are the most profitable at the present time. Raisins have been profitable. There have been a large number of them grown.

Q. Do you raise any prunes?—A. Yes.

Q. What do you know, if anything, about a combine for the marketing of fruits in California?—A. I know there is at San Jose what they call the California Cured Fruit Association. They handle prunes largely, and it is said that they fix a price at which they sell their prunes and will not sell at any less, but what are the articles of combination I am not able to state.

Q. How much capital is invested in that association?—A. I am not able to state. They handle about 3,000,000 pounds of prunes.

Q. Do they fix the price to avoid a ruinously low price?—A. I think so; yes; to keep the article up to a price they can afford to sell at.

Q. Is the price fixed exorbitantly high?—A. I think not; about 3 or 4 cents a pound; some higher; some lower.

Q. Is there any complaint among the people generally in regard to this combination?—A. No; we hear very little complaint in regard to it with us.

Q. Is the combination confined alone to raisins and prunes?—A. I think it is, yes; as far as my knowledge goes.

Q. What was the condition of the industry of those two fruits previous to the formation of this association?—A. It was in a very poor condition before that time. The fruit raisers were not making anything, and at the present time I think they are doing fairly well. Their condition is much better now than previous to the organization.

Q. Does it have the advantage of preventing an overproduction in the market at one place and an underproduction at another?—A. I think so.

Q. Does it dispense with the middleman?—A. I think the association has its agents to sell its goods.

Q. Are the freight rates satisfactory, do you know?—A. I have heard no complaints whatever in regard to freight rates. There have been some complaints perhaps made in regard to the time that it takes the cars to get into market.

Q. Is there any competition in freights east from San Francisco?—A. There are

two lines of railways from San Francisco, the Sante Fe and the Southern Pacific. I think, however, they have about the same rate.

Q. Is there any understanding as to rates between the two roads?—A. Not that I know of.

Q. How large an industry is the dried fruit industry?—A. It runs up into the millions.

Q. Where does that fruit find a market?—A. Throughout the United States, and much of it goes to foreign countries.

Q. Does any portion of it go to the Orient?—A. I think it does, yes; to China. The large trade that we have to China is in canned goods.

Q. (By Mr. FARQUHAR.) What proportion of your wheat exports go around the Horn to the Atlantic coast or to Europe?—A. I should judge about three-fourths of it.

Q. Is your manufacture of flour on the Pacific slope sufficient for your local market, or do you have competition from other sections?—A. We manufacture all of our own flour from our own wheat in the State of California, and manufacture a large amount that is shipped abroad to Asia.

Q. So you supply all your local market and also export?—A. Yes.

Q. And you think two-thirds of the berry goes around the Horn?—A. I should think so, although I am not able to give the figures. I know there is a great amount of it being shipped by very large shippers there, who are making a business of shipping to Liverpool.

Q. Is the fact that you have to pay a large freight rate from the Pacific coast to the Liverpool market the reason that the raising of wheat in California doesn't pay as well as other crops?—A. No; I don't think that is the main reason.

Q. What is it?—A. The main reason is that we do not get sufficient water to get a good and certain annual yield. We have two or three failures out of five; that is the main reason that wheat growing does not pay.

Q. It is in the raising of the crop itself?—A. Yes.

Q. But does not the fact that you have got to pay a very large freight rate on the berry to Liverpool market reduce the profit to the California farmer?—A. It does to that extent. We get the Liverpool price less the freight rate.

Q. (By Mr. A. L. HARRIS.) Is there any complaint among the farmers of a combination to control the price of wheat?—A. Haven't heard of any.

Q. Neither in San Francisco nor in Liverpool?—A. We haven't heard of any; no.

Q. (By Mr. FARQUHAR.) Has not the California farmer got to take just what is offered by the foreign shipper?—A. When they get ready to sell that is the case. They sometimes hold a little, though—speculate.

Q. Can you hold wheat against the tonnage that is there ready to be taken into Liverpool or elsewhere?—A. Yes; it can be held in storage there for 2 years.

Q. Is that done at all?—A. It is done to a considerable extent, especially when the price is low, when the farmer will generally hold a while.

Q. Isn't your holding more for the local market, for local consumption, than for the export market?—A. We also ship to foreign markets from these warehouses that I speak of; ship all seasons of the year. There is no time, hardly any day in the week and every month of the year that there are not vessels going out.

Q. Did you say it was a positive advantage to the California farmer to have the grinding and to have the middlings and everything else saved in grinding at home rather than shipping the berry out of the country?—A. That is true. I think it would be an advantage to the farmers, as well as others, to have all manufacturing in the country.

Q. Is there any complaint among the farmers in regard to storage charges or the grading of the grain?—A. The storage charge per ton, I think, is 25 cents for 6 months, and that is not excessive. They don't consider it so. The insurance, however, comes in as a factor, and all those things makes quite a little expense, although it does not seem high.

Q. Your rule of grading is satisfactory?—A. Yes; it is. Because of the fact that we have no rain our grain is bright and it does not need much grading; it is already pretty well graded.

Q. Have you anything further?—A. Yes; I have an article about the oil industry I would like to present to the commission.

Q. (By Mr. TOMPKINS.) Olive oil?—A. No; the petroleum oil yield in California. There are now about 200,000 producing oil wells in California.

Q. How many?—A. Two hundred thousand. [Reading:]

"OIL YIELD OF CALIFORNIA.

"There are now about 200,000 producing oil wells in California, owned by more than 250 companies. Most of the yielding wells are in Kern, Los Angeles, Fresno, and Ventura counties. Prospecting is progressing throughout the State, and many hundreds of oil miners are employed at sinking experimental wells and finding sites for drilling rigs.

"Counties now claiming to be within the oil belts are: Alameda, Butte, Colusa, Contra Costa, Fresno, Glenn, Humboldt, Kings, Kern, Los Angeles, Monterey, Mendocino, Marin, Napa, Orange, Riverside, Santa Barbara, San Bernardino, San Benito, San Joaquin, Santa Clara, San Mateo, Sonoma, San Diego, San Luis Obispo, Solano, Santa Cruz, Shasta, Ventura, Tehama, Tulare, and Yolo. In several of the counties little has been attempted in the way of actual development, but in all of them indications are more or less favorable. Prof. W. L. Watts, of the California State mining bureau, has carefully investigated the cost of drilling oil wells to a depth of 1,000 feet, exclusive of the cost of casing, and gives the following statement as a consensus of opinion obtained by correspondence with well-known oil producers:

"Los Angeles and Kern River district, \$1,000 to \$3,500.

"The Puente Hills, \$3,500 to \$7,000.

"Newhall and territory of the north side of the valley of the Santa Clara River, \$5,000 to \$7,500.

"The foothills of the coast ranges on the west side of the San Joaquin Valley, \$2,000 to \$7,000."

"Col. L. P. Crane, president of the California Petroleum Mining Association, reports that 'Eastern capital to the extent of over \$40,000,000 has already invested in the oil fields of California.' Recent statistics of the value of the oil lands of the State, including the plants which are comprised in boring outfits, tankage systems, pipe lines, etc., reaches the sum of \$200,000,000.

"Careful computation shows that the crude oil yield of California for 1900 was about 4,000,000 barrels, and that the output for 1901 will be from 10 to 15 per cent more than that figure.

"The growth of the petroleum industry is indicated by the following statement, compiled by Charles G. Yale, statistician of the California State mining bureau:

	Barrels.
Yield prior to 1876	175,000
Yield in 1876	12,000
Yield in 1877	13,000
Yield in 1878	15,227
Yield in 1879	19,858
Yield in 1880	40,552
Yield in 1881	99,562
Yield in 1882	128,636
Yield in 1883	142,857
Yield in 1884	262,000
Yield in 1885	325,000
Yield in 1886	377,145
Yield in 1887	678,572
Yield in 1888	990,333

That must have been a mistake. I have 990,333 and must have meant 390,333.
(Continues to read:)

Yield in 1889	303,220
Yield in 1890	307,300
Yield in 1891	325,000
Yield in 1892	385,049
Yield in 1893	470,179
Yield in 1894	783,178
Yield in 1895	1,245,329
Yield in 1896	1,257,720
Yield in 1897	1,911,563
Yield in 1898	2,249,088
Yield in 1899	2,677,870

"Edgar F. Howe says that oil at \$1 per barrel is equivalent to coal at \$4.50 per ton, while the cost of coal here is about \$7.50 per ton. Oil is therefore as cheap a fuel in California as is required for successful competition in manufactures."

Q. (By Mr. LITCHMAN.) This oil is fuel?—A. Yes.

Q. (By Mr. FARQUHAR.) When you say fuel, you mean fuel for steam making?—A. Yes.

Q. (By Mr. LITCHMAN.) When you say it is used for fuel, you do not refer to illuminating oil?—A. Yes; fuel. It is not used for illuminating nor for house purposes.

- Q. It has too much sulphur?—A. That which has not been refined has.
- Q. (By Mr. A. L. HARRIS.) Has any effort been made to refine it?—A. I think there has been. There is a portion of the oil that is not of that character. There are quite a number of wells that produce illuminating oils. But the greater portion of it, I presume nine-tenths of it, is not illuminating oil, but about one-tenth of it is.
- Q. Are you adapting your furnaces to the use of the oil?—A. Yes; the Union Iron Works in San Francisco that manufacture the battle ships are now getting ready for the use of the oil, and Mr. Spreckels, in his large sugar factory, is using oil for fuel. The cotton mills at Oakland have been using it for the last year and a half or 2 years.
- Q. (By Mr. FARQUHAR.) Do the railroads use it?—A. The Santa Fe and the Southern Pacific are using it in their engines.
- Q. (By Mr. A. L. HARRIS.) Is it used for propelling ships or boats?—A. Yes; also for ships and boats and locomotives.
- Q. (By Mr. TOMPKINS.) Is not the making of olive oil an extensive business in California?—A. Yes; that business is quite extensively in operation there. There are a great many olive groves, and a great deal of oil is manufactured from the olive. And we manufacture the very best there is in the world. The French article or foreign article is supposed to be better, but I think that our California article is purer and not adulterated as much as the foreign article is. That is my impression.
- Q. To what extent is that business done, do you know?—A. I am not able to give you the number of gallons that are manufactured. I think, however, there are quite a number of those orchards that manufacture pure olive oil.
- Q. Do they adulterate it at all?—A. I think not.
- Q. Do they mix it with cotton-seed oil?—A. As far as my knowledge goes they do not. I have heard it stated by the manufacturers that it is not adulterated, but, of course, I do not know positively of my own knowledge. I could not state, but it has the reputation of being pure, that which is made in California.
- Q. About coconut oil, is there shipped into parts of California coconuts from different parts of the world and oil manufactured from them?—A. That may be.
- Q. I have heard that there was and I wanted to know.—A. Yes; it may be possible.
- Q. In fact I am pretty sure there is a mill in San Francisco.—A. I have no doubt there is, no doubt of it.
- Q. (By Mr. A. L. HARRIS.) Do the industries which you represent favor the construction of the Nicaraguan Canal?—A. Yes; all the coast is very favorable to that enterprise.
- Q. What advantage do you expect to receive when you now have land transportation?—A. Water communication regulates to some extent the rail transportation. If we have cheap water rates cheap rail rates will necessarily follow. If you have a rate from Chicago to Buffalo of 3 cents a bushel by water, the rail rates will come very close to that figure. That is what we think is our salvation, to get cheap water rates in order to lessen the freight rates.
- Q. Will the time be sufficiently short to permit you to ship your fruit?—A. It is thought so by those who seem to understand the problem, that we can get it quicker that way than we can by the other route, the present water route, much quicker.
- Q. There is one thing I intended to ask Mr. Turnbull and that is what the people of California feel in regard to reciprocal treaties.—A. As far as I am posted, the people of California would like to see present conditions remain. We do not like to lessen the tariff in any case.
- (Testimony closed.)
- Whereupon the commission at 4.15 p. m. took a recess until to-morrow morning, June 13, 1901, at 10 o'clock.

EXHIBIT A.

TRANSPORTATION FACILITIES—LAND VALUES—LABOR DEMAND—COST OF LIVING,

[By Gen. N. P. Chipman, President State Board of Trade, Chairman of Committee on Industrial Resources.]

Transportation.—I have no statistics since 1890, but in that year there were 5,061 miles of railroad in operation in the State. Since then the Valley Railroad has been built from Stockton, the Bakersfield, and is now completed, under the present ownership of the Santa Fe system, to San Francisco. The Southern Pacific

company has completed its coast line to Santa Barbara, and some other roads have been built. The Sacramento Valley, on both sides of the river, has rail facilities to Red Bluff, where the lines unite and proceed to Oregon. The San Joaquin Valley is well supplied. Indeed, railroad building has more than kept pace with the development of our industries. We have 3 overland roads to the East—the Central via Ogden, the Southern Pacific via southern California and Texas, and the Santa Fe system by southern California through Arizona and New Mexico, all having terminals at San Francisco. The roads coming to the coast into Washington and Oregon have agencies here soliciting business, using the sea as a connecting link to compel reasonable arrangements over the California and Oregon road. We also have the open sea via Cape Horn and the Isthmus to hold in check any disposition of the overland roads to enforce unfair rates. The coast ports and landings available for coastwise trade are very numerous, and the navigable Sacramento and San Joaquin rivers penetrate to the heart of the great central valley of the State, thus giving the producer some control of the rates of transportation through the interior.

Land values.—In 1890 I sold a carload (10 tons) of dried peaches f. o. b. Red Bluff, for \$4,000—20 cents per pound. Price for other fruits were equally high. It was not unusual for orange growers to net \$500 per acre from their lands, and fruit growers generally could show good interest on orchards valued at \$1,000 per acre. Fruit growing gave a fictitious value to all available fruit lands, and, as nearly all arable lands of the lower valleys are suitable for fruits, land devoted to general farming went to enormous figures—\$100 to \$300 per acre. Of course this condition could not last, and it would have placed a ruinous limitation upon the industry if it had lasted, for only the rich could eat fruit at those prices, whereas the success of the business depends upon reaching the mass of the consumers in the United States. Those early prices placed fruit in the category of luxuries, whereas success meant that it must be an article of food. All this has changed, and good fruit land alongside of a successful orchard does not take on value from the contiguity of the orchard. It is valued, just as the orchard is valued, for what it is producing. Lands that were held at the high figures named can now be purchased at one-third, or even less than the price in the "boom days" to which I have referred. In those days, too, large tracts were held by individual ownership, and the owners would neither sell nor subdivide. This, too, has changed, and great ranches are being broken up and offered at reasonable prices per acre in small tracts. There never was a more favorable time to secure homes in California, at fair prices, than the present. Causes which I need not mention, but which do not go to the desirability of California as a place to live and to make money, have brought all this about.

It should not be forgotten that land in a country having such climatic advantages is intrinsically of greater value than land of similar fertility where the conditions are less favorable.

Labor demand.—California has felt the impulse of the general prosperity which has returned to our country, and besides, is feeling the effect of our acquisitions of new territory in the Pacific. These things have given an increased demand for labor, so much so, indeed, that employers find great difficulty often in carrying forward enterprises. Wages have always been, and still are, higher here than in the Eastern and Western States. A few years ago I would have hesitated to advise laborers to come to this coast, but present conditions fully warrant doing so now.

Cost of living.—It should follow that in a country so rich and productive the cost of living would be low, and so it is. The prices for the necessities of life, fruit, vegetables, meat, flour, etc., are cheaper here than in the East. Logically, this must be so, since, with the exception of meats, we have a large surplus to send East, and the cost here is thus regulated in a large degree. For example, wheat and flour take a price equal to the price at the foreign point of sale, less the charges to get it there. In other words, Liverpool fixes the prices of wheat here. This rule does not quite hold good in all articles. But the statement that the cost of living here is much less than in the East can not be disputed. The fact is shown in the prices charged at our first-class hotels, which are proverbially much below those charged in Eastern cities for like accommodations. The annual cost to the laborer for clothing is much less than in cold countries, where the inclemency of the weather demands greater protection to the body.

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EXHIBIT B.

Imports of foreign merchandise and exports of domestic merchandise into and from Pacific coast ports for the fiscal years ending June 30 in each year of 1887-88 to 1897-98.

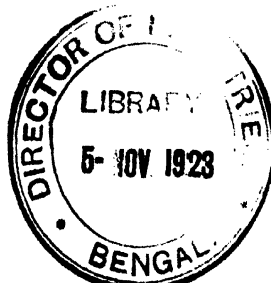
Country.	1887-88.		1888-89.		1889-90.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
Europe.....	\$10,959,188	\$21,238,148	\$9,177,982	\$32,226,693	\$8,969,440	\$27,207,350
North America.....	5,812,644	4,624,987	6,960,787	4,556,246	6,877,586	4,805,085
South America.....	396,602	647,861	311,236	1,050,788	339,835	1,580,111
Oceania.....	14,122,947	5,835,905	16,977,900	6,559,437	15,806,963	6,749,636
Asia.....	17,854,451	3,876,050	17,696,267	3,695,643	18,947,022	4,002,734
Africa.....	8,319					
Other countries.....	32,646	98,345	46,581	117,106	51,785	129,266
Grand total.....	49,186,797	35,821,296	51,170,753	48,205,913	50,992,631	44,424,182

Country.	1890-91.		1891-92.		1892-93.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
Europe.....	\$9,802,243	\$32,541,908	\$8,919,733	\$37,861,220	\$7,847,242	\$27,397,325
North America.....	9,234,966	5,690,735	9,154,149	5,735,702	9,317,515	4,977,076
South America.....	601,746	1,665,431	445,036	1,430,025	420,399	795,547
Oceania.....	16,404,547	6,792,501	10,288,840	5,511,036	11,451,177	4,014,317
Asia.....	19,147,871	4,909,435	22,710,001	4,355,978	21,971,782	4,167,610
Africa.....	318			100,360		138,487
Other countries.....	50,551	142,642	92,375	77,426	59,492	69,299
Grand total.....	55,242,262	51,642,652	51,638,661	55,054,717	51,067,607	41,559,661

Country.	1893-94.		1894-95.		1895-96.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
Europe.....	\$6,525,009	\$20,043,732	\$5,641,813	\$18,672,766	\$7,441,647	\$19,437,327
North America.....	8,733,891	5,236,142	7,729,265	6,733,124	6,708,257	7,731,017
South America.....	354,109	360,961	504,204	593,690	752,990	591,606
Oceania.....	11,238,870	4,305,118	8,878,147	4,789,556	11,427,199	7,410,782
Asia.....	15,480,509	4,237,580	17,743,240	5,907,139	23,289,836	7,682,357
Africa.....		46,750		95,334		
Other countries.....	21,610	72,254	71,832	87,791	16	1,496,972
Grand total.....	42,353,998	34,302,557	40,568,501	36,879,310	49,679,945	44,350,061

Country.	1896-97.		1897-98.	
	Imports.	Exports.	Imports.	Exports.
Europe.....	\$6,286,357	\$22,594,481	\$5,012,902	\$35,924,387
North America.....	7,008,443	8,813,941	8,391,848	7,573,778
South America.....	422,201	643,241	669,637	1,257,012
Oceania.....	11,058,040	10,067,081	11,316,721	8,430,663
Asia.....	19,899,571	14,299,481	26,628,680	16,826,282
Africa.....		2,873,661	1,425	4,516,812
Other countries.....				
Grand total.....	44,674,612	59,291,886	52,021,213	74,528,934

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990 **HEARINGS BEFORE THE INDUSTRIAL COMMISSION.**

Value of imports and exports into and from Pacific coast ports from and to the various countries of Oceania and Asia during the fiscal years ending June 30, 1887-88, 1892-93, 1897-98.

Country.	1887-88.		1892-93.		1897-98.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
Oceania detail:						
Auckland.....						\$4,748
British Australasia.....	\$1,780,139	\$2,163,635	\$1,472,339	\$1,127,958	\$844,624	2,667,452
French possessions.....	116,449	305,261	423,406	274,720	185,121	289,285
German possessions.....						3,714
Hawaiian Islands.....	11,060,379	2,828,204	9,145,767	2,602,139	9,998,351	5,420,702
Philippines.....	1,165,980	48,805	409,665	9,500	211,209	4,193
Spanish possessions.....					8,811	4,070
Tonga and Samoa.....					68,605	36,504
Total.....	14,122,947	5,335,905	11,451,177	4,014,317	11,316,721	8,430,663
Asia detail:						
China.....	5,662,643	158,539	6,173,449	185,980	8,448,435	2,334,856
British East Indies.....	1,630,522	16,277	1,673,541	28,691	2,419,312	85,950
Dutch East Indies.....	26,547		717,723		51,023	8,213
Hongkong.....	74,296	2,728,885	468,828	3,206,193	329,290	4,750,968
Japan.....	10,372,716	822,427	12,557,882	615,232	15,269,157	9,052,565
Russia.....	87,727	149,922	380,309	131,511	111,050	504,863
Turkey.....					413	
Korea.....						79,402
Other parts Asia.....						565
Total.....	17,854,451	3,876,050	21,971,782	4,167,610	26,628,680	16,826,282
Total in Oceania and Asia.....	31,977,398	9,211,955	33,422,959	8,181,927	37,945,401	25,256,945

RECAPITULATION PACIFIC COAST PORTS.

Year.	Imports.	Exports.
1887.....	\$49,186,797	\$35,821,296
1888.....	51,170,753	48,205,913
1889.....	50,992,631	44,424,182
1890.....	53,242,262	51,642,652
1891.....	51,638,061	55,054,717
1892.....	51,067,007	41,559,001
1893.....	42,353,998	34,302,557
1894.....	40,568,501	36,879,510
1895.....	49,679,945	44,350,061
1896.....	41,671,612	59,201,886
1897.....	52,021,213	74,528,931
Total.....	538,596,980	526,061,199

Relative importance of Pacific coast ports for the year 1897-98.

Port.	Imports.	Exports.
Alaska.....	\$175,235	\$29,875
Arizona.....	1,757,422	909,839
Humboldt.....	1,181	146,725
Los Angeles.....	476,042	110,375
Oregon, Ore.....	88,330	372,236
Puget Sound.....	5,058,069	17,882,355
San Diego.....	198,477	487,364
San Francisco.....	42,821,945	40,709,851
Southern Oregon.....		6,166
Willamette, Ore.....	1,444,452	13,874,148
Total.....	52,021,218	74,528,931

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Recapitulation showing the value of imports and exports from and to countries having trade relations with Pacific coast ports.

Year.	Europe.		North America.		South America.		Oceania.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
1888.....	\$10,950,188	\$21,238,148	\$5,812,644	\$21,238,148	\$396,602	\$647,861	\$14,122,947	\$5,335,905
1889.....	9,177,982	32,226,693	6,960,787	4,566,246	311,236	1,060,788	16,977,900	6,569,437
1890.....	8,969,440	27,207,350	6,877,586	4,805,085	339,835	1,530,111	15,806,963	6,749,636
1891.....	9,802,243	32,541,908	9,234,956	5,690,735	601,746	1,565,431	16,404,547	6,792,501
1892.....	8,919,733	37,864,220	9,154,149	5,735,702	445,036	1,430,025	10,288,840	5,611,036
1893.....	7,847,242	27,397,325	9,817,515	4,977,076	420,399	795,547	11,451,177	4,014,317
1894.....	6,628,009	20,043,732	8,733,891	5,236,142	354,109	360,981	11,238,670	4,805,118
1895.....	5,641,813	18,672,766	7,723,265	6,733,124	504,264	593,600	8,878,147	4,789,566
1896.....	7,441,647	19,437,327	6,768,237	7,731,017	752,990	601,606	11,427,109	7,410,782
1897.....	6,286,357	22,594,481	7,008,413	8,813,941	422,201	643,241	11,058,040	10,067,081
1898.....	5,012,902	35,924,387	8,391,848	7,673,778	669,637	1,267,012	11,316,721	8,430,663

Year.	Asia.		Africa.		Other countries.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
1888.....	\$17,854,451	\$3,876,050	\$8,319	.....	\$32,646	\$98,345
1889.....	17,696,267	3,695,643	.....	.....	46,581	117,106
1890.....	18,947,022	4,002,734	.....	.....	51,795	129,286
1891.....	19,147,871	4,909,435	348	.....	50,551	142,642
1892.....	22,710,001	4,335,978	28,527	\$100,380	92,375	77,426
1893.....	21,971,782	4,167,610	.....	138,487	59,492	69,299
1894.....	15,480,509	4,237,580	.....	46,750	21,610	72,254
1895.....	17,743,240	5,907,139	.....	95,331	71,832	87,791
1896.....	23,289,836	7,682,357	16	1,496,972	.....	.....
1897.....	19,899,571	14,299,481	.....	2,873,661	.....	.....
1898.....	26,628,680	16,826,282	1,425	4,516,812	.....	.....

Imports and exports of domestic and foreign merchandise, by countries, into and from the United States for calendar years 1897, 1898, 1899.

Country.	Imports.			Exports.		
	1897.	1898.	1899.	1897.	1898.	1899.
Europe.....	\$407,970,332	\$324,726,482	\$402,507,267	\$858,049,510	\$981,230,370	\$959,234,520
North America.....	101,762,584	97,830,811	123,348,804	129,468,932	149,164,257	168,854,567
South America.....	103,442,125	83,075,415	91,728,862	33,506,140	35,102,408	37,421,700
Asia.....	93,896,750	94,310,501	136,863,919	40,663,159	46,956,598	53,843,554
Oceania.....	25,987,853	26,883,893	32,656,083	21,341,877	24,981,163	37,542,936
Africa.....	9,535,585	8,137,346	11,740,636	16,679,427	18,111,470	18,602,394
Total.....	742,595,229	634,964,448	798,845,571	1,099,709,045	1,255,546,266	1,275,499,671

Imports into and exports of domestic and foreign merchandise from Pacific coast ports, showing relation to commerce of United States during the calendar years 1897, 1898, 1899.

Port.	Imports.			Exports.		
	1897.	1898.	1899.	1897.	1898.	1899.
Alaska.....	\$110,786	\$231,106	\$243,505	\$16,533	\$64,419	\$29,510
Arizona.....	843,248	2,454,447	1,088,264	\$949,695	1,347,486	1,887,041
Humboldt.....	1,183	1,241	2,643	174,346	151,594	192,867
Los Angeles.....	467,270	620,585	857,323	112,724	8,514	691
Oregon, Ore.....	145,819	23,837	22,593	261,782	257,365	180,786
Puget Sound.....	7,705,009	4,969,566	8,774,811	14,561,743	15,049,512	15,486,991
San Diego.....	209,505	249,440	465,114	414,067	144,928	2,622,866
San Francisco.....	40,847,664	36,057,958	45,767,110	39,803,451	31,998,805	34,270,633
South Oregon, Ore.....	8	8	10,953	.....	.....	.....
Willamette, Ore.....	1,478,664	1,538,887	1,617,162	8,372,080	12,801,913	7,273,233
Total.....	51,809,066	46,147,067	58,838,525	64,707,374	62,424,686	61,862,818

NOTE.—The above 2 tables were prepared for calendar years because the Annual Report of the Secretary of the Treasury for the fiscal year ending June 30, 1899, is not yet published. The data were obtained from the monthly reports which deal with calendar years.

Imports from foreign countries into the Pacific coast ports, and value thereof, for the fiscal year ending June 30, 1898.

Animals.....	\$248,827	Matting.....	\$199,494
Art.....	21,142	Metal composition.....	80,259
Beverages.....	14,428	Moss and seaweed.....	160,792
Bones.....	11,946	Musical instruments.....	19,659
Books.....	37,544	Oils, animal.....	19,648
Breadstuffs.....	42,727	Oils, olive.....	109,797
Brushes.....	18,233	Oils, other.....	111,883
Cabinet coins, etc.....	2,386	Paints.....	29,508
Candles.....	967	Paper, and manufactures.....	56,257
Cements.....	531,529	Plants, hothouse.....	6,239
Chemicals, drugs, dyes, etc.....	1,758,701	Plaster of paris.....	8,500
Clays.....	5,036	Platinum.....	8,111
Clocks, watches.....	10,236	Perfumery.....	4,640
Coal and coke.....	3,020,470	Products of meat.....	110,732
Cocoa.....	104,315	Pipes.....	4,527
Coffee.....	2,361,586	Rice and rice flour.....	1,020,329
Copper, and manufactures.....	1,802,405	Salt.....	65,280
Cotton, and manufactures.....	374,010	Seeds.....	44,672
Earthenware.....	278,449	Shells.....	38,097
Eggs.....	4,377	Silk, raw and reeled.....	18,367,912
Fans.....	6,957	Silk waste.....	101,425
Feathers.....	30,561	Silk manufactures.....	451,835
Fertilizers.....	33,874	Soup.....	34,662
Fiber, jute, etc.....	438,184	Spices.....	112,142
Bags and bagging.....	953,190	Spirits.....	230,479
Cordage.....	1,053,004	Sponges.....	5,252
Fish.....	137,877	Starch.....	10,414
Fruits.....	123,160	Sugar, cane, not above 16 D. S.....	10,844,470
Fruits, preserved.....	84,802	Sugar, above 16 D. S.....	282,451
Nuts.....	8,441	Tar.....	6,132
Furs and skins.....	162,649	Tar, coal.....	4,639
Glass and glassware.....	142,790	Tea.....	2,153,982
Gold sweepings.....	15,037	Tin, plate.....	419,363
Gunpowder, explosives.....	36,259	Tin, bar, pig, and grain.....	821,029
Hides and skins.....	452,693	Tobacco.....	161,150
Household effects.....	155,419	Toys.....	60,776
India rubber, and manufactures.....	28,795	Vegetables.....	112,365
Iron ore and pig iron.....	37,486	Timber, lumber, and manufacturing wood.....	168,037
Iron, plate, bar, and ingot.....	78,076	Wines.....	227,285
Iron manufactures.....	474,816	Wools and hair.....	19,899
Iron wire, etc.....	3,596	Wool manufactures.....	96,670
Jewelry.....	53,033	Various articles in small amounts.....	1,411,770
Lead ore and pig, etc.....	801,233		
Leather, and manufactures.....	197,784	Total.....	52,021,213
Malt liquor.....	83,447		
Marble, and manufactures.....	16,246		

Exports of domestic merchandise to foreign countries from Pacific coast ports in the fiscal year ending June 30, 1898.

Agricultural implements.....	\$48,571	Furs.....	\$22,565
Aluminum.....	2,000	Glass and glassware.....	72,379
Animals.....	290,040	Grease.....	17,158
Art works.....	8,792	Gunpowder.....	238,338
Blacking.....	13,528	Hair manufactures.....	18,804
Bones.....	8,369	Hay.....	198,791
Books.....	105,205	Hides.....	3,809
Brass, manufactures.....	10,116	Honey.....	21,452
Breadstuffs.....	15,441,893	Hops.....	109,812
Brick.....	23,737	India-rubber goods.....	169,069
Broom corn.....	37,891	Ink.....	14,267
Brooms.....	17,147	Instruments, scientific.....	263,163
Candles.....	69,113	Iron and steel, bar, rails, and pig.....	669,808
Cars, railroad.....	15,676	Iron and steel rods, castings.....	412,774
Cycles.....	312,964	Iron and steel engines, pumps, hardware.....	2,025,097
Carriages.....	36,440	Iron and steel nails.....	546,979
Cement.....	10,078	Iron pipes.....	224,281
Chemicals, drugs, and dyes.....	839,405	Iron safes and saws, scales, stoves, and tools.....	227,202
Clocks and watches.....	153,899	Other varieties, manufactured.....	525,539
Coal and coke.....	59,613	Jewelry.....	21,500
Coffee and cocoa.....	34,657	Lamps.....	19,128
Copper.....	2,456	Lead manufactures.....	9,193
Copper manufactures.....	10,904	Leather.....	449,435
Cotton.....	5,071,424	Leather manufactures.....	382,871
Cotton, cloths.....	1,739,867	Lime.....	30,633
Cotton manufactures.....	709,421	Malt.....	72,367
Earthenware.....	29,977	Malt liquors.....	204,947
Eggs.....	39,311	Musical instruments.....	45,310
Fertilizers.....	355,677	Naval stores.....	16,265
Fiber manufactures.....	107,738	Oils, animal.....	158,077
Fish, dried and canned.....	2,636,830	Oils, illuminating and lubricating.....	26,396
Fish, shell.....	178,820	Oils, other.....	
Fruits.....	366,696		
Fruits, preserved and canned.....	1,355,109		

Exports of domestic merchandise to foreign countries from Pacific coast ports in the fiscal year ending June 30, 1898—Continued.

Paints	\$124,633	Sirup	\$6,444
Paper and manufactures	636,708	Tin manufactures	45,749
Plated ware	17,129	Tobacco	196,579
Provisions, meat products	835,241	Tobacco manufactures	341,102
Dairy products	330,703	Toys	16,639
Quicksilver	229,278	Vegetables	379,000
Salt	34,161	Wine	415,114
Seeds	38,783	Wood, unmanufactured	2,075,083
Shells	19,522	Wood, manufactures of	497,612
Shoe findings	12,187	Wool manufactures	124,922
Soap	73,005	Various articles	120,214
Spirits	372,212		
Starch	8,565	Total	74,528,934
Stationery, except paper	90,570		
Sugar, refined	80,572		
Sugar, candy	25,614		

ALBANY, N. Y., May 22, 1901.

STATEMENT OF HON. CHARLES A. WIETING,

Commissioner of Agriculture of the State of New York.

The pursuit of agriculture in New York State is not as profitable as it was from 1860 to 1873, but conditions are improving, and it looks to me as though the year 1901 will be more profitable for the farmers of New York State than the preceding years.

From 1860 to 1873 all farm products brought extremely high prices on account of the great demand caused by the war of the rebellion. Farm products bringing high prices made the value of lands high, and farms were sold at high prices. Many of them were bought on time and mortgaged. After the close of the war the demand for farm products gradually grew less, prices became less, and the price of land shrank accordingly, so that many of the farmers of the State of New York, who had bought lands and mortgaged them, lost them by shrinkage of value.

The main causes for the cheapening of the value of products were the increased supply of cereals coming from the rapid development of new territory, and the extension of railroad facilities reaching into the newly opened territory and the greatly reduced rates of transportation, of which that new territory received the benefit and of which New York State has been deprived, and the lack of demand for those products by nonproducers and consumers becoming producers and ceasing to be consumers on the market.

To illustrate how rapidly the Western territory was developed, I call attention to the fact that reports from the National Government show that the original area of land belonging to the people at large was 1,815,504,147 acres, of which 806,532,362 acres has been alienated. For the year 1897 the following is a table showing the rate of transfer to private ownership, viz:

To 1884	591,987,814	1890	12,665,532
1884	26,834,042	1891	10,357,232
1885	20,113,663	1892	13,566,552
1886	20,991,967	1893	11,801,686
1887	25,111,401	1894	10,377,225
1888	24,160,785	1895	8,364,300
1889	17,026,092	1896	13,174,071

This shows an alienation to private ownership of nearly 23,000 square miles per annum, or 1,305,041 acres per month, or 43,501 acres per day, or 1,812 acres per hour, or 30 acres per minute; that is, 1 acre every 2 seconds. It is fair to estimate that the produce of this land went into direct and immediate competition with the products of the farms of the State of New York, which were valued at from \$50 to \$150 per acre, and which had been farmed until the soil required much fertilizing. The western lands had been untilled, were rich, and required no fertilizer. Then, in addition to that advantage, the Western farmer was enabled to place his goods upon the Eastern markets by paying greatly reduced freight rates, in some cases being able to put his goods on the market for as little money as the Eastern farmer had to pay for placing his there.

In a report made by Mr. George T. Powell, of the State of New York, upon "Agricultural Conditions and Needs," he calls attention to the fact that in 1870 the freight on a bushel of wheat from Chicago to New York was 30 cents, while in 1890 it was reduced to 14½ cents, a decrease of 52 per cent, and that in the year 1870 the freight

from Chicago to New York by rail on a bushel of corn was 28 cents, while in 1890 it was reduced to 11½ cents, a decrease of 59 per cent. No similar decrease in freight rates in favor of New York farmers, who desire to send their goods to New York markets, was made during that period of time. It has been entirely in favor of the great producing West as against the producers in New York State. This will apply equally as well to other farm products. The results produced in this way are working against the New York State farmer, and a similar condition of things in other countries is operating against not only the farmer in New York, but all the farmers in the United States. For instance, the great wheat fields of South America and Australia and those that bid fair to be opened in Siberia make the prospect of the New York farmer raising cereals at a profit quite discouraging. He must, in my judgment, in order to succeed from an agricultural standpoint, turn his attention to other products; possibly, yes, I may say probably, to those that are known as perishable products that can not be transported a great distance, such as fruits, vegetables, dairy and meat products, and some others.

With this end in view the authorities in the State of New York are doing what they can to meet the situation by causing instruction to be given each year along lines that have a tendency to help the farmer in producing these crops, with the hope in view that they will thus be able to stem the tide that is cityward and possibly turn it back toward the farm. In other words, they are attempting to disseminate sufficient scientific agricultural knowledge among the people so that farming may be considered a profession rather than a drudgery. To that end we are spending thousands of dollars a year.

A notion has prevailed to some extent heretofore to the effect that education unfitted a person for farm life, that, as a result of his education, he was bound to enter into one of the professions. That idea is fast becoming one of the past among New York farmers, as we now have in our State many young men who are well educated who are devoting their knowledge and energies to the work of farming and who take as great pride in it as in a profession. This makes the outlook somewhat brighter, as such farmers become business men, keeping books in which they have an account with their farm. They understand that in order for the farm to successfully feed them and those they leave after them they must also feed the farm as they go along—i. e., they can not rob the soil of its strength without placing back in it something to compensate for what they have taken out.

Should conditions change so that the scope of the market for cereals should be enlarged, for instance, by the annexation of territory, this would be of great advantage to the farmers of New York State, as it would not only make a market for the cereals, but make a market for the products of the shop and manufactories of the country, thus enlarging our home market and also making a demand for agricultural products.

It has been said that the farmer of New York State is laboring under a load of taxation that is disproportionate. I can not agree with those who hold this idea. I find upon inquiry into the subject that the average farmer in the State of New York owning a farm of 100 acres does not pay a tax to exceed \$25. I can hardly accept the proposition that a matter of \$25 a year is going to make a difference between good and hard times upon a farm of 100 acres.

In addition to the load that the farmers of New York and other Eastern States have been carrying for many years, as above referred to, is the one of adulterated food products which is of great injury to them from the fact that the imitation and adulterated goods are so manufactured as to resemble the pure goods made by the farmers and palmed off on the unsuspecting consuming public as the genuine article. This injures the market, to say nothing of the fraud practiced upon the consumer. We have for a number of years been spending much money by giving instruction in making first-class butter and cheese. We believe we have reached the point where we can say that all New York State full-cream cheeses are now of a uniform first-grade quality, yet we find that manufacturers of inferior goods in other States are imitating the brand which is being placed upon these cheeses and placing it upon cheeses of an inferior quality made in other States. This is a wrong not only upon the cheese producers of the State of New York, but also a wrong upon the consuming public, and it should be stopped. I believe that if the National Government should enact a law and provide for its enforcement to the effect that no food products should be falsely branded as to the State in which they are made, it would stop this fraudulent practice. I believe that the National Government has that constitutional power under that clause in the Constitution giving them power to regulate commerce between the States.

There is another law, I think, which Congress should pass, namely a law providing that when any dairy or food products are transported from one State to another they should immediately become subject to the laws of the State, irrespective of package or form in which they are done up; the same as the law enacted relative to whisky, known as the Wilson whisky bill. This, I believe, is no more than a fair proposition, because when a State has fought hard and long, and at a great expense

to provide its citizens with nothing but pure food products it is an outrage to allow a manufacturer of impure goods in another State to send his wares in in original packages and sell them, perhaps fraudulently, to the unsuspecting public.

Q. (By Mr. WEST.) What would you say as to the earnings of capital in agriculture compared with other lines of business?—A. That is a particularly hard question to answer. You can water the stock on a farm but it does not add anything to its value, it only keeps it where it is. It is safe to say, however, that the profits are very much less in agriculture than in other lines of business. There are no large salaries paid out of the profits of agriculture.

Q. Do I understand you to say that the farmers are not unfairly taxed as compared with city residents?—A. They will not be under the new tax law of this State.

Q. Is property in this State, speaking generally, assessed at its full value?—A. Well, it is supposed to be. Farms are assessed for not quite their full value, and I think the same is true of city and village property. If it were to be sold at auction I do not know that it would bring more than it is assessed for, in many cases.

Q. Does property in the city often sell for more than its assessed valuation?—A. I should imagine that it would, in a great many cases, unless it was sold for some special purpose; it would be difficult to say. Property often does sell for more than its value.

ALBANY, N. Y., May 22, 1901.

STATEMENT OF HON. GEORGE L. FLANDERS,

Assistant Commissioner of Agriculture of the State of New York.

Q. (By Mr. WEST). Is the employment of scientific methods of farming on the increase in New York State?—A. Yes.

Q. To what do you attribute that increase?—A. To the teaching in the agricultural schools and colleges, and the instruction given at our farmers' institutes, of which we hold three or four hundred a year.

Q. What can you say about the keeping of farmers' books on the double-entry system? Do the farmers of the State commonly open accounts with their crops, so that they know at the end of the year whether they are profitable or not?—A. Some of them do; the younger farmers who have been educated at the agricultural college and many who are taking the advice of the institute workers are doing so.

Q. That would apply, among others, to the farms owned by rich men?—A. I imagine a number of them would not care to see the books; but there is a gentleman who has a hen farm who knows exactly what his hens pay, making due allowance for the different breeds, and keeps the books evenly balanced. The farmers' institutes have done a great deal toward getting the farmers to do this, as well as toward educating the older farmers. Many farmers who are keeping cows have never tested the milk of each cow separately, and think that the one which gives the most milk is the best cow, when the butter may not be of as good a quality as that made from the smaller amount of milk from another cow, and so they often sell the wrong cow. But our dairymen are coming gradually to understand that every cow they keep that does not pay offsets one that does, and are applying tests at given intervals to determine what ones are profit-producers and what ones are burdens upon the dairy. On the whole I think it is safe to say that the farmers of this State are moving in the right direction in their work and doing it with a reasonable rapidity. The legislature has made provision for several years last past to the end that the literature and good advice as to the most approved methods of farming along different lines may be laid before them, and it is having its effect. This is applied to all lines of plant growth and dairying.

Q. Will the annexation of territory result disadvantageously to the agricultural interests of the country?—A. On the whole, no. There may be minor adverse conditions, but, on the whole, it will open a large market for American goods and give work to a number of people, and when that is done agriculturists will be profited proportionately with those in other callings.

Q. In the matter of the official label for New York State full-cream cheese, do I understand correctly that that label has been counterfeited?—A. Yes, sir. It has been counterfeited to considerable extent, largely in Chicago. The brand is issued by this department to the different cheese manufacturers in this State. The statute provides that it shall bear the words "New York State full-cream cheese," and a different number for each factory. The State has been for a number of years giving instruction to the different cheese makers within its borders to the end that they might produce here a uniform, first-grade article. The statute also provides for the issuing of the cheese brand to the different factories, to the end that the purchasing

public might know the quality of the goods they were purchasing when this brand was upon them. Some dealers in cheese in the West, particularly in Chicago, evidently conceived that it would be a very enterprising scheme to imitate that brand, which they did, and placed it upon cheese of an inferior grade made elsewhere than in the State of New York. This practice is ruining the reputation of cheese makers in this State as to the quality of cheese they produce, and is also taking from them their reputation for integrity, and, of course, ruining our market. We desire in this State to have the National Government do something to stop that condition of affairs.

Q. Is your official brand registered as a trade-mark?—A. It can not be done. The same principle is involved as in the South Carolina whisky case, where the people of that State wanted to brand their whisky with the word "Palmetto," but the courts held that it could not be done. This department has sent representatives to Washington on several occasions to see whether we could take advantage of the patent laws or copyright laws to stop this false branding, but we were informed by the authorities that it could not be done. A person registering a trade-mark must have a proprietary interest in it. The commissioner of agriculture or official of this State registering such a trade-mark would not have that interest in it, and to ask the proprietor of each cheese factory in this State to file his particular brand as a trade-mark and pay \$25 would be a burden which they would hardly feel they could afford; but even if they could do that another difficulty arises, namely, that if persons in other States used the brand wrongfully it would involve the private individual who had a proprietary interest in the brand in a lawsuit in the United States court, the expense of which the large majority of our cheese makers could not bear. That method of handling the matter is impractical.

Q. What would you suggest as a remedy?—A. That the National Government exercise the power conferred upon it by the National Constitution to regulate commerce between the States by enacting that no dairy or food products used in interstate commerce should be falsely branded or labeled as to the State in which they are manufactured or produced. A bill to that end was introduced in the last Congress by Mr. Sherman, from New York, and introduced in the Senate by Senator Depew, from this State, and reported favorably by the committees in each branch to which it was referred, but did not finally pass. A bill was introduced by Mr. Sauerhering, of Wisconsin, which provided that the governors of the different States might file a trade-mark at Washington, to be known as the State trade-mark, which might be used upon any goods of any kind whatsoever manufactured within the different States, but its use prohibited upon goods manufactured in any other State, and that no two trade-marks so filed from different States should be the same. This bill was defeated.

Q. Would you have the law cover anything further than what you have just stated?—A. I would have the law cover all dairy and food products, so as to stop fraud in interstate commerce. That power was given to the National Government to exercise, and it should exercise it to the end that no fraud should be practiced which may injure the consuming public, because the States themselves are powerless to take care of interstate-commerce questions.

Q. Has your State authorized the use of the words "New York State" upon any other product than cheese?—A. Not that I am aware of.

Q. Then, applying this legislation to all dairy and food products, would you extend it to other cases than the fraudulent use of the name of the State?—A. I can see no reason why all fraud in interstate commerce should not be stopped by the National Government. The National Government is given power to regulate commerce between the States. Just how much that means I would not undertake to state in this interview. I certainly am of the opinion that the National Government has power to enact and enforce the law that we are asking for. In that opinion we do not stand alone. This question was a matter of serious study for some time prior to our taking a positive stand upon it, and we consulted some of the best patent lawyers of this State. The opinions of such men were without exception to the effect that Congress had the power to enact the statute referred to.

Q. Has there been any trouble in this State over violations of the oleomargarine law?—A. Yes, sir; but we are detecting those who violate it and proceeding against them for it. These violations are, however, few, when you consider the size of the State and the population. The violations are in almost every case clandestine.

Q. Are these violations, any of them, by people outside of the State?—A. Yes. In November of 1899 our attention was called particularly to violation on a wholesale plan by a Chicago firm, or so-called firm. We investigated it fully. A man in Buffalo was selling this oleomargarine and branding it renovated butter; and when we discovered it there were about 200 tubs in the store. He claimed he had been deceived, and we were unable to prove to the contrary. There were two companies—the Elgin Produce Company and the Aurora Produce Company.

Q. Were these the names of actually existing companies?—A. They were fake companies doing business under cover for certain oleomargarine industries.

Q. Do the large manufacturers of oleomargarine conduct their business in a legitimate way?—A. Yes; we think so. There are exceptions, and the percentage is an open question.

Q. Were these goods marked as required by the national law?—A. No; there was nothing whatever to indicate that the tubs contained oleomargarine; it was evident that these dealers had some way of procuring the goods without their being stamped and marked as required by the national law. That law requires, among other things, that the label placed upon the tubs shall have 5 tacks driven through it. There were no marks anywhere on the tubs indicating that tacks had thus been driven in.

Q. Was the butter packed in the tubs at the original place of manufacture?—A. We do not know.

Q. Why should oleomargarine be labeled renovated butter?—A. Because it was made in such good imitation of butter it could easily be palmed off on the public for renovated butter, when the same public would not buy oleomargarine.

Q. But they could not palm it off as fresh butter?—A. Possibly they could, but they expected to deceive the public better by selling it for renovated butter.

Q. Which do you consider the more desirable article of food, oleomargarine or renovated butter?—A. Renovated butter, by all means.

Q. And the reason?—A. Because one is a butter fat and the other is a fat that was never intended to go into the human stomach raw. It takes more effort to digest oleomargarine than it does to digest butter.

Q. May I ask you to state the percentages of stearin and butyric acid in butter and oleomargarine, respectively?—A. I am informed that Dr. Wiley, chief chemist of the Department of Agriculture at Washington, stated that oleomargarine contained from 4 to 5 times as much stearin as butter; and he estimates that good butter contains from 4 to 8 per cent of butyric acid, while oleomargarine has but a trace of it.

Q. Do I understand you to say that butyric acid is an aid to digestion?—A. Yes.

Q. Is it an oil chemically similar to stearin?—A. I can not tell you what it is; I am not a chemist.

Q. Can you refer the commission to any definite evidence on this point?—A. I refer you to Dr. R. D. Clark's second annual report made in 1886 to the New York State dairy commission; also to my testimony before the United States Senate Committee on Agriculture and Forestry, beginning at page 121 of its report,¹ and especially to the statements quoted on pages 134 and 136.

Q. The commission would like to know what your State department of agriculture is doing.—A. The State department is an outgrowth of the old dairy commission which was created by an act of 1884, chapter 202, of the laws of that year. Its purpose when created was to stop the sale of adulterated milk in the State of New York and to stop the fraudulent sale of oleomargarine as and for butter. This commission continued as such until the year 1893 with little change, except that during that period there was an educational branch added to it for the purpose of giving instruction to the farmers of this State in making uniform, first-class products, to the end that the commodities might appear on the markets of the world as first-grade goods. In 1893 the laws were revised, the name was changed to the department of agriculture, and outside work was given to it, until now it has much more work to do. The educational work consists of imparting as much knowledge as possible to the agriculturists of the State through a bureau connected with the department known as the bureau of farmers' institutes. The work of that bureau is to impart the best ideas relative to agriculture to the people of the State directly engaged in agricultural work.

In the executive part of the work, the department now stops the fraudulent sale of oleomargarine as and for butter, filled cheese, cheese falsely branded as to quality, stops the sale of impure and adulterated milk, the sale of calves under 4 weeks of age, the sale of sugar made in imitation of maple sugar, the sale of vinegar containing less than 4 per cent acetic acid, the sale of adulterated linseed oils, and the sale of condensed milk containing less than 25 per cent of butter fat. The department is also charged with the enforcement of the law for the suppression or prevention of contagious and infectious diseases of domestic animals, also with the suppression or extermination of infectious or contagious diseases of fruit trees. The work in the last two above-named departments is not small when you take into consideration that there are a million and a half milch cows in the State of New York, to say nothing of other cattle, and that there are nearly 500 nurseries in this State producing fruit trees for sale, all of which have to be examined.

The department also distributes money appropriated by the legislature to encourage the culture of sugar beets in this State, to the end that it may become a strong and permanent industry within the State. It also distributes money appropriated by the legislature to agricultural fairs for the purpose of promoting agricultural industries. Last year the amount distributed was \$147,000.

¹ Senate Report No. 2043, Fifty-sixth Congress, second session.

It is fair to say in this connection that when this department was first created oleomargarine was manufactured and sold in the State of New York as and for butter in large quantities, hundreds of thousands of pounds per year; to-day there is none manufactured within the State, and very little sold, and what sales are made are clandestine.

Since the enforcement of the milk laws the milk routes have increased in number and have extended in length. At the time of the creation of the department the milk taken to New York City over milk routes was between 3 and 4 million 40-quart cans. This amount has increased annually under the enforcement of the law until last year it took between 13 and 14 million 40-quart cans to supply the demands of the city. What is true of New York City is proportionately true of other cities of the State. People are now sending milk from Elmira to New York; formerly it was bought within a few miles round about. The people of Rochester now go from 75 to 100 miles out to get their supply of milk. That is the outcome of the enforcement of the law, which calls for more milk and less water.

Q. The commission would like to know through what hands the typical consignment of milk passes?—A. Why, there is usually a milk station to which all the milk is carried, and it goes from there of a uniform quality. The stations are usually owned by the man who owns the routes in New York, but in some cases the milk is sold to the peddler.

Q. After it reaches New York?—A. In many cases the milk is consigned directly from the station.

Q. Are you familiar with the work of the Five States Milk Producers' Association?—A. We are not sufficiently familiar with the work of that association to feel competent to make any statements. You had better consult its president or secretary, Mr. F. B. Aikin, of Trumansburg, N. Y.

The State of New York has expended large amounts of money during the last 15 years in producing the results that now exist, to the end that the consuming public shall not be defrauded relative to these particular food products, and the request the State now makes of the National Government is that that Government may exercise such power as has been conferred upon it to regulate commerce between the States, to the end that those who would deal fraudulently with the consuming public may not be enabled to do so by virtue of the fact that the State governments have no control over such commerce.

Q. Have you anything further to suggest under the head of remedial legislation?—

A. Well, as to that, the Grout bill, which was before Congress, if enacted and enforced will, in our judgment, remedy some of the evils that have existed in this State, which are caused by the people of other States shipping their goods into this State in original packages and endeavoring to sell them in violation of State laws. That bill provides that whenever dairy or food products are brought into a State, immediately upon entering they shall become subject to the State law to the same extent and in the same manner as if they had been products of the State, etc.

Q. Have you anything to say with reference to the scarcity of farm laborers?—

A. On that question I would not care to enter into a discussion. The question was investigated at the expense and under the direction of an association formed in New York City, known as the Association for Improving the Condition of the Poor. Mr. George T. Powell, of Ghent, N. Y., is now at the head of a school which is the outgrowth of that investigation. This department has no authority to reach out and investigate such questions. Our work is defined by the statute under which we act. It might, at times, seem proper for us to investigate some such questions, but our work is determined by statute.

Q. These statistical questions are all left to the bureau of labor statistics?—

A. There is a bureau of labor statistics created in this State, and its duties are defined by statute.

Q. Does it go into the matter of agricultural statistics?—A. There are no statistics of agricultural products collected in New York State under the auspices of the State, that I know of, except relative to butter and cheese manufacture.

Q. What is the attitude of the farmers of the State toward the Agricultural College?—A. Favorable; and many of the farmers of the State who are succeeding are those who are sticking close to the scientific principles of farming.

Q. Will you say something further about this school of which Mr. Powell is the director?—A. I can not say anything about it, as it is just started. I believe the motive of the school is to undertake to do something to turn the tide of young men from the city back toward the farm. It has been quite a study in this State how to turn that tide—how to make the calling of farming sufficiently interesting and remunerative to keep the young man at home on the farm. The Briar Cliff Farm is only one farm of many that are run by capital which stands back of them.

Q. It is a question whether the farm pays or not?—A. A number of these farms do not pay. You will find that many are run by people who make their money elsewhere and spend it on the farm.

Q. And these farms are unprofitable?—A. No; I would not say that, but they are not run as a matter of financial gain; they are run more as a matter of pride.

Q. With reference to the shrinkage in the value of land after the close of the war, is the present tendency in the price of farm land upward or downward?—A. My notion of it is that it is improving, but not enough to speak about. Some farms, however, have sold for less than the cost of the buildings upon them.

Q. About when was the turning point?—A. In the neighborhood of the nineties.

Q. Are farm values increasing at present in all parts of the State?—A. I think there is a slight increase in values; they are not on the decline.

Q. Are there any abandoned farms in New York State?—A. Well, I do not really know; few, if any.

Q. Are the prices of farm lands increasing as rapidly as the price of the land in the cities?—A. No.

Q. Now, on the question of taxation: Are the assessments in the cities raised as rapidly as the land increases in value?—A. I am not familiar with that question. I know one man who loaned money on farms and had to buy 60 of them in himself, so you see he was not making any money on them.

Q. Are the prices of farm products still on the increase?—A. That is largely regulated by the crop of the year.

Q. With relation to the treatment of diseases among trees, has the State committed itself to a policy?—A. It has provided that nurseries shall be inspected, and wherever the diseases are found, means are employed to eradicate them and prevent their spread. Whenever a company receives a consignment of nursery stock from other States, immediately upon such receipt it must notify this department from where it was received and the destination, and by this means we are helped in the prevention of the spread of disease.

The legislature of 1901 placed in this department the treatment of tuberculosis and glanders among domestic animals. In all cases except tuberculosis we are producing good results, but on that we have just commenced. Also as to the suppression, if possible, of foul brood among bees. We have a peculiar difficulty in the new disease which is commonly called black brood, which is very nearly akin to foul brood. The law gives us authority to suppress foul brood, but says nothing about black brood. This illustrates some of the many difficulties with which we have to contend in the enforcement of the law.

Q. Are the statutes too specific?—A. I think there is danger of being too specific in the statute. Sometimes you find the law stops you from doing the principal thing which you are expected to do.

ALBANY, N. Y., May 22, 1901.

STATEMENT OF MR. PETER DEYO,

Secretary of the New York State board of tax commissioners.

Q. (By Mr. West.) Are you in a position to state how the valuation of farm property in New York State compares with that of other property?—A. The assessments upon which the State taxes are levied are returned to the controller by the clerks of the board of supervisors of the different counties, and the only subdivision in the counties is the assessment by cities and towns. There is no division between farm land and village property. The local assessors, when they appear before this board, state generally that they assess property at full value, as the law requires, but there are people who volunteer the information that that is not a fact.

The table for the equalization of State taxes is based upon percentages supposed to represent the percentages which the assessed value bears to the real value, so far as the tax commissioners are able to obtain the facts. It is not absolutely a correct table except as to what the State board of equalization believes to be a relative basis for a distribution of the tax.

It has been the opinion of the commissioners who form this board, since I have been here, that, generally speaking, farm property is assessed more nearly at the real value than city property, and for the reason that farm property in this State has greatly decreased in value.

Q. And the assessments have not been correspondingly reduced?—A. No.

Q. In the cities have the assessments increased and kept up with the increase in values?—A. Yes; and due probably to improvement and growth. In some instances the cities are obliged to increase their assessments in order to reach some improvement they desire to make by a bond issue.

Q. There is some testimony to the effect that the prices of farms have lately taken to increasing in New York State?—A. I do not think so.

1000 HEARINGS BEFORE THE INDUSTRIAL COMMISSION.

Q. Are they still declining?—A. Well, that seems to be largely the evidence brought to this board. There were some gentlemen here from Minneapolis recently who said farm land had advanced in Minnesota. They had been appointed by the governor to investigate taxation.

I have been trying for the past 2 years to get the corporate assessments of the various counties separated from the other assessments; they are all reported together. I have a table here for that purpose, which, when revised, will be published in next year's report. It shows that the proportion of corporate property is surprisingly small, ranging from 12 per cent in New York County to 31 per cent in Schenectady, and averaging 14½ per cent for the State. This includes steam railroads, 3.47 per cent; street railroads, 1.6 per cent; telephone and telegraph companies, .25 per cent; gas, electric-light, and power companies, 1.15; banks, 2.73 per cent, and miscellaneous, 5.33 per cent.

The board also publishes a table showing the amount of property in each county exempt from taxation (Report for 1900, p. 34). This is not an exact statement of the facts for the reason that under the bill providing for these returns only property in cities which was on the assessment roll was returned. There is a great amount of municipal property in villages, and State property in other districts that was not returned under this law, but the last legislature provided that in the future returns shall be made of all exempt property in every town and city.

In the last report of the board of tax commissioners the following statements were made:

"Farm lands in this State are assessed more nearly their full value than any other form of realty. Low water and rail freight rates for products of cheap Western self-fertilizing lands have hammered down the worth of an Eastern farm to \$25 and \$15 per acre, frequently far less, from the \$100 and \$75 per acre value the same acreage bore before this latter day unequal competition with the West and slight participation of personal in tax paying. The descent in value has been steady and sure, until the assessors' mark has now, in most instances, become high as compared with other property. Some relief from this condition is expected from abandonment of cereal crops and resort to specialization in stock breeding, dairying, or fruit growing; but the transition is slow and difficult, as are all revolutions. The long droughts of 1899 and 1900, in large areas of the State, have contributed temporarily to discourage those who till the ground and are dependent upon the seasonableness of the seasons."

This touches the difficulty of ascertaining the exact percentage which the assessment bears to the full value. It is because in every locality there is certain property which, by reason of certain conditions, has become very desirable or undesirable, and it is the undesirable property which is usually placed upon the market at forced sale, and under such conditions the price does not always represent the full value. I think usually it is the property that is worth, say, from \$1,000 to \$5,000 that is assessed most nearly at full value. The more expensive buildings, both residences and manufacturing or business property, usually show the widest difference between the assessment and the value of the property, both in the city and in the country.

ITHACA, N. Y., May 29, 1901.

STATEMENT OF PROF. B. E. FERNOW,

Director New York State College of Forestry.

Q. (By Mr. WEST.) How came the New York State College of Forestry to be instituted, and what is its object?—A. The New York State College of Forestry was instituted by act of the legislature of New York State of March 26, 1898, for two objects, namely: To educate foresters, and to make a demonstration of practical forest management on a tract of timber land in the Adirondacks. The history of its origin may be briefly stated as follows: The State of New York had, by various acts, declared for a policy of forest preservation, with a view to protecting the watershed of the Adirondacks. In 1885 the State possessed a property of some 600,000 acres of timber land, acquired by tax sales, mostly culled, and more or less maltreated, and a forest commission was instituted for its management. Although the commission had the power to do whatever was necessary to institute technical forest management, it failed to secure expert advice and to formulate any coherent plan. It exercised the power to cut timber by selling stumpage to lumbermen, who continued to cull the woods of the valuable spruce and pine in the same manner as before, and in consequence those who saw in this method of treating the woods danger to their continuance and to their effectiveness as protectors of the watershed, brought about the insertion of a clause into the constitution which forbids the cutting of any trees

Q. And these farms are unprofitable?—A. No; I would not say that, but they are not run as a matter of financial gain; they are run more as a matter of pride.

Q. With reference to the shrinkage in the value of land after the close of the war, is the present tendency in the price of farm land upward or downward?—A. My notion of it is that it is improving, but not enough to speak about. Some farms, however, have sold for less than the cost of the buildings upon them.

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what he leaves; he works for his present pocket interest, without conscious regard to the future; the forester cuts it with a view to securing a second, third, and continuous, and, if possible, better, economically more valuable crop; he works for the present and the future; he must be willing to forego some of the present profits, which the lumberman takes, for the sake of future profits, which the lumberman does not take into consideration. The lumberman compares to the berry picker in the wild woods; the forester to the market gardener, applying skill in the production of his crop.

There are two parts to forest management, just as in any other technical business, agriculture included. There is the technical part and the business part, namely, silviculture, which is the art of using the forces of nature so as to secure the best wood crop, and forest economy, which concerns itself with the business arrangements. The time element, the long period between the starting and the harvesting of the crop, from 50 to 100 years and more, renders the business arrangements peculiar and, *sui generis*, different from any other business, and hence, especially on account of the time element, as a business by itself, forest management does not recommend itself to the small capitalist. It is peculiarly a business for large capital and for the State or long-lived concerns, like communities. The State, especially, is concerned in the future, is long lived, and hence can afford to forego present revenue or spend money now for the sake of future satisfaction.

Of the three factors of production, nature, capital, and labor, in forest management, the last counts least; hence the small capitalist who expects to secure by intense application of skill the largest margin from his capital has here the least opportunity, except under very special conditions. The large capitalist, who can wait while nature is accumulating the wood crop, who does not want to depend upon labor and its uncertainties, who wants a safe continuous investment with sure though comparatively small returns, is best fitted to carry on the forestry business.

Q. Is forest management profitable?—A. No business can be said to be profitable except under certain given conditions. Forestry, applied to our virgin woods as a business, working as it does for the future, can certainly not be profitable immediately, except under very favorable and particular conditions, namely, on very large areas of well-stocked timber with large capital. In the long run, however, it can be made, and will become as profitable as any other business, and as it has become in Germany and other countries. As long as virgin supplies, which have cost nothing to produce, compete in the market, there is naturally little inducement to apply skill and labor, i. e., money, upon the production of wood crops. Nevertheless, the time has seemingly come when natural supplies of timber ready for use have been sufficiently reduced to foreshadow a balance between supply and demand which may call for effort to increase the former, and those who are now beginning to look out for the future will undoubtedly reap their reward. This is especially true with certain kinds of timber supplies, notable pulp wood.

Reliable and intelligently computed statistics on standing and growing timber supplies—which do not exist and are, to be sure, most difficult to obtain—would stimulate the forestry business more than any other agency. Here is where the Federal Government should have long ago taken the initiative.

Q. What relation has forestry to agriculture?—A. Forestry can utilize the soils which are not fit for agriculture; hence there is not necessarily any interference from that point of view. The farmer should keep all the poor parts of the farm for wood cropping, which, incidentally, will bring him profits from the otherwise useless portions. Besides, in certain locations, the beneficial effect of a forest cover, as on hill tops, steep slopes, especially with still, impermeable soils, and the protection against winds may induce location of wood lots even on agriculturally valuable soils. The farmer can practice silviculture on his wood lot, applying such principles as I have outlined in *Farmers' Bulletin No. 67*, United States Department of Agriculture, entitled "Forestry for Farmers."

But it is not to be expected that the farmers' wood lots will ever furnish the enormous supplies of log timber—at present not much less than 40,000,000,000 feet, B. M.—which our market requires. Not only would it not pay for him to allow his trees to grow as long as is needed for such log timber, but even silviculturally speaking, the wood lot is fit only for growing firewood, posts, poles, and small dimensions. Log timber must be grown on large contiguous areas by large capitalists who can afford to have their capital tied up for a long time and are not tempted to cash it as soon as it becomes possible.

Q. What relation has the College of Forestry to the State forest commission?—A. There is no direct organic relation between the college and the commission, except that the commission is by law required to furnish protection against fire on the college tract. By implication, rather than by direct language, the commission should choose its professional employees from the graduates of this college, and last year it did so employ the first and only graduate. The commission might also apply to the college for any expert advice that it may desire in formulating plans for the

management of the State's forest property. Such a relation has so far, however, not developed, and in fact no attempt at professional forest management has been made; the commission, as far as forestry interests are concerned, has hitherto only exercised police powers, preventing forest fires and stealing, enforcing the game and fish laws, looking after contracts arising from the purchase of timber lands under reservation of certain kinds and diameters of soft woods, etc.

The constitutional clause prevents the commission from doing any forestry work which necessitates the cutting of trees. There would, however, be many other opportunities for forestry work on the 1,500,000 acres controlled by the State, like the planting up of burned areas, the survey and subdivision of the forest property, the taking of stock preliminary to future plans of management, in which the commission could be assisted by the college and employ its graduates.

Q. What is the policy in the management of the college tract, and what has been accomplished?—A. The college tract is typical of the Adirondack woods; a hard-wood forest composed of sugar maple, yellow birch, and beech, mixed with spruce and hemlock, and in some parts white pine, besides some other species occurring sporadically. Most of the college forest has been culled by lumbermen of the merchantable pine, which is nearly extirpated, and of the spruce, which has thereby been considerably reduced. It is, therefore, the leavings of the lumbermen—a forest culled of its most valuable materials—which has been set aside for this experiment. There are, besides, the usual balsam and cedar swamps and considerable areas of burned lands, grown up to aspen and white birch, where formerly the white pine was the dominant tree.

The silvicultural policy, briefly stated, is to replace the old decrepit natural forest by a new, more valuable forest, more or less rapidly.

The financial policy is to bring about this change in the conditions of the property, as far as possible, by using only the profits which come from the harvest of the old crop. The first step necessary was, therefore, to find a market for the hard wood, which did not exist locally. Since the hard woods do not float, railroad construction is absolutely necessary for transporting the harvest out of the woods. This means that a comprehensive plan for the entire harvest is necessary. Since the proportion of logs to cord wood in these hard woods is about as 1 to 3 or 4 in volume (that is to say, there is from three to four times as much wood fit for cord wood as for logs), and since for the success of the young crop the debris of logging must to some extent be taken care of, it was even more essential to find a market for the cord wood than for the logs. Consequently a contract was entered into with the Brooklyn Cooperage Company to erect stove mills to use the logs, wood-alcohol plants to use the cord wood, and a railroad for the purpose of taking out the entire hard-wood crop, logs, and cord wood that might be cut for the next 15 or 20 years.

In this way the market question—the most difficult one to solve—for the least salable part of the crop was settled at once. The company has invested a large amount in construction of mills and railroad, and the first year's cut has been made, harvesting from 500 acres about 2,500,000 feet of logs and about 8,000 cords, besides small quantities of soft woods which it became necessary to remove. Close utilization of every part of the trees cut, the saving of the little odds and ends and of the inferior materials, must be attempted to secure the profit.

Regarding the reproduction of a crop, various methods are available. The object being to have the relatively more valuable conifers reproduced in preference to the hard woods, whatever young conifer growth is present is to be saved in the logging, and occasionally seed trees of conifers as well as hard woods are to be left to fill out the crop. A satisfactory natural reproduction, however, requires that the old crop be removed gradually while the young crop is gradually developing, giving light to it as the different species require. But such a procedure—gradual or repeated logging over the same area—is costly. The scanty allowance of working capital has prevented it in the first season. Besides, nearly all the hard-wood trees, even the small or young ones, are defective and unpromising, mostly owing to injury by fire, and should therefore be removed, being mere runts, while the spruces which might be left as seed trees, being shallow rooted, are readily thrown by winds in the severer openings; hence it appears in many places preferable, less expensive, and surer of results to artificially secure the young crop by planting. Consequently large nurseries, in which plant material is grown from seed to be transplanted to the woods when 2 or 3 year old, have been established. In these mainly white pine and spruce, together with other coniferous species, are grown, more than a million seedlings being now on hand.

Planting is done only with conifers, since the hard woods are able to reproduce themselves readily without assistance, furnishing a sufficient amount of this desirable admixture. This at least is the theory upon which the management has, so far, proceeded. The burned areas and openings are also to be gradually planted up to useful species. So far about 165 acres have been planted for experimental purposes in varying manner.

The most difficult problem here, as elsewhere, unsolved, and taxing either ingenuity or the purse, is protection against fire and getting rid of the unavoidable débris that comes from logging when the brushwood can not be disposed of. An attempt to utilize the latter has so far not proved a success financially. Against the fire danger constant patrol seems to be the only help, all other means seemingly being more expensive and less effective.

Ithaca, N. Y., May 30, 1901.

STATEMENT OF PROF. L. H. BAILEY,

Of the College of Agriculture in Cornell University.

If farming is unprofitable, the farmer moves to town; thereby is the balance of population disturbed and our economic equilibrium upset. The agricultural status concerns the city man as well as the country man. Whether there is an agricultural decline depends largely on the point of view; that is, on the kind of measure with which we measure it. We have erred in measuring the agricultural status by the means that we are accustomed to use in other industries. The farm not only produces a certain product, but it is the farmer's home. The question is not one of economics alone, but quite as much of social statics. If one were to ask 20 farmers whether agriculture is undergoing depression, he would likely receive 20 kinds of answers, depending largely on the personal experience of the respondent. One can arrive at a satisfactory conclusion as to the agricultural status only by taking a broad view and by considering the averages of many conditions. He will arrive at truer conclusions by knowing the actual conditions and aspirations of farmers than by studying statistics alone.

Judged historically, agriculture itself can not be on the decline. The "good old days," of which we hear so much, were days of less production, narrower range of effort, poorer ideals of living. A series of contrasts will illustrate this fact.

The best information concerning the agricultural status of this country at the close of the eighteenth century is that contained in the correspondence of George Washington, particularly in that part of it conducted with Arthur Young, the famous English agricultural writer. At Young's suggestion, Washington made an inquiry into the condition of agriculture, and this inquiry was published after Washington's death. Although the farming lands were then relatively new, nevertheless the yield of crops was remarkably small as compared with that from the same regions to day. R. Peters, for example, living at Belmont, within 6 miles of Philadelphia, writes in 1791 that "about 8 bushels of wheat per acre is a full allowance for the better kind of farms in these parts. Some do not yield 6, and eight out of ten do not come up to 8 bushels per acre." He also reports that a dairy of 8 cows should give an average yield of 2 pounds of butter per week for each cow, making an average through the year of 101 pounds, or 832 pounds for the herd. At the present time the yield of wheat in Pennsylvania and adjacent regions averages at least twice the figures given by Mr. Peters, and the best farms much exceed that amount. The ordinary farm dairy to-day, in that region, should average 250 pounds of butter to the cow, and the best herds will exceed that figure.

The general low state of agriculture in Virginia may be judged from the following extract from one of Washington's letters, written from Mount Vernon in 1787: "The cultivation of tobacco has been almost the sole object with men of landed property, and consequently a regular course of crops have never been in view. The general custom has been, first, to raise a crop of Indian corn (maize), which, according to the mode of cultivation, is a good preparation for wheat; then a crop of wheat, after which the ground is respited (except from weeds and every trash that can contribute to its foulness) for about eighteen months; and so on, alternately, without any dressing, till the land is exhausted; when it is turned out, without being sown with grass seeds or reeds or any method taken to restore it, and another piece is ruined in the same manner. No more cattle is raised than can be supported by lowland meadows, swamps, etc., and the tops and blades of Indian corn, as very few persons have attended to sowing grasses and connecting cattle with their crops. The Indian corn is the chief support of the laborers and horses. Our lands, as I mentioned in my first letter to you, were originally very good; but use and abuse have made them quite otherwise."

Following is a sketch of the products of a good farm in Bucks County, Pa., in 1791. It is "an estimate of what may be supposed the average annual product of the different articles raised on the lands" near Philadelphia:

"Quantity, 200 acres; value, 3,200 dollars. Two hundred acres being nearly the

average quantity of the farms in this quarter, have taken that as the most convenient portion from which to form the required estimates.

"*Arable land*, 125 acres. The arable land, divided into five fields, of twenty-five acres each, makes in the whole 125 acres.

"*Pasture*, 50 acres. The course of cropping pursued here requiring three fields to be under tillage, two of course will be left for pasture, which make 50 acres.

"*Orchards, &c.*, 10 acres. Orchard, garden, house, and barn, yards, lanes, &c.; supposed to occupy 10 acres.

"*Meadow*, 15 acres. The natural meadows in this part of the country being few, yet as every farmer finds means for allotting some portion of his land for that use, suppose the nearest average 15 acres.

"*Woodland*, 50 acres. Timber being an article indispensably necessary for fuel, fencing, building, &c., have allowed 50 acres for that use.

"*Wheat*, 200 bushels, at 90 cents per bushel, is 180 dollars. One of the aforesaid fields is allotted, in rotation, for wheat and rye; suppose twenty thereof to be sown with wheat, will yield, *communibus annis*, ten bushels per acre; for although in seasons, on well improved grounds, twenty, thirty, and even thirty-five bushels may be produced from the acre; yet from the many casualties to which land tillage is exposed, so that in some seasons the best improved ground may not produce even five bushels; have, from my own observation, and that of an intelligent neighbouring farmer, taken the above as the nearest supposed medium, making two hundred bushels; which, at 90 cents per bushel, is 180 dollars.

"*Rye*, 50 bushels, at 60 cents per bushel, 30 dollars. Rye likewise, ten bushels to the acre; the remainder of the field, being five acres, will yield fifty bushels, which, at sixty cents per bushel, make 30 dollars. N. B.—The field on which the wheat and rye is sowed is generally also put in with grass, and lays for pasture two years.

"*Corn*, 300 bushels, at 40 cents, 120 dollars. One field is generally allotted to Indian corn and buckwheat, in the same proportion with wheat and rye; the 20 acres of corn will average 15 bushels per acre, making in the whole 300 bushels, at 40 cents per bushel, is 120 dollars.

"*Buckwheat*, 75 bushels, at 30 cents, is 22 dollars and 50 cents. This grain is so precarious in its growth that it is extremely difficult to form an estimate of its general produce; but suppose 15 bushels per acre, which, from five acres, being the remainder of that field occupied by the corn, will be 75 bushels, valued at 30 cents per bushel, is 22 dollars 50 cents.

"*Barley*. So little of this grain is raised here that I did not think it worth notice. "*Oats*, 100 bushels, at 20 cents per bushel, 20 dollars. By the course of cropping commonly used here, this grain is sowed for the sake of ease and convenience to the farmer, upon some part of the fallow intended for wheat, to which it generally proves injurious, therefore is not largely propagated; have only allotted five acres, which will average twenty bushels per acre, making in the whole 100 bushels, at 20 cents per bushel, is 20 dollars.

"*Flax and seed*, 30 dollars. This is also generally raised on part of the fallow; suppose two, which, on an average, may yield 250 pounds of swinged flax and 12 bushels of seed, which, both together, may be worth 30 dollars.

"*Apples and cider*, 30 dollars. Every farm has more or less of orcharding; eight acres allowed for that use, the product whereof in apples and cider can not be worth less than 30 dollars.

"*Hay*, 20 tons; value, 120 dollars. Although 15 acres only are allotted for meadow, which, probably, on an average, will not yield more than that number of tons, yet as the farmers by sowing grass seeds on their lands, improved with dung, plaster of paris, &c., annually mow more or less of those, I have allowed 20 tons, worth six dollars each, makes 120 dollars.

"*Cattle*, annual product, 70 dollars. I suppose a farm of 200 acres will, on an average, support 12 head of cattle; of those, I suppose five milch cows, which will each yield per annum one calf, two of them to be raised and three fatted, the latter worth six dollars. Five milch cows will produce fifteen pounds of butter per month each for seven months, which makes in the whole 525 lbs., at nine cents per lb. makes 47 dollars 25 cents, five months allowed for their being farrow or fattening the calves. Two calves annually raised affords opportunity for disposing of that number of cattle annually, either in beef or milch cows, which, being worth 16 dollars each, makes 32 dollars, making in the whole 79 dollars 25 cents. Deduct for accidents, &c., nine dollars 25 cents, leaves an annual product of 70 dollars.

"*Horses*. Whatever these may produce must be considered as included in the general product of the farm, for the cultivation of which they are made by the propagation of the animal, unless it be in the most interior parts of the country where no market can be procured for grain, &c.

"*Sheep*, annual product, 28 dollars. Twenty store sheep may be conveniently kept on a 200-acre farm; their wool will average 40 pounds per year, worth 23 cents per pound, which makes 10 dollars; their increase in lambs, twelve; this number being to be disposed of annually, either in lambs or fatted mutton, they may be worth 18

dollars each, makes 18 dollars. Thus the whole annual product on sheep will be 28 dollars.

"Hogs, annual product, 80 dollars. Ten hogs may be considered as the average number raised annually on a 200-acre farm; weighing 200 net pounds each, making 2,000 lbs., at four cents per lb. the value of the annual product will be 80 dollars.

"Poultry, annual product, 10 dollars. Suppose, on an average, ten dozen may be raised, worth one dollar per dozen, their product will be 10 dollars.

"Wood consumed in fuel, 25 cords. Allowing one kitchen fire, which burns more or less the whole year, and one other fire during the winter, for the convenience of the family, I suppose the two fires will consume 25 cords.

"Consumed by cattle, horses, sheep, hogs, and poultry: Indian corn, 200 bushels; rye, 25 ditto; buckwheat, 40 ditto; potatoes, 75 ditto; hay, 20 tons.

"The family consumption may be estimated by what will support nine persons, viz, the man, his wife, and three children, one man hired by the year, one bound boy, and one girl, the extra hiring of hands in harvest and haymaking, spinsters, visitors, &c., equal to the maintenance of one person more during the year.

"Tax paid annually for defraying the expenses of the country, supporting the poor, and repairing the roads will average about \$8."

This account shows that a good farm of 125 acres of arable land in eastern Pennsylvania could be expected to produce at that time 200 bushels of wheat, 300 bushels of corn, 100 bushels of oats, 75 bushels of potatoes, and 20 tons of hay. I have asked a representative farmer of eastern Pennsylvania to estimate what the average yield of such a farm would be in 1900, and he reports as follows: Wheat, 1,250 bushels; corn, 1,500 bushels; oats, 500 bushels; potatoes, 500 bushels; hay, 50 tons; tobacco and other crops not mentioned. That is, the average productivity of a farm is four or six times greater to-day than it was in the same section 100 years ago. This fact is illustrated in the most remarkable way in the contrasts of fruit growing of the two centuries. In 1791, for example, it was estimated that 8 acres of orchard should produce apples and cider worth not less than \$30, or less than \$4 per acre. A first-class apple grower at the present day would be satisfied with nothing less than a net profit of ten to forty times this amount.

There are many reasons why farms are more productive to-day than they were 100 years ago, notwithstanding the fact that the amount of available plant food may be expected to have decreased rather than increased. One reason for the increased productiveness is the use of better tools. Another is the use of commercial fertilizers, which were unknown a hundred years ago, and the general appreciation of the value of tillage and of rotation of crops. The farmer now has more fundamental knowledge of the laws that underlie productiveness, and is thereby able to prosecute a more rational system of farming. There are better markets and more competition at the present day, thereby stimulating activity and inquiry. A greater range of products is in demand. Diseases and insects are under better control. It is apparent from a review of this history that, with the possible exception of the thoughtful provision for spinsters, the whole plane of farming has raised immensely.

The opinions of representative farmers on the agricultural outlook are of the greatest value. They are first hand. They are born of experience. From a recent correspondence with New York farmers on the general subject of the agricultural status, I have selected 20 replies. These replies represent the various opinions on the subject of the so-called agricultural decline, and suggest nearly or quite all the possible remedies, aside from those proposed by political partisans. The authors of these letters are substantial farmers, representing several great branches of agricultural pursuits, as stock raising, dairying, grain farming, fruit growing, and general mixed husbandry.

1.

"There is much depression in agriculture in this section, mainly from drought. As a preventive, I suggest exemption from taxes of a certain per cent of land holdings when in natural forest or reforested. I believe this plan should be pressed upon the legislature. Industrial stimulation is rapidly decreasing the supply of good farm labor."

2.

"I think that there is a depression in agriculture, or at least agriculture is not receiving sufficient reward for the amount of labor bestowed upon it. The cost of production does not favorably compare with the selling price of farm products. The farmer is either paying too much for labor or he is not getting sufficient price for the products of the farm. There is too much difference in price between producer and consumer. Too many are becoming wealthy upon the products of the farm after leaving the farmer and before reaching the consumer. To give the producer the benefit of 75 per cent of this difference will place agriculture upon a footing that will restore the neglected farm improvements of former years."

3.

"I would say that there is a decided depression; and one proof is the very low present value of farming real estate. Farms have been selling for one-fourth to one-third of values a few years since. And why? Perhaps several causes. Perhaps increased taxation, bearing most heavily on the visible and easily found farming property; perhaps the high cost of labor, which is a large item of expense; perhaps the new and fertile Western lands with the cheap transportation, for the West is a strong competition in grain, beef, pork, and butter; perhaps agriculture is undergoing a transition condition. A proof of change may be the drift of population away from the rural parts and toward the cities and towns. Farming responds to business changes the last of anything, while the iron and steel industries feel the changes so quickly as to be considered the business barometer. I have sometimes thought that farming is in the condition of reaction from former prosperity, and the same law of reaction must soon bring improvement."

4.

"There is depression, as shown by the depreciation in farm values of one-third to one-half. Abundant proof of this might be cited.

"Causes: First, overproduction; second, failure of farmers to recognize the changed conditions and adjust themselves thereto. The only farmers I see making money now have excelled in some one thing."

5.

"There is certainly a decline in agriculture. The splendid railroad system and low rates for long hauling of freight and cheap lands West make it discouraging to try to live and educate your children. It can not be done here in New York State raising cereals." [But this correspondent is a very successful and thrifty fruit grower.]

6.

"The question as to whether there is any agricultural depression or not, seems to me can be answered with yes or no. When I compare the sales of farm produce as kept by my father in 1840, as kept by myself in 1860, and as it is selling to-day, and the expense of producing it at the three different periods, there would be more surplus money to-day than at the other times. When we take into consideration the changes that have taken place and the difference in our surroundings, we find that the price of agricultural products has not kept pace with our necessities, consequently there is a depression. Take some examples—first, taxes. An ordinary farm of 100 acres has to pay not far from \$70 yearly. This would take the raising, marketing, etc., of 100 bushels of wheat. Second, take our insurance, repairs, clothing, groceries, etc., and we soon find \$200 gone. This takes 400 bushels of shelled corn, or ordinarily 700 bushels of potatoes. Suppose we want to send our boy or girl to the high school in a nearby town and we have this bill for one term of 14 weeks: board at \$3 per week, \$52; tuition, \$7.50; books, etc., \$5.50; net, \$65. This to-day would take 225 bushels of oats. Four terms a year would take 900 bushels. An ordinary family, with 100 acres of land free from incumbrance, has hard work to make ends meet."

"Some of the causes: Gambling in grain; wealthy corporations controlling the price of some farm products; high taxes, partly the result of expensive and high-salaried officers (school-teachers not wholly exempt); trying to keep up appearances so that we may compare with our city cousins, etc.

"One more example may be cited showing the difference between the pay received by intelligent farmers and some public officers. My judicial district has 6 judges, who receive \$42,000 annually. The farmers taking milk to our depot to-day are receiving 2½ cents a quart. Paying the judges' salaries in milk would take 1,680,000 quarts. There is an honest, hard-working farmer going past my place every day (4 miles) over the bad roads with 60 quarts of milk to help pay their salaries. In his case ignorance is bliss. What if these judges had to take their pay 1 year in milk? How much land and how much hard labor would it take for the above bill, and how many carloads would it make?" [This farmer evidently forgets that only a part—and that probably a small part—of the salaries is paid by farmers.]

7.

"It seems to me that the foundation step of real progress among the farmers is based on the question of cheap and rapid transportation; otherwise the farmer, 20 miles from market is in the position that the fruit growers in California were of

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having immense crops of beautiful fruit decaying on their hands because the freight rates were so heavy as to prevent their being sent to market. A farmer intelligently operating his farm 20 miles from the market and having good crops and choice things to sell loses the self-incentive of commercial gain. The moral incentive of being a successful producer is there, but it does not bring him bread and butter."

8.

"There should be an effort to improve the condition of the farmer by improving his methods of selling his produce. It is not necessary to introduce evidence to prove that this needs doing. The sales should be made by using a representative farmer for salesman, one who is adapted to the work, well supplied with information, who has enough of the smaller products of the farm that he can ship economically, enough stock so that he can afford to advertise and command the attention of large buyers, one whose knowledge of qualities is sufficient to assure a correct response to a distant order, and whose known responsibility will convince the buyer that he has a ready redress if his order is not honestly filled. We also should cheapen and at the same time improve methods of packing and shipping by securing uniformity in size and kind of packages, and complete reform in the present tendency to pack deceptively and in undersize packages. We should sell more and more as time goes on by filling orders direct from farmer's hands through his agent, thus checking the tendency to 'glut' the market by untimely shipments. Since the farmer has to pay the entire expense of getting his produce into the consumer's hands, no matter how he markets it, he can economize largely on present methods, and a penny saved here is more than a penny earned. If it costs 15 cents per pound to produce butter, then the man who sells it for 16 cents makes 1 cent per pound, but if he saved another cent a pound by selling more economically, he makes as much as if he had produced another pound of butter. In other words, adding 1 cent to the price is as good to him as doubling his output. The farmer needs educating right here. He does not appreciate the difference between the total price and the small fraction left to him as his own, and consequently does not realize the immense importance of the additional fraction added to the price. It is far within the mark to say that the cost of distribution is 10 per cent of the total value as at present managed. This can be reduced if the produce is handled in a wholesale way."

9.

"Agriculture has been passing through a period of severe depression in all countries for a quarter of a century, owing primarily to great changes in transportation. While France and Denmark are gaining, our own country is rapidly leading the world in improvement. When methods are adapted to changed conditions, this improvement is most marked. Present prices for most agricultural products may be considered as returning good profits."

10.

"While there is no 'boom' in this section, I do not believe that there is any depression. Farms are advancing in price. Hay, beans, potatoes, and apples are selling fairly well, wheat alone being below what it ought to be."

11.

"Is there an agricultural depression? It depends. If you mean land values, yes. Farm after farm in New England, New York, and Pennsylvania can be bought to-day for two-thirds the cost of buildings. A farm in this county once sold for \$100 per acre was lately sold for \$30. Land my father sold for \$60 per acre has since sold for \$15.

"If you mean farm-product values, no. Butter, pork, cheese, etc., are as high as the average for the past 3 years.

"If you mean farm wages, no. I pay 12½ cents per hour for men. My father hired just as good men for 7½ cents per hour."

12.

"In my judgment there is no real depression in agriculture. I think that there has never been a more favorable time to buy a farm and pay for it from the soil than now."

13.

"There is certainly a depression in land values compared with 20 years ago, caused doubtless by immense tracts of Western land coming under cultivation, and we can not compete with Western farmers in raising wheat. My idea for farmers of this

State is this: Work toward a specialty. It is my opinion that the farmer who attends to his business as strictly and intelligently as the business man in town need have no fear of agricultural depression. On my farm of 40 acres, my specialties are apples and potatoes, and without boasting I can say that the results are very satisfactory."

14.

"The best evidence that we have that agriculture is on the decline is the number of abandoned farms throughout the country. The causes are:

"(1) The prime cause is ignorance, and that word implies so much that I will not attempt to define it.

"(2) Five-sixths of the tillers of dear old mother earth have no heart in their work.

"(3) And having no heart in their work, they totally neglect proper cultivation, which is the foundation of all farming and more important than all else excepting one factor, and that is good seed.

"(4) Cost of fertilizer.

"(5) Poor farming, poor pay.

"(6) Farmers, as a rule, have an idea that they must live on the husks, and thereby bring discontent and unhappiness to the household.

"(7) And last, but not least, the farmer and his life companion do not pull together in many cases.

"A man who can not see, even without book knowledge, some beauty and satisfaction in the sowing and the harvest has no place in God's grand old laboratory."

15.

"My observation in our section is that farming has paid better in the last 2 years than for several years previous. Farmers have been raising a greater variety of crops."

16.

"I do not think that agriculture is in a depressed condition at the present time, but on the other hand that we are at the beginning of a period of prosperity that will equal, if not surpass, that which has been experienced in the mercantile world. The reason that I have for believing this is, that when the consumers are well employed and paid they will naturally live better and consume more."

17.

"I do not think agriculture is on a decline. Perhaps it does not make the progress found in other business. If not, I would attribute the cause to lack of proper education and business methods on the part of the farmer."

18.

"I fail to see any general agricultural depression. While undoubtedly many farmers who work along the methods of 40 years ago, trying to raise crops of grain as their fathers did, are hard up, the progressive, up-to-date farmer is doing better now than for many years. I have noticed that those farmers who stick to raising grain and hay for sale are gradually raising smaller crops, but those who mix in a liberal amount of stock growing or feeding, or who keep cows, have their land growing better and more productive."

19.

"It is very difficult to express the situation in a few words. The financial rewards of the farmer are not commensurate with the knowledge, skill, and labor required of him to succeed. Therefore there is depression.

"The causes are to be found in legislation as affecting land values, in taxation, transportation, and education. When 60 per cent of the farmers are as well educated as the best 30 per cent are now, all this injustice will disappear. But it does not follow that agriculture is now on the decline. On the contrary, it is on a rapid, steady, upward incline. Knowledge is the push and skill, the steering arrangement that is impelling it forward. For the intelligent, educated, industrious farmer there will be the greatest prosperity which the profession has ever known. But for the ignorant, uneducated, average farmer there is nothing for encouragement. He can not keep up."

"The depression in agriculture is apparent rather than real. The farmer thinks that agriculture is on the decline because he compares his income and expenditures of to-day with those of the last generation, or with those of the city man who has more capital invested. Considered with reference to the amount that one can produce from a given quantity of land, agriculture has not declined, but has decidedly improved.

"The causes of the so-called agricultural depression are associated mostly with the failure of the farmer to adjust himself perfectly to the changing conditions of the time. As a result much of the depression is local. For example, the condition of abandoned farms in New England has come about very largely because great areas of new land were opened up in the West and the competition in the old-fashioned staple crops became too severe. As soon as the farmers of New England learn how to grow the things for which New England is better adapted than the West is, or which their markets demand, in better condition, the condition may be expected to improve. Another reason for the apparent decline in agriculture is the change in social conditions. The farmer may earn as much as he did years ago, or even more, but he has to spend the greater proportion of it in keeping up with the times. He feels that he must have all the things that the city man has. The piano has taken the place of the melodeon, and the carriage of the democrat wagon. The farmer sometimes forgets that he has a great deal which the city man does not have."

Of these 20 replies only 6 seem to indicate that there is a general depression in agriculture; and even in these cases the decline does not appear to make the respondent hopeless. The general assigned causes of the so-called agricultural depression are chiefly the following: First, economic conditions, comprising depreciation of farm values, inequalities of taxation, the high charges between the producer and consumer, the drifting of population toward the cities, the competition due to the opening of the West, overproduction, the increase of governmental expenses, and the fact that the farmer reacts slowly to economic changes; second, poor roads, whereby the farmer is at a disadvantage in the market and is socially ostracized; third, the lack of good farming and of the ability to take hold of the new knowledge and inspiration of the day, as seen in the need of education and of business method, in the tendency to follow old lines of effort, in the lack of specialization; fourth, social conditions, comprising the relative isolation of the farmer and the consequent unattractiveness of his life, the fact that he does not appreciate his business, the great increase of expenses due to his effort to provide what may be called the luxuries of life.

It is apparent, from a review of the preceding discussion, that the remedy for the so-called agricultural decline lies very largely with the farmer himself. The general economic conditions are largely beyond his reach and control—as, in fact, they are beyond the reach of men in other business. The farmer reacts so slowly to changing conditions that his adjustment to them comes after all other businesses have become thoroughly accommodated and revitalized, and in the meantime he suffers. This lack of quick adjustment is due, in part, to the inherent conditions of country living, whereby people are scattered far and wide. It is due, also, to the fact that farmers have less inherent community of interest than men in most other vocations. Farming is not one occupation, but many occupations. One farmer makes a specialty of sheep, another of potatoes, another of peaches, and another of carnations. It is not to be expected that men with such varied interests can organize into a compact body, for the basis of the most efficient cooperation is commercial benefit.

It may be asked what is proposed in the way of legislation to relieve the difficulties under which the farmer labors. The bills introduced in a recent legislature of the State of New York may be taken as fairly representing the range that such remedial legislation can profitably take. Thirty-one special bills were introduced in aid of the agricultural interests. A large number of these were regulatory and police measures. One made it obligatory upon State institutions to give preference to New York State products when buying supplies. One proposed to make it mandatory upon commission merchants to render to the consignor the names and addresses of purchasers, thereby affording the farmer a check on the middleman. One related to regulations concerning the sale and analysis of feeding stuffs. Eight had to do with adulteration and regulation of articles of food and feeding. Two related to sugar beets. Four were concerned with establishing legal sizes of packages. Four protected the farmer from nuisances, as weeds and rabbits. One sought to check the spread of diseases of bees. One related to the control of commercial fertilizers. Two appropriated money for the furtherance of agricultural education. With the exception of the two bills to promote education, all the 31 proposed measures aimed only to protect the farmer and to give him a fair chance to work out his own salvation. They could not make him a better farmer nor relieve any fundamental difficulty.

It may be well to make a hasty review of some of the causes that are commonly assigned for the agricultural depression.

1. *The economic condition.*—The most emphatic indication of a decline in agriculture is the depreciation of farm values. In nearly all parts of the country, particularly in the East, values of real estate have depreciated 25 per cent and more. This depreciation represents decline when measured by fixed indebtedness, but it is not decline when measured by the possibilities of a present-day investment. It is said that farmers can not hold their lands and pay their debts. These debts, however, were contracted years ago, in most cases when farm values were high. They were contracted on a rising or perhaps inflated market, and they are being paid on a falling market. All farmers agree that it is possible to produce more per acre at the present day than a generation ago. Valuations of farm properties have decreased. It is therefore apparent, if prices have not depreciated, that the income from investment in farm lands to-day is relatively greater than a generation ago. When farm values are low it is the time to purchase farms if one desires to make a living from the proceeds. In this view, therefore, the decline in farm values promises well for the earning power of farming. It has been a fault with farmers, perhaps, that they have considered the changes in farm values to be merely temporary, and they have therefore been free to contract debts, hoping that the status would quickly regain itself. The fact seems to be, however, that the decline in farm values is general and relatively permanent. The reaction to former land values will come about slowly as the result of improved farming and the general rise in the tone of country living.

In the increasing complexities of our civilization it is impossible that taxation shall fall equitably on all classes of our population. It is probable that the farmer is taxed relatively too high. His property is tangible and visible. Yet the increment of what may be considered as excessive taxation is so small as compared with the earning power of his investment that it can scarcely be regarded as contributing in any large degree to an agricultural decline.

Theoretically, cooperative selling and buying may be the ideal plan for the farmer. It is practically impossible, however, to obliterate middle dealing, for it is only in exceptional cases that the farmer can come into direct contact with the consumer. As already explained, thoroughgoing and complete cooperation among farmers is almost impossible because of the many practical obstacles in the way. In regions in which one kind of product is chiefly grown there may be pooling and centralizing of interests, but even in these cases the pools are usually of relatively short life. In most classes of agricultural produce the price obtained by the pool is that of the average or poorest product rather than of the best. There is a general tendency, therefore, for those parties who produce a superior product to withdraw from the pool and to find a personal customer. Perhaps the best instances of profitable and sustained cooperation among farmers are those afforded by creameries. In this case the cooperative interest is aided by the fact that a manufactured product of more or less uniformity is made; the value of the raw material supplied by different patrons can be graded on a decimal system, by means of the proportion of fat in the milk, and the product is staple in the market and relatively imperishable. It is a manufacturing rather than an agricultural enterprise. The business of farming stands for individualism. Each man works and plans for himself, and usually with relatively little reference to his neighbor. Farmers are isolated. Each man's ideals and products are influenced largely by the conditions under which he lives. It is scarcely to be expected that such centralized organization as obtains in manufacturing pursuits can obtain in the agricultural field.

There are undoubtedly inequalities in transportation charges, but these result in local disturbance and not in a general decline of agriculture. If by cheaper transportation and less middle charges farming is made more profitable, then more men will go into farming and much that is gained may be lost. Nevertheless, difficulties associated with transportation are undoubtedly the cause of agricultural distress in certain regions.

Protective tariff is of less value to farming than to manufacturing, and it may be one reason for the inequality between the two businesses. The farmer deals little in raw materials other than those that he raises, and he has little control of the selling market, since the selling of his products is largely delegated. Primarily he is not a trader. His individual and isolated position give him little leverage on the market. The farmer's surplus, or what he has to sell, is largely perishable and thereby he is again at a disadvantage. He can not hold his product for any great length of time. What benefit the farmer secures from tariff protection is largely indirect. Notwithstanding this, it is difficult to believe that protection can be assigned as a cause of any general agricultural decline, for the farmer has shared in whatever general prosperity the tariff protection may have brought.

Overproduction is often cited as the cause of the agricultural depression. It is easy to figure the proportion of the crop of the staple grains to the consumers and to find that the production is sometimes too great per capita. It is true that there

is often an overproduction in staples, but it is seldom that there is an overproduction in the luxuries and amenities. In the staple products the demand largely determines the supply; whereas in products of luxury the supply, to a large extent, determines the demand. There may be overproduction of wheat in a certain township, but it is very unlikely that there will be an overproduction of apricots or other fancy articles. However, if there is overproduction no statute law can correct it. Similar danger lies in every business. It is temporary and more or less local. It merely shows that too many people are engaged in farming, or that too many farmers are raising one crop. In the long run the question will solve itself by the operation of the natural laws of supply and demand, and the solution will no doubt come the quicker the freer the crop from speculation. The dangers of overproduction threaten every business in which men engage. This danger is, in fact, the very spur to effort and to improvement in order that better and more various products may be secured that will reach new and open markets.

Other economic difficulties which are sometimes ascribed as the cause of the agricultural decline are merely symptoms of changed conditions. Such, for example, is the drift from the country to the city. Fewer people are needed on the farm at the present day because much of the work that was once done by hand labor is now performed by machinery. The movement from country to city is one of many economic movements which are caused by the changing conditions of the times. It can not be understood when standing alone and it is not primarily an agricultural question.

Abandoned farms are only symptoms of a change in rural conditions. Many of the farms that are now abandoned would never have been settled if the easier and more fertile lands of the West were then accessible. It is sometimes said that a New England farmer lives on what he saves rather than on what he earns. The opening of the great West gave new opportunities and presented new ideals. It would have been strange if many of the hill farms of the East had not been abandoned. The general tendency is for these hill farms to be amalgamated into grazing ranges or to be taken as summer homes by city people. All the fertile and accessible lands of the East, however, are still good farming areas, supporting prosperous farmers. Although the abandonment of farms in parts of New York and New England may work hardship on the present generation and cause much uneasiness, it will no doubt be regarded a generation hence as having been a necessary economic change and therefore productive of good results.

The increase of farm mortgages in some parts of the country is frequently cited as an indication of an agricultural decline. It is often the measure of local unthrift, but it can not be considered the cause of a general depression. In great numbers of cases the mortgage represents the purchase money of the farm and therefore is not to be charged to loss. The mortgage, when it does not represent purchase money, is rather an indication of unfortunate local conditions or of poor executive management on the part of the individual farmer than as a fundamental cause of depreciation and unrest.

2. *Poor roads.*—It is true that the American country roads are very poor. This is due in part to the great extent of the country and the large holdings, and in part also to the fact that in many regions the railroads have developed before the wagon roads, and the necessity of road improvement has therefore not been so imperative. In many great geographical regions road-building material is scarce and expensive. Poor roads contribute to the unattractiveness of farm life and therefore complicate the social condition quite as much as the economic condition. It can not be considered, however, that poor roads are the underlying cause of any agricultural decline. If roads need to be improved for the benefit of farming, the problem is in the hands of the farmers themselves; for as soon as they demand that better roads shall be made necessary means will be provided. It is easy, however, to carry the agitation for good roads too far, for the building of roads may entail more expense in many cases than the adjoining property is worth. Much of the agitation for better roads comes from persons who are not farmers. The agitation is bound to bear good fruit and it should be encouraged, but the reform will come slowly and gradually, and thereby it will be the more permanent.

3. *Lack of good farming.*—It is undoubtedly true that the lack of good farming, or the inability of the farmer to appropriate the best knowledge and advice of the time, is the fundamental cause of most of the agricultural unrest. The future must see a greater intensification of effort on the farm. The amount of capital invested in the ordinary farm is very small. Farming is essentially a small business, and the rate of profit, even on poor farms, is nearly always high. It is no unusual thing for a farmer to make a living on a farm which represents an investment of not more than two to four thousand dollars, and in many cases he is able to save a little money beyond his living to add to capital. Cases are not unusual in which a farmer produces an annual profit from a field equal to the entire value of the field itself. There is a tendency for the big farmer to crowd out the small one in certain localities or in particular branches of farming; but, as a rule, the farmer holds his individuality

even though his investment and his base of operations are very limited. Since his expenses are almost necessarily increasing with the new demands of civilization, it is increasingly more important that he shall intensify his methods in order to produce the greatest possible product from a given amount of land.

The farmer usually is not skilled in making money from hired labor. His "hired hands" are often his neighbors; he treats them as equals. He does not like to work men in gangs; he is not an overseer or a boss; hired labor means to him a different thing than it does to the contractor. Yet, notwithstanding all this, the general tendency is to make relatively more of the labor than of the land. This economic difficulty was well expressed by Washington in 1791 in a letter to Arthur Young, and his remarks are equally applicable at the present day: "An English farmer must entertain a contemptible opinion of our husbandry, or a horrid idea of our lands, when he shall be informed that not more than 8 or 10 bushels of wheat is the yield of an acre, but this low produce may be ascribed, and principally, too, to a cause which I do not find touched by either of the gentlemen whose letters are sent to you, namely, that the aim of the farmers in this country (if they can be called farmers) is not to make the most they can from the land, which is, or has been, cheap, but the most of the labour, which is dear. The consequence of which has been much ground has been scratched over and none cultivated or improved as it ought to have been, whereas a farmer in England, where land is dear and labour cheap, finds it his interest to improve and cultivate highly, that he may reap large crops from a small quantity of ground. That the last is the true and the first an erroneous policy I will readily grant, but it requires time to conquer bad habits, and hardly anything short of necessity is able to accomplish it. That necessity is approaching by pretty rapid strides."

Various natural agencies are against the farmer. For example, there is a general tendency toward the depletion of available plant-food in the soil rather than toward its augmentation. Insects and diseases are more numerous and more serious, consequent upon the increased commerce with the world and the danger of introduction of pests, upon the greater variety of crops, upon the greater extent of crops of one kind, upon the fact that the natural breeding places of these pests in woods and fields are being eliminated. On the other hand, the farmer has more resources to-day than he had a generation ago. A large part of the work of the experiment stations thus far has been directed toward the overcoming of natural difficulties. In most cases the farmer has a recourse for the destruction of pests and the overcoming of environmental obstacles.

If poor farming is really a fundamental reason why farming does not take its place alongside many other callings it is plain that the only fundamental remedy therefor is education. Never has there been so much intelligent and scientific attention given to agricultural questions as now, and there is no country in which so much has been done to educate and to help the actual farmer as in North America. This effort has been productive of the greatest good, and the general tone of farming has raised immensely within a generation. Many of the questions that farmers discuss to-day were wholly unknown to them a generation ago. Farmers' meetings are well attended and the discussions are clear-cut, practical, and pointed. Anyone who is familiar with the present attitude of farmers will have no doubt of the future. Present-day farming is full of vim and vitality, and it is constantly improving.

4. *Social conditions.*—The so-called agricultural question is only in part an economic one. It is largely social, intellectual, and spiritual. We have erred in putting the stress on the economic or commercial side of the problem. Half the value of farm life is in the satisfaction of living it. The attractive side of farm life must be emphasized. The farmer's mind must be open to appreciate things that are his without the asking or the buying. Ordinarily the city man appreciates the advantages of farm life more than the farmer does. He desires to go to the country to escape the city. This desire is in part an expression of natural unrest. The city man longs for the country, and the country man longs for the city. However, the city man usually has a more specific knowledge of what the country is and what it can give him than the country man has of the city. In the country the individualistic life is possible. The advantages that the country man has are far beyond the power of money to buy. When the city man wants strawberries he goes to his pocket; when the country man wants them he goes to his garden.

The following letter from a staff man on one of our metropolitan dailies indicates the point of view of many a city man toward the country and it is one which the country man himself too often fails to appreciate: "My reading and investigation have crystallized my longing for a return to the farm life of my boyhood days. For several years I have been laboring in police courts and in doing such work as ordinarily falls to the lot of a staff man on a large metropolitan newspaper. I am asking for the experience of others as a guide against the day that I am able to drop newspaper work for the harder labor of being my own boss on a bit of farm land

somewhere. I have a profound love for everything that a city lacks and which the green fields, the sunny skies, the falling rain, and the vistas of growing things only can afford; and I have no preference for North or East, or South or West, so long as it carries me away from city life with its ninety-nine parts of misery to one part of happiness." It is difficult to place a tangible value on such an appreciation as this, but it is nevertheless one of the legitimate assets of the farm.

Those who are familiar with the literature of country life will have been struck with the great importance that is given to this intellectual and spiritual side as contrasted with the mere economics of farming. The value of open fields, running brooks, and green trees is quite beyond the reach of mathematical calculation. The following extract from Horace Greley, who knew both the city and the country point of view, is interesting in this connection: "If I were asked to say what single aspect of our economic condition most strikingly and favorably distinguished the people of our Northern States from those of most, if not all, countries which I have traversed, I would point at once to the fruit trees which so generally diversify every little, as well as larger, farm throughout these States, and are quite commonly found even on the petty holdings of the poorer mechanics and workmen in every village and in the suburbs and outskirts of every city. I can recall nothing like it abroad, save in 2 or 3 of the least mountainous and most fertile districts of northern Switzerland. Italy has some approach to it in the venerable olive trees which surround or flank many, perhaps most, of her farmhouses, upholding grapevines as ancient and nearly as large as themselves; but the average New England or Middle State homestead, with its ample apple orchard and its cluster of pear, cherry, and plum trees surrounding its house and dotting or belting its garden, has an air of comfort and modest thrift which I have nowhere else seen fairly equaled."

Contrasted with these spiritual and intellectual aspects of country life is the relative isolation of the farmer. His social ostracism is rapidly disappearing, however, under the influence of trolley roads, neighborhood telephones, rural-mail delivery, bicycles, and better roads. These agencies also bring the city man into the country and thereby add greatly to the momentum of these civilizing movements. They will undoubtedly do much to keep the future generations on the farms.

The desire to leave the farm is no doubt crystallized in most people's minds before they have come to the age to appreciate the economic advantages or disadvantages of farming. They are influenced largely by the unattractiveness of the farm home, by the lack of opportunities for social pleasures and for physical comfort. The farm buildings and appurtenances are not tasty nor attractive nor convenient; they repel rather than attract. The lack of ordinary means of sanitation is too often apparent. Frequently the boy is given no chance to develop himself. What was Tom's calf becomes the old man's cow. The boy compares his estate with that of the city boy's; his dissatisfaction crystallizes into desertion of the farm. Much of the dissatisfaction with farm living is due to the hard lot of the woman. The condition of women on the farm is a fairly good index of the intellectual and social status of the community. The condition of the farmer's wife may not be expected to improve merely because the economic status of the farmer appreciates; it will improve only as a higher type of living, quite independent of income, comes into existence.

In the long run the best survive. This rule holds in farming as well as in manufacturing or in the professions. It may be hard on the individual, but it finally works out the good of the race or of the vocation. It is really surprising what a small percentage of the persons engaged in any calling really achieve what may be fairly called success. The farmer is likely to compare the agricultural status with isolated successes in other callings, but if he were to make a careful investigation he would find that the proportion of successful men in farming is as great as in other callings, and probably even greater. The following extract from a recent volume of the *International Medical Magazine* will illustrate the point: "Of the nearly 2,500 physicians in Paris, says the *Pacific Medical Journal*, 5 or 6 make from \$40,000 to \$50,000 a year; 10 to 15 make from \$20,000 to \$30,000; 100 make \$3,000 to \$5,000; 800 make from \$1,500 to \$3,000, while 1,200 make less than \$1,500."

The sentiments of Washington respecting country life are worthy of emulation. The man who had all the opportunities of his day and who led the American armies to victory, wrote as follows to Arthur Young in the closing year of his life: "The more I am acquainted with agricultural affairs the better I am pleased with them, inasmuch that I can nowhere find so great satisfaction as in those innocent and useful pursuits. In indulging these feelings I am led to reflect how much more delightful to an undebauched mind is the task of making improvements on the earth than all the vainglory which can be acquired from ravaging it by the most uninterrupted career of conquests."

BUFFALO, N. Y., May 27, 1901.

STATEMENT OF MR. SPENCER KELLOGG,

Proprietor of the Kellogg elevator, Buffalo, N. Y.

The Western Elevating Association has been organized for a good many years. The only thing that has any interest to me at the present time is that they have made an agreement with the trunk lines to elevate their grain, and they in turn have agreed to pay them one-half cent a bushel on all grain that passes through this port and is shipped by rail.

Q. (By Mr. West.) Who agrees to pay that?—A. The trunk lines, composed of the New York Central, the West Shore, the Delaware, Lackawanna and Western, Lehigh Valley, and Erie; those are the trunk lines running east to New York; they are under one management, I believe, now. Harriot, of the Erie, has the making of these rates. If you want a rate you must go to Harriot for it. If any grain man wants a rate through the Kellogg elevator they give him a half cent higher rate for freight, because they claim that inasmuch as they have made this contract to pay a half cent, if they paid the Kellogg a half cent they would be paying double elevation; that is their side of the story—the railroad's side; while I claim that it is boycotting the Kellogg elevator, because nobody is going to ship through the Kellogg elevator and give them half a cent for the privilege of doing so; and that is the reason they have for making that agreement, I believe. That we of course expect to prove. Up to this time last year we had elevated about 2,000,000 bushels of grain, and then the boycott took effect and we didn't elevate any. This year it has been continued, and we have practically elevated no grain at all. Of course, that only shows that the boycott has taken effect. The Kellogg elevator is out of the race. The only grain they have any chance of getting at all is the canal grain, and the Western Elevating Association, to handicap the Kellogg elevator, I believe is elevating that grain free; so the Kellogg elevator can neither get rail grain nor canal grain. I don't know what arrangements they have with these forwarders, but we can't make inducements sufficient to get the grain. That is about the way we look at the matter. It is simply a boycott; that is all there is about it, and we have been willing and are willing to-day to elevate for just half the price they are charging. We think there is money in it at that, at one-quarter of a cent a bushel, but there must be a certain amount of business to make it pay at that rate.

Q. How long has this boycott been in effect?—A. Since about the 1st of June last, 1900. We are going to try and see if they can do that sort of thing in this country.

Q. The case is now in the courts?—A. Yes.

If this arrangement had been made at the first of the season, I do not think it would have been legal, but it would have had a better appearance; but this contract was made after they had attempted several times to get the Kellogg elevator into the association and the Kellogg elevator had refused to go in; refused to be dictated to; so after that they started to put on the screws.

Q. How long has canal grain been elevated free of charge?—A. Well, since we started competing for it last June; and one year—year before last, two years ago—when all the elevators were out, when there was no association at all—all the elevators were outside competing for the grain. I have always contended that this grain should be competed for the same as any other grain.

Q. That is, by competing elevators?—A. Yes; the same as any other business.

Q. What is the effect of this combination upon the farmers and upon the public generally?—A. Why, I presume the effect, while it would aggregate a large amount, wouldn't be felt; just like a tax spread over a whole community, nobody realizes what it is.

Q. In this case the tax is in the form of higher charges than would otherwise be charged?—A. In the elevating business, certainly the rates are higher now than they would be under competition.

Q. Have the rates been raised?—A. No; 3 or 4 years ago they were lowered from three-fourths to a half.

Q. Prior to June of last year was there no pool or combination among the elevators?—A. There had been a pool for a good many years.

Q. But no boycott upon the outsiders?—A. No boycott, because they never succeeded in getting the railroads to pool with the association. This last year they were in good condition to form such an arrangement, because the railroads were pooling themselves, and the Western Elevating Association succeeded in making them believe that unless they had an association it would cause friction in their rates

by the cutting of rates, which was not a fact, because shortly after that they did cut the rates for about a couple of months, until they got together again.

Q. Just what is the relation between the railroads and the elevators in Buffalo?—A. Why, that is the only relation—this agreement—that I know of.

Q. By whom are the elevators owned?—A. The New York Central have their own elevators, also the Erie; the Lehigh Valley and the Delaware, Lackawanna and Western have not their own elevators; the latter, however, has a small elevator called the Union, which is not of much account. I guess they don't figure on that being any factor. The West Shore, of course, is leased by the New York Central; as a railroad they have no elevator.

Q. Is the competition of the Erie Canal effective in the grain business?—A. I think not now; you might say not positively. I am positive about that, because last year I think they carried 15,000,000 bushels, and I don't think they will carry that this year, out of upward of 150,000,000.

Q. These figures you have given are for the grain going from Buffalo to New York City?—A. Yes, sir; also to other eastern seaports.

Q. Can you suggest any legislation, national or State, to remedy the abuses you speak of?—A. Well, I must say I have not a great deal of faith in legislation. I don't want to be put down as a pessimist, but when I look at the Interstate Commerce Commission I will say that I don't believe there is any use of any other legislation, unless it is to give that commission more power.

Q. In what way would you have the commission's power enlarged?—A. I couldn't say, because I am not well enough posted on that line.

Q. Does this elevator pool affect the price of wheat?—A. These little charges of an eighth and a quarter, while they do affect, and you can figure them up in so many hundreds of thousands of dollars, they are spread over so much territory that people don't feel it—just like a stamp on a check or any other tax.

Q. Do the Buffalo elevator men deal in grain on the board of trade?—A. They deal but very little.

Q. Is there any law in New York State prohibiting public warehousemen from dealing in grain?—A. Not any.

BUFFALO, N. Y., May 27, 1901.

STATEMENT OF MR. WILLIAM H. KNAPP,

Of the firm of Lucas & Co., canal forwarders, Buffalo, N. Y.

Q. (By Mr. West.) Does the elevator pool, so called, interfere with your business?—A. Yes; it makes it very much nicer, because on all the stuff that comes through the elevator pool we get free elevation, and they charge the railroad half a cent, because we have to bid half a cent under the railroad in order to do any business on the canal, and that is why that is done, and the elevator pool favors us in that respect. If we had to pay half a cent elevation, our freights would necessarily be 1 cent lower than the railroad freights and we couldn't compete with them at all.

Q. As it is you are able to charge—A. We charge half a cent under.

Q. Is it chiefly export grain that is shipped by canal?—A. In a great many instances it is, and we have had a lot of grain here that has been for home consumption.

Q. Is there any difference in the rates to New York between export grain and grain for home consumption?—A. Not a particle; it is all the same.

Q. Does that apply both to the railroads and the canal?—A. That I don't know; it does as to the canals.

Q. Are there any elevator companies which do business over the canals only?—A. There was one last year, but none this year. The Watson can't do any business except canal business, because it is on an island.

Q. Do the elevator men in Buffalo deal in grain on the board of trade?—A. There is no dealing here in Buffalo. You mean options? There is no dealing in Buffalo except by men that have made a business of that.

Q. In other words, the dealing on the board of trade here is entirely bona fide business?—A. Oh, sure. If there is an option bought or sold it has to be sent to Chicago or New York.

Q. Do none of the elevator men deal on the board of trade or through brokers?—A. I don't know, but I don't think they do. That is something I don't know about. The elevators are mostly owned by corporations—in fact, they all are. There is no private individual that owns an elevator here except Thomas M. Ryan, and his hasn't loaded a boat in 5 years. The other elevators are owned by corporations.

- Q. So there is now no canal elevator doing business?—A. No.
- Q. There are elevators which do both a rail and canal business?—A. All of them, except those that can't do rail business. The all-canal elevators aren't doing business.
- Q. The railroads have driven the canal elevators out of business?—A. The all-canal elevators, because the railroads here own the majority of the elevators.
- Q. Do the railroads own all the elevators that are now doing business in Buffalo?—A. Not all of them.
- Q. About what proportion of the storage capacity of Buffalo is controlled by the railroads?—A. Half of it. That is, of course, a guess; but I should say half.

BUFFALO, N. Y., May 27, 1901.

STATEMENT OF MR. P. G. COOK,

Secretary of the Western Elevating Association.

- Q. (By Mr. WEST.) Will you tell the commission about the Western Elevating Association and its purposes, etc.?—A. The association is formed for the purpose of facilitating the business of the people doing business here. It centralizes the work and establishes a uniform price for elevating grain and for storing also.
- Q. When was this association formed?—A. It is formed from year to year; it runs from year to year. The usual date is from the 1st of April to the 1st of April.
- Q. When was it first organized?—A. Way back in the sixties somewhere. Of course there have been seasons when all or a part of the year there wouldn't be any association, but as a rule it has run since that.
- Q. Is there any pool among the elevators?—A. This association provides for the collection and distribution of the earnings on the basis of shares or percentage.
- Q. Would you be willing to explain a little more fully how that is done?—A. They simply agree that the earnings from elevation and storage shall be collected by the treasurer of the association, and, after deducting the expenses of this office, shall be paid out again to the various elevators in the association according to the percentage or shares that they have in it.
- Q. Shares of stock?—A. There is no stock. It is simply an agreement with them that they are to have such proportion of the net earnings.
- Q. May I ask upon what basis the earnings are divided, whether upon storage capacity or some other basis?—A. Hardly the storage capacity. Of course the storage capacity does enter into it, it is an element in it; and then another thing is the working capacity of the house; and, in a measure, the business controlled has something to do with it.
- Q. What is the distinction between the storage capacity and the working capacity?—A. Some have 1 elevator leg and others have 2 and some have 3. Of course a house with 2 can elevate more and handle more than a house with 1.
- Q. So that there is no one basis?—A. No, sir.
- Q. It is a matter of agreement?—A. It is a matter of mutual agreement anyway.
- Q. What is the effect of the association upon the elevators not in the association?—A. That is a pretty hard question. They simply have to go into the market and take business on their own hook.
- Q. Can they get business?—A. Yes.
- Q. Can you state what proportion of the elevator business in Buffalo is done by elevators in the association?—A. I think about 95 per cent of it, last year.
- Q. For the calendar year?—A. For from April to April.
- Q. For from April, 1900, to April, 1901?—A. Yes. We handled very close to 150 millions out of 155 millions and a fraction.
- Q. What have you to say to the allegation that the association boycotts outside elevators?—A. We don't boycott anything. We aren't in shape to boycott anything. We are simply here in shape to handle business coming down the lake. If anybody wants to work with us to-day and work with somebody else to-morrow, that is his privilege. We don't boycott anybody.
- Q. Are the charges for elevating and storing grain the same in the association as in the outside elevators?—A. I don't believe I could tell you that. Our rate is published. Of course an outside elevator might cut—very likely would cut to get business.
- Q. Will you kindly state your charges?—A. One-half cent a bushel for elevating and including 10 days' storage; and for storage after the first 10 days it is a quarter of a cent for each 10 days or any part thereof; and on through-rail grain there is no charge for loading in addition to the elevation rate; but on local, near-by grain, which

is practically grain peddled from here, there is a charge of one-eighth of a cent for loading in addition to the other. That usually goes out in small quantities, while the other goes in large quantities.

Q. Was there danger of cutting in the charges for elevation and storage before the association was formed?—A. Yes, sir.

Q. And the prevention of that was one of the objects of the association?—A. Yes, sir.

Q. Would you be willing to state what the other objects are?—A. Well, one great object is to maintain a uniform rate and another is to centralize the business and to give responsibility to the receipts—that is, the bank will take our receipt without any question, while there are numbers of individual elevators that they wouldn't take without they had bondsmen; and everyone handling business here comes right to this office and transacts it here, whereas if there were 20 different offices to transact business they would have to go around to the different offices to handle it.

Q. How many elevators are there in Buffalo not connected with the association?—A. I couldn't tell you without counting them up.

Q. A large number?—A. Quite a few. They are not operating.

Q. None of them operating?—A. The Kellogg is operating. I think that is the only one at present.

Q. Has the association driven the others out of business by competition?—A. Oh, not necessarily. A good many of them haven't worked for years, whether they were in the association or out of it. The elevators in the association, as at present constituted, all have a connection with a railroad; that is, they have tracks to their elevator by means of which grain can be shipped on a railroad as well as by canal, and, with the exception of the Kellogg, all the elevators not in the association are houses that do not have any track connection, and consequently can handle nothing but canal business, and they can't make a go on that business alone.

Q. Would you be willing to explain more fully just what the connection between the railroads and the elevators is?—A. They haven't any very great connection with them, except they handle business for them the same as for other people. Some of the elevators in the association are owned or controlled in some way by railroads, and they have an agreement to handle railroad grain at the price stipulated on the card—half a cent a bushel.

Q. How many elevators are there in the association altogether?—A. Twenty-one or 22.

Q. Do you hear any complaints of excessive charges for transfer, elevation, or storage of grain?—A. No, sir. Not at the rate we are running at now.

Q. Is that rate lower than formerly?—A. Yes. It used to be seven-eighths of a cent.

Q. And was that rate complained of as excessive?—A. Occasionally.

Q. Does the publication of these rates do away with any advantages which elevators might otherwise have in dealing in grain?—A. Oh, yes. As I look at it, it puts everyone on an even footing in handling grain or in putting grain through here. The charge is always collected just the same whether they own grain or do not. Elevators in the association do a strictly warehousing business.

Q. Even the owner of an elevator would have to pay storage charges if his elevator were in the association?—A. Certainly.

Q. Are there any suggestions that you would care to make as regards National or State legislation affecting the transportation of grain or storage of grain?—A. No. From my observation, and I have been in the business a good while, legislation as a rule doesn't benefit the business at all in that line. I think the trade will take care of itself down this way. You can't charge an excessive rate here for doing business without drawing other people into it, and a uniform rate here as established by the association is of very great advantage to the trade generally, for the reason that any man doing business knows he is getting just as good a rate as his neighbor, whereas if there is no association, you have got to dick around all around and then not get as good as the next, perhaps. It facilitates trade in every way. You take it now, we can send grain going by rail to any house that has a connection with the road that is to carry the grain. In case there were no association, the grain would be forced practically to one or two houses under the influence of that road, causing congestion and delay at such elevators.

Q. Do the elevators which are controlled by railroads have any advantage over other elevators by reason of that fact—over elevators outside of the association?—A. Why, just how do you mean?

Q. In the case of the Chicago elevators it was testified that their connection with the railroads gave them certain advantages.—A. Why, I should say no, not here. Of course, where that might have an effect would be in the formation of an association, that they would get a better rating through having control of that business;

but the minute it is formed, if there comes a rush, the grain is sent wherever it can be handled to the best advantage.

Q. Does the association prevent the railroads from granting a monopoly of the grain business on their respective roads to any particular elevator?—A. No; we don't have much to say about that.

Q. Doesn't this division of the receipts have that effect?—A. It does have that effect, as it is understood that all the means at the command of the association shall be used when necessary to facilitate the handling of grain; and, as a result, an excessive amount of grain for shipment over one road would be distributed to several elevators to prevent delay.

Q. Would you be willing to give the commission a copy of the agreement?—A. I hardly like to, because that is a sort of a private paper.

Q. You have stated, I suppose, the gist of it?—A. Yes, sir. I will let you look it over if you want to see it.

Q. What is the arrangement about winter storage?—A. It is provided that the winter storage, after December 1, shall belong to the elevator storing it. Now, that refers simply to the extra storage and not to the half-cent elevation. The extra storage during the winter doesn't run a quarter of a cent every 10 days all winter long, but only until the accumulation after the 1st of December amounts to 2 cents.

Q. The maximum charge is 2½ cents?—A. For elevating and storage.

(The company's rate card, submitted by Mr. Cook, is reproduced below:)

THE WESTERN ELEVATING ASSOCIATION AND GEORGE F. SOWERBY COMPANY,
OF BUFFALO.

Rates for elevating and storage on all sound grain received on and after date. Until further notice, the charge for elevating and storage will be as follows: For elevating (including 10 days' storage), per bushel, one-half cent; for storing, each succeeding 10 days or parts thereof, per bushel, one-quarter cent.

All accrued elevating and storage on grain remaining in store on April 1 in each year must be paid to that date, on or before 10 days after the opening of canal navigation following, under penalty of one-half cent per bushel additional storage, if not so paid on that date.

Above charge to be paid by the grain.

BUFFALO, May 15, 1901.

WASHINGTON, D. C., June 10, 1901.

TESTIMONY OF MR. J. H. RALSTON.

Attorney at law, Washington, D. C.

The commission met at 10.55 a. m., Mr. Phillips presiding. At that time Mr. J. H. Ralston was introduced as a witness, and, being first duly sworn, testified as follows:

Mr. KENNEDY. Please give your name and address and occupation.

The WITNESS. Jackson H. Ralston; Bond Building, Washington, D. C.; attorney at law.

Mr. KENNEDY. Mr. Chairman, I think Mr. Ralston would prefer to say what he has to say on the single-tax question without interruption, and then submit to any questioning at the end.

The WITNESS. If that is agreeable to the commission, I will make a statement, and then submit myself to such questions as the commission may see fit to ask.

I presume in entering into a discussion of this sort I ought in the beginning to define what I understand by the single tax. I understand it to be a system of taxation which calls for the levying of all taxes on the value of land, exclusive of the improvements borne upon the land. When carried to its logical ultimate, it would involve the doing away with all tariff taxes, and with all license taxes, with a possible exception in so far as license taxes are imposed for police reasons; the abolition of all taxes on personal property and of taxes upon the improvements upon land; leaving as the sole subject of taxation the value of land itself, the one thing which is not the direct result of labor, and which is rather the incidental result flowing from the advancement of the community, from the perfection of government, from the educational and other advances incidental to the community, transportation facilities, and any of the elements that would naturally conspire to maintain or increase the value of land.

Historically, I might perhaps say a word. There has, in the judgment of single taxers at least, been a constant groping toward the single tax for several hundred

years. Prior to the century just past the most pronounced steps in that line were taken by the French philosophers of the time of Louis XIV, Louis XV, and Louis XVI. The single taxers are fond of citing the example of Quesnay, Turgot and Dupont de Nemours, and others of the prominent Frenchmen of about 250 years ago, as giving indications of a belief in the principles of the system which has now become elaborated under the name of the single tax. Turgot, as will be recalled, was the French minister who attempted a reform of the system of taxation in France, and who attempted to reform it in the line of the single tax. But the vested interests of France at that time were too strong for the reforms attempted by him, and he ultimately lost his ministry; and after the downfall of the sort of reform advocated by him ensued the French Revolution.

There were, later on, some English writers who indicated a knowledge of the general principles which we now group under the name of the single tax. Among them was a man by the name of Spencer, who wrote over 100 years ago. Later on was a man by the name of Dove, who wrote about 1840. But the general theory was more successfully, more logically, and more completely elaborated, as we know, by Mr. Henry George.

Mr. George himself did not claim to be the originator of the system; in fact, in his writings he recognizes the justice of the criticism of some one who says that whatever there is in his writings that is new is bad and whatever there is that is good is old. Of course, with Henry George's ideas that is precisely so, and the underlying ideas of his system are to be found long anterior to him. He simply assembled, grouped them, and gave them a form and substance, and clothed them in a style of unsurpassed literary excellence.

The authorities referred to by Mr. Henry George in the course of his argument are authorities whose force is generally recognized—Adam Smith, author of the *Wealth of Nations*, John Stuart Mill, and Herbert Spencer; the underlying idea of the single tax being well stated by Herbert Spencer in one chapter in his *Social Statics*, a chapter the logic of which can not be escaped, although in later years under different surroundings and under different circumstances Spencer attempted to repudiate his own logic.

The present movement toward the single tax may therefore be dated from the time of the publication of *Progress and Poverty* by Henry George—from about 1879. The book was looked upon at the time of its publication as remarkable. Its literary style was recognized. Its force of argument was recognized. But it was not regarded then as having any serious practical importance, and the ideas only sprang into public notoriety upon the campaign of Henry George for the mayoralty of New York in 1886. There have been from time to time other events of a more or less striking nature which have brought the single tax into prominence, one of the most striking being his second candidacy for the mayoralty in 1897.

It might perhaps be of importance or interest, before commencing a discussion of the reasons for which the single tax is advocated, to consider whether it has attracted the attention of a sufficient number of men of intelligence and thought to justify spending any particular time with regard to it, and whether it has to any extent made any impress upon public thought up to this time.

If I refer to the events in Congress as bearing upon this question, I should direct your attention perhaps, as first in order of time, to the investigations made by a subcommittee, I think, of the Committee on the District of Columbia, under the supervision of Mr. Tom L. Johnson, when he was in Congress about the year 1891. Many witnesses were called before that subcommittee, the object of the committee being to report to Congress as to whether the single tax would be advisable as a system to be put into effect in the District of Columbia. The report of that committee was in favor of the adoption of a system of that kind, the report being verified by an abundance of tables well worthy of very careful examination.

The next Congressional event of note would be in connection with the Wilson bill before Congress, a proposition for the purpose of raising some \$20,000,000 or so to supplement the amounts of money receivable from import duties. Judge Maguire introduced an amendment to the bill providing for a system of taxation on land values throughout the United States, excluding, of course, improvements and personal property; and his amendment received the votes of such men as Mr. Harter, of Ohio, whose ability was unquestioned; of Mr. Tracy, from Albany, N. Y.; John De Witt Warner, from New York City; Jerry Simpson, if I am correct, from Kansas; Judge James G. Maguire, of California; and possibly one or two others whose names I will slip me. Of course the proposition was defeated; the time had not arrived for it.

At the last session of Congress a bill was introduced providing for a gradual adoption of the single tax in the District of Columbia, this bill being introduced by Mr. Ridgely, of Kansas. It was referred to the Committee on the District of Columbia of the House, and nothing came of it, although it received the sanction of the labor organizations of the District of Columbia.

It may not be out of place for me to say that the single-tax system of taxation has received the very general sanction of labor organizations throughout the country.

The declaration of principles of the Knights of Labor recognizes the single tax as something to be worked for. It is one of the principles of the Knights of Labor. The American Federation of Labor has by repeated resolutions, passed at annual meetings, favored the adoption of the single tax. Of course the labor organizations in New York, by the indorsement of Henry George, practically gave their indorsement in two different campaigns to the thing for which he stood, not merely inferentially, but actually. Other labor organizations have repeatedly passed resolutions in this same general direction. I think that it may be said that among labor organizations throughout this country it is impossible to find any opposition to the single tax, except it be on the part of individuals who have not studied the question or who may be perhaps biased by their more immediate, as they consider, personal interests.

We may therefore say truly, I think, that the largest share of support which the single tax has received among thinking men—among representative thinking men—in this country has been among the labor organizations.

The subject has found its way into the magazines. There is perhaps not a magazine of prominence in the country which has not at some time or other in the course of its career published articles favorable to the single tax. I might mention notably the debate of years ago between Henry George and Mr. Atkinson appearing in the columns of the *Century*. The *Arena* has been particularly notable for the number of articles which it has published in the same general line.

The single tax is finding its way into legislation. Some 3 years ago an amendment to the constitution of the State of Washington passed the legislature of that State for submission to the people, the purpose of that amendment being to permit local bodies to say if they wished the single-tax system of taxation for their local purposes. That amendment, while not necessarily a single-tax proposition, was so treated by the people and press of the State of Washington; and, while it was defeated, it is to be noted that it received a very heavy vote at the election.

At the last session of the legislature of Colorado a somewhat similar proposed amendment to the constitution was adopted for submission to the people, the vote of adoption being perhaps 4 or 5 to 1 in favor of the amendment. And I am informed by Senator Bucklin, of Colorado—the author of the amendment—that he confidently anticipates that the people of Colorado will give that amendment their favorable vote at the election in 1902. The proposition will have to be submitted in 1902.

The single tax has received more discussion in the State of Delaware than in any other State in the Union, the immediate effect of that discussion being that at the last session of the legislature an amendment providing for what we might term home rule in taxation, which would permit any town to adopt the single tax if it saw fit, passed the lower house of the legislature and by pure accident was defeated in the senate by about 1 majority, one man misunderstanding what he was voting for, although he had intended to vote favorably, and a second advocate of the proposition being out of the senate for a moment.

In several other legislatures of the United States at recent sessions propositions in the same general line have been submitted and have come near adoption. This was true in the State of Texas and was also true in the State of New York. A similar proposition was lost in the State of Michigan about 2 years ago by 1 vote in the house after having passed the senate.

I mention these things as showing that, although there has not been of late any occurrence in connection with the single-tax discussion that might be termed sensational in its nature, nevertheless the discussion and the movement are going on hand in hand, and going on rapidly.

Some gentlemen, whom perhaps I ought not to quote by name, but whose positions have been such that they have been placed in touch with public sentiment all over the United States, have taken occasion to say to me that the single tax was proceeding at the present time with greater rapidity than at any prior time. From the view of the single taxer all this is natural. It appeals, as we believe, to educated political sentiment. This sentiment finds its outlet in public bodies such as Congress and the legislatures, in the magazines, and the newspapers. I venture to say even the members of this commission would be surprised if they could be truly informed of the very large percentage of newspaper men who are open and avowed single taxers. It is true that the proportion of newspaper men of this way of thinking does not yet find its illustration in the editorial columns of the press; for, as we know, the editorial columns of the papers are very largely controlled by the business office, and business interests are not yet sufficiently educated on this subject to realize the fact that their best development is to be found in the line of the single tax.

But, perhaps, speaking of the reasons why the single taxers advocate their particular theory, it might be of interest to point to some practical illustrations bearing upon it. It is a matter, perhaps, of curious, although not of important, interest to

know that the very first development of the single tax occurred in this country long before the name was known. Some 60 years ago in the town of Alton, Ill., a resolution passed the common council providing that all taxes should be levied upon the value of the land, and that improvements and personal property should be exempt from taxation. I mention this fact as being something entirely unknown or practically unknown at the present time. It has been lost sight of in all the recent discussions, and only perhaps had a momentary importance.

Q. Was that law enforced?—A. It was enforced for about a year, possibly two years. The only way I have of knowing that it ever existed is through one of the very earliest of the Illinois Reports, which contains a case from the town of Alton arising upon a question as to the validity of a tax deed, and coming up in this way: The constitution of Illinois provided that all property should be taxed, and the question arose as to whether the town of Alton had violated the constitution in this exemption provision, the question arising upon a tax deed. The holders of the property claimed the tax deed to be void because all property had not been taxed. The question came up before the supreme court of the State of Illinois, and the supreme court so decided, holding that Alton had no right to indulge in the exemptions under the peculiar provisions of the constitution of that State.

Q. (By Mr. LITCHMAN.) The effect of the decision being against the single tax?—A. Against the single tax, yes. And it is quite curious to know that in the discussion there by the court or by the attorneys in that case, the arguments in favor of the single tax were substantially the same as those now stated by the single taxers. That is, approaching the question from what we single taxers sometimes term the fiscal side, it was agreed by all parties concerned that a system of taxation of that sort might prove very beneficial to industry, might tend to the building up of houses, and might do away with the holding of land out of use for speculation to the detriment of the community.

The next illustration that I know of in this country is one in which I was quite actively concerned myself, and which may be fairly regarded as the outgrowth of the present single-tax discussion. It was in the neighboring town of Hyattsville, Md. In that town in 1892 the board of commissioners determined to exempt improvements from taxation, personal property having been theretofore exempted. We believed that we had power so to do under the provisions of our town charter, and we believed also that the provisions of the State constitution upon the subject of taxation were not intended to apply to town taxes. We therefore eliminated the side of our tax book representing improvements, increased our tax rate sufficiently to cover the reduction which might otherwise have occurred because of striking out that part of our tax roll, and levied our taxes under the single-tax system, and collected them for one year. Some citizens of the town antagonized us very decidedly and appealed to the courts. In the circuit court our action was sustained, but the court of appeals held that we were not authorized under our charter to make the exemption we had made, and that our action was unconstitutional. It is perhaps worthy of note that since then the court of appeals has held that no provision of the State constitution has any reference whatever to town government except in certain cases in the city of Baltimore, and if the court of appeals were to-day to follow logically this decision, it would be compelled on this point to reverse its decision in the Hyattsville case.

Since that time the single tax has not been attempted, largely, perhaps altogether, because of constitutional difficulties in this country. But it has gone forward with rapidly increasing strides at the other end of the world.

In New Zealand a very considerable proportion of the colonial taxes are obtained by a tax on the value of lands exclusive of improvement. The colonial-tax system in this particular respect has the peculiarity that with the increase in the value of the land there is a corresponding increase in the amount of tax, the effect being, of course, to break up quickly the very large holdings of land that have heretofore existed in New Zealand. In addition, there are probably two or three dozen towns of New Zealand, or local taxing districts, which have adopted the single-tax system for their local purposes. It is worthy of note that no town or taxing district which has adopted the single tax in New Zealand has gone back to the old method of taxation, but, on the contrary, adjoining towns which have seen the benefit of that sort of taxation, have adopted the single tax, one after the other, and by majorities that in some cases are simply marvelous, the votes of the towns running as high as 8 and 10 to 1 in favor of the adoption of the single-tax system of taxation for local purposes.

The facts to which I am now adverting are given, many of them at least, at great length and with much greater particularity than it is possible at the moment for me to give them, or than you would care to have me do, in the report of State Senator J. W. Bucklin to the Colorado State senate, submitted at its last session.

I might say that Senator Bucklin, with 2 fellow-senators, was appointed 2 years ago by the senate as a committee to investigate the Australian land-value system of taxation, and in consequence of such appointment Senator Bucklin went to New

Zealand and to Australia and made a thorough investigation, came back, and, with his fellow-members, submitted a report in favor of permitting the citizens of Colorado to do the very same thing. And it was in consequence of that report that the constitutional amendment of which I spoke some time ago passed the legislature of Colorado for submission to the people of that State.

Q. (By Mr. LITCHMAN.) Will you go a step further and say what the result was of that submission?—A. I can not do that. It is to be submitted in 1902, but, as I said, Senator Bucklin writes me that he anticipates a favorable result.

Let us turn now to the question of why single-tax people believe the single tax should be adopted. We sometimes think that the reverse question should be asked, Why anything except the value of land should be taxed? But we recognize the fact that as we propose what is comparatively an innovation, the burden of the argument rests upon us.

A tax upon the value of improvements is a direct deterrent to the making of improvements, and if it be a good thing that improvements be made, then we should avoid, logically, doing the thing which prevents in any degree their being made. Now, I say that the taxation of improvements deters their erection. I think the proposition is so self-evident as not to require any particular argument. We might almost regard it as axiomatic, whether we be single taxers or not. But one or two illustrations may not be out of place.

We know that at the present time there exists in France a tax on windows and doors, and those of us who have had occasion to investigate it know that the direct effect of that tax has been to prevent the using of doors and windows, even at the expense of health. We know that in England formerly there was a tax on fireplaces, and that the effect was to prevent the erection of fireplaces, and thereby to interfere with the health of the people keeping house.

Mr. FARQUHAR. And also on windows.

The WITNESS. And also on windows, with a like effect. To use a very homely and common illustration, we know that one of the most effective ways of preventing an increase in the number of dogs is to tax them. We treat houses similarly, and with similar results, as we believe. In such treatment of houses we prevent their erection; we prevent the employment of labor which would be engaged in their production; we compel people to live in poorer houses, because in paying their rent they are compelled to pay the tax; and we create a multitude of evils which, to the mind of the single taxer, constitute the chief blot upon our American civilization. Why should we do it? The single taxer finds no answer for this question. He sees no reason at all for the taxation of houses. And I believe that with a fair, candid consideration even of what I have already taken occasion to say we may consider the burden of the argument shifted upon that particular point to the other side.

Take the matter from another point of view. The single taxer believes that there is an ethical principle governing taxation as well as all other relations in life. The single taxer believes that taxation is something that ought to be rendered to the State for service given by the State. What service does the State of Maryland or does the town of Hyattsville render to my house that I should be compelled to pay taxes upon that house for the benefit of either the State or the town?

Let us analyze the situation. The town improves the street in front of my house. Is that a reason for taxing the house itself? Does the improvement of that street add value to the house as such? It certainly does not. Does it maintain the value of the house? It does not. The value of my house is to be maintained or added to by something that I do or cause to be done to that house in the way of building an addition, in the way of painting, in the way of improving it in some manner. I myself can add to the value of my house, but the town, by improving the street in front of the house, adds nothing to its value. It does add value to something, but that something is the land upon which the house is located. The street improvement tends to add to or maintain the value of that land. Similarly with regard to sidewalks, with regard to sewers, with regard to water. All of these things add to the value of the land on which my house rests, but the value of the house remains the same.

Suppose the house burns down. It is going to cost as much for me to replace that house whether the street improvements in front of it are complete or whether there are any street improvements at all. The value of the house or the cost of construction of the house or of replacing it remain the same. But the town, we will say, preserves order, and therefore the house should pay the tax. The town, it is said, furnishes us with police protection and protects that house. Let us grant that the police protection operates to save that house. Let us grant that the fire department operates to protect it against fire. Does that add to the value of that house? No, in nowise; nor would the house be receiving any value. But if my house in that locality be protected from fire, be protected from robbers, the result is that the land upon which the house rests increases in value, rises continuously with the improvements of that kind. So it turns out, anything that this town of Hyattsville can do

adds to the value of my land but does not augment the value of the house at all, and yet I pay taxes on the house.

Q. (By Mr. PHILLIPS.) Do you not make a distinction between value and cost there? Is there not properly a distinction there? Could the house be as readily sold if there was no street improvement? It would cost, I admit, the same to build it, but would it have the value if built out in the woods?—A. No. It is quite possible for a person to waste money in putting up a house. His house has to conform to the general surroundings or he throws away money. That may happen in one of two ways. I might go down here in the extreme southeast part of Washington and put up a \$20,000 house and I would be absolutely throwing away my money. It would have scarcely any value at all. That is a way of wasting money. Or I may go up to the extreme northwest section of this city, where land is worth \$3 a foot, and put up, if they would allow me to do so, a frame shanty, and I would be equally throwing away my money. I can not get a proper return from that land with that sort of improvement. But either of those would be exceptional cases.

I was about to say, does anything that the State does add to the value of my house? What the State does in the construction of roads approaching that house adds to the value of the land upon which the house rests. Whatever the State does in the maintenance of order, in the maintenance of courts of justice, adds to the value of that land, and hence it happens that the State or the locality where order is best maintained, other things being equal, shows the highest amount of land value.

Now let us see some of the consequences flowing out of this argument. As I said before, if I pay money on my house, which is expended for the maintenance of street improvements or the making of street improvements, I am paying money for which I do not get a return. But somebody does get that return. Going a step farther, suppose that adjoining me there be a vacant lot; nothing has been done with it—it has remained there up to the present time without improvement. What does the town do with the money that I have expended—that I have given it? It takes the money which is raised from land values; it takes the money raised from personal property taxation; it takes the money raised from house taxation and spends it all in street improvements, and spends just as much in front of the vacant lot as it spends in front of my own place. Every facility which is afforded to the lot upon which I place the house is afforded equally to the adjoining vacant lot, and raises its value equally with any raise that may be given to the value of the property which is possessed by me. Now if, therefore, you can take taxes from me, the single taxer says, on my house, and expend those taxes just as much in front of the lot adjoining, which is vacant, as you do in front of my lot, you are guilty of a wrong to me; you are creating a privileged class in a very extreme sense of the term, and the privileged class is of the man who owns the land as such as distinguished from the man who is an improver of land, and right in that fact lies, to our minds, all the advantage that goes to the land speculator. He gets, not only the return for the tax he pays, but he gets the benefit of the taxes which other men pay, to which he is not entitled. And in that very one fact lies the secret in the mind of the single taxer of the maladjustments of society. If you can continually tax the value—if you can continually tax the property held by one man and turn the taxes over, expend them for the benefit of another man, you have a topsy-turvy condition of affairs so far as matters of taxation are concerned, and it is impossible to get a proper adjustment of industrial conditions until you come right down and meet that question and get a system of taxation upon a clear, clean, logical, and just basis—upon an ethical principle of giving a man just what he pays for, and not taking from one man and giving to another something he has not paid for. Now, without elaborating, because I am proceeding at length and do not want to weary you too much—

Q. (By Mr. PHILLIPS.) Kindly get down to farm lands in your discussion, will you?—A. I have not got to farm lands, but I will say a few words about them. It is the belief of many persons that the single tax, while it might work well enough in cities and perhaps be proper, will work harmfully to the farmers. I do not think so. On the contrary, I think the man who is to benefit, above all others, from the single tax is the farmer. But the confusion of ideas upon that point is a very natural one. The farmer looks upon himself as being par excellence a land owner. In point of fact he is not. He is a land user above all other things, but not a land owner above all other things, and there is a very broad distinction between the two. The farmers, many of them, have failed to note that distinction, and therefore have failed to appreciate the true working of the single tax.

At the present time the farmer, as a consumer, pays a heavy tax upon goods coming through the custom-house; he pays a heavy tax on his personal property, a tax that is out of all proportion to the personal tax paid by men in cities, the natural reason being that the personal property of the city man is concealed and can not be gotten at under any attempts that have been made. The personal property of the city man never has been gotten at, whereas the property of the farmer is open, and readily determined by his neighbors; it can not be concealed, so he pays those two

taxes. Go further: He pays a tax upon his house, barn, outbuildings, fencing, fruit trees; he pays a tax upon everything that he does to give value to his premises, and it will be found on careful examination, I think, that the value of improvements is vastly superior in the case of the average farm to the value of the naked land. That is, if you take the naked land—if you take a farm stripped from all these different elements of value of which I have spoken, leaving only the naked land, you will find the value is very slight. I have myself seen some very striking instances of that kind. One that I have sometimes quoted occurred in Prince George's County, Maryland: An auction was going on at the door of the court-house one day of two tracts of land almost adjoining each other, and equal distances from the railroad. In one case the land never had been improved, and that place, about 25 miles from Washington, I should say, located as it was, the land sold for \$1.10 an acre. The next piece of land was an improved farm, with fences, stables, barns, a fair farmhouse, an average Prince George's County farm house, and that sold for \$20 an acre. Of course, that is an extreme instance; but, without going into those extreme instances, without taking up time for details—the fact is, I have not the details here—I will take the liberty of referring to the most complete investigation on this particular point that has yet been made in this country, and that was made by Mr. Henry A. Robinson, a former statistician of the Department of Agriculture. It was made about 5 years ago, and covered some 6 or 8 counties in New York State and perhaps some in Pennsylvania. The investigation was made for the purpose of determining whether the farmer would be a gainer or a loser by the adoption of the system of the single tax, and his conclusion contained in that Agricultural Department report, which is readily obtainable, was that the farmer would be largely the gainer by the adoption of the single tax.

Would you briefly state in what way?—A. Because his taxes would be lighter; his tax on his personal property would be taken off; his tax on all of his improvements would be taken off; simply the value of his land would be taxed, and the value of the naked farm land is comparatively small. I said that the farmer is in confusion about the matter because he considers himself a large land owner, when in point of fact he is simply a large land user. The value of the land, and not the area of land, is the thing which the single taxer would tax. If you tax land by area, the farmer is the sufferer; if you tax land by value, he is not, because the seat of land values is in the cities. Upon this point I might refer to the report of Mr. Schilling, of the bureau of labor statistics of Illinois, made some 5 or 6 years ago, in which he points out the fact that the value of a single acre of land in the city of Chicago that he could select was greater than the value of some of the entire counties of Illinois, land, improvements, personal property, and all included. Now, the farmers of that particular county might think they were hurt by the single tax until they come to compare the value of a single acre in the city of Chicago. Similarly here in Washington we have seen lots on F street that have sold recently, lots of perhaps a couple of thousand square feet, worth as much as 50 farms in Prince George's County with all their improvements. So that the value of land is in the cities, and it is the cities which would have to pay the tax under the single tax, and not the farm lands.

From the fact that taxes would be shifted from improved lands on to unimproved lands through the operation of the single tax, the single taxers expect large consequences to follow. The single taxers find that at the present time immense quantities of land are locked out from use which ought to be used. They find that people are crowded and huddled up in cities, and that artificial conditions exist in cities. There poverty and distress are found which ought not to have any existence at all, and would not have any existence if the people could get freely to the lands. It is unnecessary to ask if I would have them all farmers, but people need land about their houses; they need freedom of space; they need land for their little gardens, for ornamentation. It is contrary to the best interests of the community that the system of taxation should be maintained that permits land to be held out of use while people are huddled up in buildings—in incomplete and improper quarters, such as is the case at the present time. The single taxer expects that with the opening up of the opportunity to get at land, that would result from the operation of the single tax, there would be an infinitely larger employment of labor.

Perhaps I should have said something in a preliminary way here: Do we think this land would be opened up? We think it would be, because the burden of taxation upon vacant land would be too heavy under the single tax to permit its being held out of use any longer. I remember a very mild illustration of this in connection with the single tax contest in Hyattsville before the single tax went into operation. Some of our landholders frequently said: Why, if we were to have the single tax, the taxes on land would be so high that no poor man could buy a lot. Immediately upon the adoption of the single tax a different thing was said, and the large landholders said: We can not afford to pay these large taxes on this land, and we shall have to sell it at any price if we don't get rid of the single tax. Their very statement that they would have to sell the land at any price tells the whole story, for

what does that mean? It means that the land would be opened up for use by people who needed to use it, because if the taxes were large, as they say, and there was no reason for their holding the property any longer for the purpose of speculation, there would be no reason for anybody else holding it for speculation. But there would be an opportunity of getting at that land and putting it to use; so, as I say, in a few words, that tells the whole story, as we believe, of what would occur through the adoption of the single tax all over the United States; of what would occur not merely with reference to city lots, but with reference to coal deposits, iron deposits, copper deposits; with reference to wharfing privileges in cities, with reference to all classes of land imaginable. You can imagine what the result would be in the way of opening up the opportunities to labor. It would be simply impossible that there should be hard times in this country. For reasons which I can not take the time to elaborate, the single taxers believe that the recurrence of hard times is because of the vicious system of holding land connected with the vicious system of taxation, and until that particular thing shall be met, there will be this constant recurrence of hard times. But I do not want to elaborate that argument, as I believe we would be able to demonstrate it if I had the time.

Now there are other features of this matter, many others, but I have been talking pretty near long enough, I think. The single taxers are such, not merely from what they consider the fiscal side of the question, which has been in fact the side that I have discussed so far for the most part, but because they believe that there is a moral and ethical backing to the positions which they take. The single taxers think that any one man upon this earth has equally as good a natural right to be here to enjoy the blessings of life, liberty, and the pursuit of happiness as any other man has, but the single taxer does not believe that under conditions as they are at present arranged every man enjoys that right. The single taxer believes that if one man owns the land upon which others have to live, the landowner possesses not only his own right to life, liberty, and the pursuit of happiness, but that of all the rest, because they can only remain upon this earth as long as they make terms with him. They have to pay him for the privilege of existence, and the single taxer does not believe that any government which permits such a violation of the fundamental natural right can continue for an indefinite length of time. He believes that such a government has in itself the seeds of destruction, which must be removed, else the government itself will perish. We may probably be called cranks for thinking thus; but we so think, and think it very earnestly.

Why should one man pay tribute to another for the privilege of living on this earth? What natural reason is there for it? I think we will all agree to begin with the proposition that one man has just as good a right as another. We must all agree that at the present time every man does not exercise that right, because he has not equal freedom with another to get at the earth upon which we must live, and from which we gain our livelihood directly or indirectly.

How does the single tax change this situation? How would it change it? How would it tend to bring about these natural rights?

The single taxer says that if the men who own the land, who hold the title to the land at the present time, paid into a common fund, to be disbursed for the common benefit, the special value which accrues to them, the special reward that they get merely because they are the holders of land, a social readjustment would be brought about.

To use a homely or familiar illustration of single taxers, if 20 men happened to be common owners of a horse, and the yearly value of the use of that horse is \$20, it would make no difference—the adjustment of the relations of all with that horse would be brought about—if a single man had its use and paid \$20 into the common fund to be disbursed to all the 20 stockholders. Now, going from the small thing to the infinitely large one, the single taxers believe that if the net rental value of land of the United States be one billion dollars a year, and the owners of land pay that billion dollars into the common fund and have it disbursed for the benefit of the whole community, in that way the equal rights of every one in that community and the land upon which they work and live will be recognized, and that there will not then be the extremes of poverty and wealth which exist at the present time when certain persons get the benefit of land to the value of which all have contributed.

Q. (By Mr. LITCHMAN.) In connection with your last statement, can you logically apply your system of the single tax unless all the land of the country comes ultimately under the central Government?—A. Yes; I think so.

Q. How can you apply your theory of taxation to the locality? Say, take a town and run that town on a single tax as against the State, which is run on the other system?—A. Perfectly well, so far as town taxes are concerned. You can not apply it in its ultimate, which excludes the idea of other than taxes on land values.

Q. You must extend ultimately, then, the centralization of the Government, and all the taxes should be under the central Government?—A. Not necessarily; not necessarily. You can divide the fund in a different way. There is not that centralization at the present time as between the State and the localities of the State, even although

the tax may be collected by the same tax collector, as is the case in some instances, as for instance in Maryland. There the taxes which are required for State purposes and the taxes which are required for county purposes both go through the hands of the same man. He turns certain taxes over to the county commissioners and certain other taxes over to the State treasury. There is not any necessary centralization of functions.

Q. How would you collect the taxes of the State?—A. That is a matter of detail which may be arranged, as it is now.

Q. I mean on what would you levy the taxes of the State?—A. Levy them on the value of the land.

Q. In addition to the levy of the town?—A. In addition to the levy of the town.

Q. Then, in the last analysis, does not it get back to the proposition that if the land is surrendered by the holder it will go back to the State?—A. There is no surrender to the State.

Q. Then who would he surrender it to?—A. Oh, if that should be the case, necessarily the State would become the owner.

Q. Then how would you levy the taxes of the nation—in the same way?—A. Yes.

Q. Then you have three systems of taxation, all applied to the land?—A. Yes; that would be the ultimate. Of course I do not expect that to be reached for many a year.

Q. Well, that is the last analysis and the logical conclusion that the system must be judged by?—A. I think it will be reached by gradual approaches.

Q. Is not that the real hope of the single taxers, that the land shall be nationalized?—A. No, no. Understand the difference between the single-tax system and land nationalization. The Socialists are believers in land nationalization, as I understand their contention. They believe that the community should own the entire land, and should determine that certain crops should be raised on certain parts, and that certain other lands should be used for certain other definite purposes, and so on. The single taxers do not interfere with the management of land at all. If you have the land you may use it for whatever purpose. You will use your own judgment as to what you will do with it. The State will not interfere with your management.

Q. (By Mr. A. L. HARRIS.) If the entire amount of taxes necessary to be raised to defray the expenses of the Government, the city, and the locality is distributed upon the land, how much would that probably be among the older States now?—A. I do not know that I quite understand the question.

Q. The question is this: If you take one of the older States—the State of Ohio, and distribute Ohio's share of the fund necessary to run the Federal Government through the State, and then its own special taxes, and then its local taxes, and the township taxes, have you ever figured how much that tax would be on land values to the acre?—A. It is absolutely impossible to answer that question with accuracy, for the want of perfect statistics. There have been several attempts made to answer it. There was one made by Mr. Shearman, who, in his work on "Natural taxation," shows to his satisfaction, and I think it would be to the satisfaction of anybody else, that what we may term the present rental value of land, exclusive of the improvements, is more than sufficient to meet all local and general taxes.

Q. Then if it is all the rent the title is sacrificed?—A. No; not at all. The title may be held as a matter of convenience; although if the taxes were levied to the extent of the entire rental value, the mere holding of the title would be merely a convenience for the purpose of retaining the improvements.

Q. (By Mr. FARQUHAR.) What is the use of the title, then?—A. No; nobody else is likely to pay more than the fair rental value of the land.

Q. Then that value would become speculative every twelve months. That would be a matter of speculation, just as we have on F street and G street, and others?—A. No; there would not be any room for land speculation, because as land went up taxes would go up.

Q. Then it would not be worth holding. The less you would have the better you would be off, either one or the other?—A. Yes; it would be worth the holding for use. It would not be worth the holding for speculation.

Q. If the land has, for public utility or otherwise, to pay the tax, what is the use of your title, what increment of gain are you making in holding simply the title?—A. I do not want you to make any gain.

Q. But that disposes of land values?—A. No.

Q. (By Mr. LITCHMAN.) Now, then, does not that get back logically to the question I asked, that in the last analysis the State would be the owner of the land, and private ownership would be useless?—A. In one sense it does; the value of private ownership—the advantage of private ownership would be gone.

Q. Then, of course, it seems to me inevitable in logic that the State would become the owner, and it simply rents the use?—A. That is practically all we get out of the earth anyway, individually.

Q. (By Mr. A. L. HARRIN.) Would it encourage improvements when the title is precarious?—A. When the title is precarious? The title would be no more precarious than now. The tax on land would increase with the increasing value of land, which is precisely what it does now, although not to the same degree. Your holding would be subject to the possibility of an increased value, of course, and that is the chance which we take to-day. It happens to-day that improvements become valueless because of the great change in the situation of land, in the surroundings of land. I can conceive that that thing might happen under single tax as it does under the existing system. On F street to-day there are improvements which 20 or 30 or 40 years ago were put up at great expense. In the buying of the ground on which those improvements are situated, the improvements are not taken into consideration; they have become valueless. I should conceive that the same thing might happen under the single tax as happens to-day in that respect.

Q. I am interested as a farmer. You spoke a moment ago, saying that the increased value of city lands would to a large extent relieve the farmer on account of his unimproved country farm land. Who would you have make the valuations?—A. They would be made as now. I do not know of any necessity of any change of detail in that respect. I do not mean to say that our details are perfect.

Q. The city would value its own real estate, would it?—A. Yes; probably.

Q. Would not the city, as it does now, relieve itself of the actual value of its real estate and throw it upon the farm lands?—A. By a system of undervaluations?

Q. Yes.—A. That is quite possible. It is possible now and it is done now. But that is a matter which, as we know, is receiving under present conditions the attention of students throughout the country, and I think under present conditions the solution will be found. One has been proposed in the New York legislature this past winter that is very probably a correct and proper one. That is to say—I do not know that I can entirely state it, but in effect it is this: The amount is determined which will be needed by the State for its purposes. It is furthermore determined how much tax is to be raised by each local community for its local purposes; and a proportion is struck between the aggregate amount of local taxes and the amount of money wanted by the State for its purposes. So that if a town uses for its local purposes \$10,000, it pays a certain amount to the State. If it uses for its local purposes \$100,000, it pays 10 times as much to the State, so that there is a constant relation under this proposed plan between State taxes and local taxes. However, that question of yours does not, I think, particularly pertain to the single tax. It is something that we have to meet in another way.

Q. What I wanted to get at was whether the inequitable valuation of city property, as the farmer believes, would be relieved under your system?—A. No; I should say no, because I do not think the system has any relation to that. I think that has got to be met in another way.

Q. How would you get at the land value?—A. I would get at the land value as now; that is to say, by the appointment of assessors.

Q. Then you would have that same disability that we are now in?—A. That same disability is not necessarily connected with the question of methods of taxation. It is connected with the relations which exist between the municipality and the State, and does not bear any relation, I submit, to the question whether you tax one, two or three different things.

Q. You spoke a moment ago about street improvements; are they not generally made by assessments on the foot front? Is not the street improved by the foot front?—A. In some localities; yes.

Q. Is it not most generally done by the foot front?—A. I would not be able to answer.

Q. If done by the foot front, the vacant lot would pay just as much as the improved lot?—A. Of course; in so far as it is done by the foot front, the vacant lot does in that item pay as much as the improved lot.

Q. In turnpikes in the country the same rule would apply, would it not, where the acres adjoining the improvement pay the cost of the improvement?—A. I have never heard of that system adopted for country roads, but it may be.

Q. Now, let me ask you this general question: Has or has not private ownership been largely instrumental in accomplishing our high degree of civilization and wealth?—A. I do not think so. I think it has been a deterrent; and for some of the reasons that I have given we can so affirm of private ownership. It has been a positive deterrent, because it has enabled land to be held out of use. This withholding of land has thrown people out of work. It has prevented the orderly development of cities, and it has resulted in some people amassing great wealth and others remaining in poverty.

I think the system of private ownership of land is worthy of all the denunciation that has been given it from the time of Lycurgus. And I want to say in going back to Lycurgus, if I may indulge in a very interesting historical example, that it is interesting to note that, according to Plutarch's Lives, when Lycurgus became ruler of Sparta there were great inequalities of wealth and great distresses. He found the

subservience and wretchedness of the poor on one side and the avariciousness and power of the rich on the other, and, as a step which was proper at that time to get rid of the inequalities, he practically abolished private ownership of land and divided it into a certain number of small holdings and so arranged the leases that these holdings could not be sold by one man to another, and that a man's interest in his holding ended on his death. It is interesting in this connection to note the fact that for hundreds of years Sparta enjoyed the highest repute for honesty and bravery and equality of its citizens.

Q. (By Mr. KENNEDY.) Sparta also abolished a great many other things besides that land system?—A. Yes; but you will find that is the fundamental influence. Read particularly, having that in mind, Plutarch's *Life of Lycurgus*.

Q. (By Mr. LITCHMAN.) How far would the French law of succession operate in the same direction?—A. The French law of succession does operate in a degree in the same line, and to that is attributed among single taxers the fact that France has suffered to a less degree than any other country from industrial depressions and from the ravages of war. Under the French system a man is not allowed to will away more than perhaps a certain amount of his land from his children, and the rest is divided in specie. The French system is not theoretically the best at all, because it divides land into too small holdings, and the most economical method of working land is not available under that system. So there are objections, as I say, to the French system; but nevertheless to a very large degree it has proved the salvation of France.

Q. (By Mr. A. L. HARRIS.) What inducement would the farmer have to improve his farm if his title were not permanent?—A. The inducement of possession. Now, I want to say one word, and then I will try to answer your question by asking another. Some of the best improvements in New York City are on leased lands, land which is leased for terms of 20 or 30 years, subject to revaluation at that time. That is true of the Snug Harbor estate in New York City and also of others. So that the lessee has security of possession without having any title at all; and what a man wants, and what he would have under the single tax, would be a security of possession so long as he paid the increased value, which would naturally come and come, not particularly to himself but to all of his neighbors, and the valuation is made, of course, for all the community. But answering the question by asking another, I would ask what security has the farmer in making improvements at the present time? The instant he makes improvements his taxes are raised, and it is within my experience, and I have no doubt within the experience of all the commissioners, that farmers have hesitated to make improvements simply because they knew it meant an increase of taxes.

Q. (By Mr. LITCHMAN.) Is not that on the basis that a man is taxed on the property that he is supposed to own?—A. He is taxed now on the property that he is supposed to own; yes.

Q. Yes; is not that a fair basis of taxation?—A. I do not think so for a variety of reasons, some of which I have given. Another reason would be that we do not know what a man owns.

Q. Well, you can only judge by the evidence that shows what he owns.—A. To tax a man on a basis of what he is supposed to own is to tax him on the basis of guesswork.

Q. Is not all taxation guesswork?—A. No; the single tax is not guesswork.

Q. Now, let us take an illustration that brings up a question I was going to ask awhile ago. In the first place you will fix the valuation, you say, by assessors?—A. Yes.

Q. Having fixed that valuation by assessors, I go on and erect a factory for somebody. That factory is engaged in a line of business where I have a very strong and powerful rival in some other locality who desires to get rid of me. He makes a bid for that property beyond what I can afford to pay, not because that is the fair usufruct, but because he wants to get rid of that factory. How would your single-tax system meet that?—A. I do not think that is a workable illustration, if you will pardon me, because there is no reason for taxing that land under the factory any more than the adjoining land.

Q. But somebody comes and offers more for the use of that particular piece of land for the express purpose of getting rid of me.—A. What would we think of the assessor who accepted such an offer as that? He could not accept that offer under his oath of office, and under the eyes of the community, unless the value of the property of the whole community had gone up in some corresponding way.

Q. (By Mr. PHILLIPS.) He would have to raise on all the other property as well?—A. Property does not rise in a particular square to an extraordinary degree and not in the other square.

Q. (By Mr. LITCHMAN.) Under your theory, as I understand, the value would be the usufruct—what a man is willing to pay for it; how are you going to fix the value in any other way?—A. We can not say that a particular piece of land is of a particularly extraordinary value because one man, desirous of getting rid of his neighbors,

is willing to buy it. It is what the community generally is willing to pay, and what generally that land is to be regarded as worth.

Q. (By Mr. FARQUHAR.) To make the matter plain, the question is this: Do you single taxers deny the right to tax property according to the use that property is put to? There is a machine shop here, for instance, a hotel in another place, and working men's dwellings in another place on the same street, how are you going to differentiate as to the value of property unless you do so on the basis of the product that comes from the property itself?—A. You can not do it by the product.

Q. Take this case. Consider a place, say, at Dunkirk, N. Y. The Brooks Locomotive Works cover 4 or 5 acres of ground, furnishing the whole world with locomotives, and employing 2,000 or 3,000 men, and that little piece of property turns out more product than the whole city besides does in any shape whatever. Taking that land alone that the Brooks Locomotive Works are built on now, how would you tax it?—A. I would tax it in conformity with the value of surrounding ground.

Q. You would tax it, would you, just as you would the neighboring ground?—A. Yes.

Q. Then all the tax on that ground collected by the present State law would go for naught. How would you collect it?—A. I do not understand you.

Q. Well, take any machine shop. Take the Sparrows Point Machine Shop, because it has a product that goes into interstate commerce, and goes all over the world.—A. To take any particular place. At the present time we tax the land, we tax the improvements, and we tax the personal property. Now, what difficulty arises because we eliminate two of those factors and simply increase the rate?

Q. (By Mr. LITCHMAN.) Simply because you transfer the tax that the Rogers (Brooks) Locomotive Works pays on its personal property onto somebody else that does not pay the tax.—A. Onto the value of land. Because other people are being relieved at the same moment, you may with equal propriety say that their taxes are put on the Rogers Works, or the Brooks, whatever they are. So you have given them exemptions on both sides, and the only person who is suffering is the man who is holding his land out of use who does not get any exemption, or the man who has inadequately improved his land.

Q. (By Mr. FARQUHAR.) Were the land owned entirely by the State and you had to go to the State to get a possessory title on your improvements and everything else, when you would be thrown off your land there would be a presumption that would rest upon the fact that the State had the original fee simple and could sell the land. But to take your proposition now and uproot the whole system of the acquirement of property and the title to property and everything of that kind seems to be the difficulty in your argument this morning; that you are really releasing the strong betterment in one place without any tax. This is illustrated in the case of the Brooks Locomotive Works. Or, take another; a few acres of brick walls; nothing but brick walls and machinery in them, and then a neighboring hotel, and then 8 or 10 dwelling houses covering the same amount of ground. Why the Brooks works under the present system of taxation of the State of New York would pay 5 or 6 times as much as any other property around it. Now, the State loses all that betterment, does it not?

Q. (By Mr. PHILLIPS.) Let me just put in one more question. Take this city. There are certain localities and streets that are much more valuable for merchandising purposes than others. Now, if a man utilizes one of those corners which is much better than a square or two around, how do you regulate the value of a particular lot or location? You value the land higher then on that corner, do you?—A. Certainly, as it is done now.

Mr. PHILLIPS. Then that answers the question about the locomotive works.

Mr. FARQUHAR. No; he has not answered the locomotive works question.

Mr. PHILLIPS. The one will answer the other.

The WITNESS. The matter that Mr. Farquhar has in mind is probably that the tax of exemption of the locomotive works would be extremely large.

Mr. FARQUHAR. Yes; and somebody will be taxed for it and somebody will have it to pay in Dunkirk who is not in the locomotive works and not getting a dividend from the locomotive works.

The WITNESS. But you forget the other proposition, and that is that all the householders in Dunkirk are at the same time escaping taxes on their houses.

Q. (By Mr. LITCHMAN.) If they have a leasehold or have what is equivalent to the ownership of land, do they not increase the charge on their land and do they not increase the charge also on their personal property? And is there not a larger exemption on the locomotive works?—A. We will take it in a larger way. In Hyattsville, when we had the single tax, our whole town basis of taxation was \$600,000. Our lands were valued at \$400,000, say, improvements at \$200,000. Now, when you took the land value as a basis, when you struck off \$200,000 from the assessment rolls, it became necessary for the tax rate on the land to be raised. The suggestion of you gentlemen, if I understand it, is that that proceeding brought the tax back and made it heavier on the householder. But it did not. It practi-

cally doubled the tax on the landholders who were holding vacant land all over the town. It raised their rate from 15 cents on the hundred to 25 cents on the hundred, raised it two-thirds; but in practically every instance with the householders their taxes were less. And yet the town raised slightly more revenue. So, you take it in Dunkirk, it is quite likely that the Brooks Company would pay less taxes, but on the other hand every householder in town would be paying less taxes, and the persons who would be paying the larger taxes would be the people who hold a cordon of vacant lots around Dunkirk and prevent its development. They are the men who would pay the taxes which were before taken out of the Brooks Company.

Q. (By Mr. A. L. HARRIS.) Have you ever figured that down to see how it would work?—A. Yes; I have in several instances. I know how it worked in Hyattsville, and it worked in that way; that is, that the householders in practically every instance with the higher rate paid less taxes. There was scarcely an instance in the town where that was not true.

Q. (By Mr. PHILLIPS.) How did you assess corner lots?—A. We took precisely the present basis of assessment.

Q. Put the value on the location?—A. Put the value on the location.

Q. You did not put as much value on the vacant land as on the improved land?—A. Yes.

Q. Then, if a man had a good location for business, he would not pay any more taxes?—A. Pardon me; we did this: Beside the name of each tax holder in the town was a column for land values, in which his land would be assessed, a column for improvements, and a column for personal property. Under the old system we would have levied a tax of 15 cents on everything in the 3 columns. Under the single tax we did not alter the assessment at all; we simply struck out the improvement column and the personal-property column and left the land-value column. That was all there was to the adoption of the single tax besides the raise in rate from 15 cents to 25 cents, a raise of two-thirds.

Q. (By Mr. A. L. HARRIS.) Now, I would like to go back to the first proposition, and that is, whether or not there is a tax on labor. Improvements are made by labor, are they not?—A. Yes.

Q. When the community is improved, it increases the land value, and does it not indirectly tax labor?—A. No; the increase of land values is not a tax on labor. An increase in tax values is equivalent to saying to the man who lives on that land, "We increase your taxes because on this land you are capable—the community taken as a whole—the community is capable of earning more money." That is just what happens on a very large scale in the city of New York. Your highest land values in New York City are about Wall street. The very largest rewards for exertion that are obtainable anywhere in this country are obtainable there; so that if you pay the tax on land values, you pay the tax for the privilege of the opportunity of earning the very highest rate of compensation. That is not a tax on labor, but a tax on opportunity.

Q. But is it not labor that makes the land valuable?—A. We say labor makes land valuable, and for rough purposes that is a sufficiently correct method of statement; but labor never does create land values. Labor in the Sahara will not give any land values to Sahara, but it has got to be labor in conjunction with the people. If you get down to the very last analysis, it is the people who create land values. The more intelligent they are, the more developed they are, and the more they advance in every respect, the higher the land values, and houses are the mere insignia of this advancement, the result of it.

Q. Under the present system, in nearly all of our States, the owner of land has received title from the Government. That may be the condition even in the city of Washington?—A. Yes.

Q. And a man owning a lot, not being able to improve it possibly to the full extent that his neighbor improves, the rate is raised on him until he is not able to pay it. Would not that be confiscation?—A. It might amount to that, and then the question arises whether that sort of confiscation is right. If he created that land value, if he can show any natural right to that land, the confiscation is wrong. But if, on the other hand, the value of that land was created by the whole community as it is, and if the land itself was never created or brought into existence by him, then confiscation of it is right. It is simply the old question of slavery over again. If, as in our case, it was right to hold slaves, then it was absolutely wrong for the Government to confiscate them.

Q. (By Mr. LITCHMAN.) Well, do you not differentiate between a piece of land and a human being?—A. No; because the man that owns the land owns the people on the land.

Q. That is an academic question that perhaps might be disputed—the conclusion that argues that there is no difference between a piece of land and a human being; but I do not know whether your use of the illustration of slavery would justify that. If you wish to leave it—A. No; I do not wish to differentiate in natural

right. As I said before, I think all people have an equal right to live upon the earth.

Q. Following out the questions to the last analysis, if a man has improved the property to the extent of his ability to improve it, and the confiscation comes, is that equal right?—A. I think the illustration as I gave it covers it all.

Q. As I say, he improved the land to the extent of his ability to improve it.—A. As I say, I think it comes down to a question of right. The man who stands in the attitude of being a landholder, doing nothing with his land, whether from poverty or any other cause, while his neighbors are building up the town around him, is doing a positive injury to the community. If he could show as clear a right to the land—as natural a title—as he can to his horse or to his house, the product of his own work one way or another—if he could show that clear title to the land, I would say, whether he injures the community or not, he ought to keep it.

Q. Is not the title to the land the same as the title to the horse or anything else, except that in the one you require a paper writing and in the other you do not?—A. No. Perhaps the illustration of a horse is not so happy as a hat, because a hat is a direct product of human industry. A man has set to work and created that hat, or by the employment of another he has created it by his own labor. But the man does not live that has ever created land or the value of land.

Q. The value of land was created in the same way, was it not?—A. By the whole community, and the whole community, being the creator, should have the benefit of the value. That is our position.

Q. Let us consider the position of the man who hires a house. If the tax is doubled on the land, will he not in the last analysis have to pay the taxes if he pays the rent for the house?—A. Value is increased either by increasing the demand or diminishing the supply. I think that is a general proposition to which you will all accede. The levying of a tax on land value does not in itself increase or diminish the supply and does not diminish or decrease the demand for land, but its tendency is to increase the supply of land so that the tax can not be shifted onto the user. If you tax a hat, you have to get that tax out of the consumer. If you are a maker of hats, you have to get it out of the consumer or you will stop making them. But you can not say that about lands.

Q. Can you not about houses, if you build houses to rent?—A. Oh, yes; about houses it is true.

Q. Well, then, if I hire a house, do I not have to pay the tax of the man that owns that house on that particular house?—A. You do; but that was not your question.

Q. Yes, it was. My question was simply this: If you shift the tax to the land, how do I escape in my rent of the house?—A. How do you shift the tax on the land? The effect of shifting to land values only is to open up the amount of land that is available for the purpose of house construction; and the minute you open up a supply of land available for that purpose you diminish the selling value of the neighboring piece of land and you interfere with the ability to shift the tax on the house user.

Q. But do you not finally get to the point where you will find all the houses occupied?—A. Yes; that is possible. We have not reached it yet.

Q. Will it not be necessary also to have the house located near where the labor of the renter of the house is?—A. Yes.

Q. Then, there is a limit to the extension of the supply of houses, is there not?—A. There is not any limit to the extension. There is not any limit in the sense of which you speak to the operations of the single tax until every square foot of land in the country is used, and used in its best way, because the single tax will in its operations continually open up new opportunities and give greater freedom for labor either for house construction or something else.

Q. Let me make my illustration on that question more concrete. Let us suppose that here on this spot, where this building now stands, there is a factory employing a dozen men. Of necessity, those men must be within easy access of this factory; and you can apply your theory, can you not? If the rent is raised on the house I now have, I can go to a house that is farther off. But there must be some limit to the distance I can go from this factory where I get my employment, must there not?—A. Yes.

Q. Does not the theory fail when I have reached that limit, and do I not then reach the point where the increased tax on the land has increased the rent on the land?—A. In order to make your illustration good, you would have to run a fence round the particular piece of land and allow no other factory owners to come upon it anywhere; otherwise, they might escape elsewhere and allow other people to come in. You can not very well assume an absolutely crystallized condition in any one place. The crystallization must exist all over the country.

Q. You must admit that in our present situation, under our present system of particular production that requires such an enormous amount of capital in one industry, the shifting of that industry is of a great deal of importance?—A. Oh, yes.

Q. Then the supposition that you make may be said to be well-nigh impossible, if not improbable. Having eventually located there and being conveniently located, the worker must accommodate himself to those circumstances?—A. Unless he chooses to go elsewhere.

Q. But is there a choice to the mechanic at the present time to migrate at his own will?—A. There is not as great choice as there ought to be, because he has not access to land.

Q. Supposing he has access to ever so much land, what is the use of his going where it is if he has not the opportunity of employment at his trade after he is there?—A. He has not the opportunity of employment at his trade because neither capital nor labor can freely get access to land at the present time.

Q. If there is some limit to the number of factories that would create a supply of land?—A. I do not myself think that there is any practical limit to the supply of factories.

Q. The factory is subject to the law of supply and demand, as is anything else?—A. I do not think there is any practical limit to the number of factories which may be erected in this country, for the reason that new wants and new necessities are continually arising, while the old wants and old necessities we have not begun to meet even here.

Q. What is the power of consumption of the individual?—A. I could only answer that question by saying it is indefinite.

Q. Is not the power of consumption of the individual dependent upon the reward or return for the labor of the individual?—A. It is limited by it. You asked me what his power of consumption is. His power of consumption is his power—

Q. (Interrupting.) I meant by his power of consumption his earnings. I thought you would catch my question and answer it in that way. Then there is a limit even if everybody in the country is consuming to the full extent of his earnings, is there not?—A. To the full extent of his earning at a given time; but the capacity of man is unlimited practically; his ability for improvement is unlimited practically. The wants and the necessities of gentlemen at this board to-day are infinitely greater than were the wants and necessities of their grandfathers.

Q. Are their necessities for food any greater?—A. Oh, they can live on just as little as ever.

Q. The natural necessities are no greater? It is merely the comforts that have become greater, is it not?—A. The necessities, in view of our modern civilization and in view of our intellectual advancement and the different ways in which they touch the community—those necessities are capable of indefinite expansion.

Q. Is it not true that whether you judge them as necessities, comforts, or luxuries, the power of a man's consumption depends on the amount of his earnings with which to gratify those necessities, comforts, or luxuries?—A. Yes; and I go a step further and say that his earnings depend on the facility with which he can get at the soil from which his earnings in the last analysis come.

Q. But if he is a mechanic and works at a factory, he has to live somewhere near that factory, has he not?—A. Certainly.

Q. Then, does it not come back to the question I asked, and that is the possibility of going to and coming from a cheaper piece of land, because he must inevitably work in that factory or get work in another factory; and if there is not any other factory he is compelled to work in that one?—A. Yes, and under necessity he is driven to inconvenient places in the outskirts, while land between him and the factory is left unimproved.

Q. We will not dispute that, and I will frankly say that I agree with the single tax, in so far as it will bring into the market unimproved land which is held by some individual who wants to get the unearned increment.—A. If you will agree that far, I do not need to say anything further. It is a system which simply involves striking out two factors in the present tax system, which seems to me hardly could be called complex.

Mr. PHILLIPS. (Addressing witness.) Perhaps you may have something to add?

Mr. KENNEDY. Mr. Ralston, the privilege has been accorded to all witnesses to fortify and amplify their testimony by the addition of other facts.

Mr. LITCHMAN. And also to fortify their statements by citations.

Mr. RALSTON. I then beg leave to add as part of my remarks so much of a report recently prepared by me for the use of the Washington Board of Trade as relates to the question of methods of taxation. It summarizes my own views as to personal taxes, a branch of the discussion to which I have only incidentally referred.

(Testimony closed.)

APPENDUM TO THE TESTIMONY OF MR. J. H. RALSTON.

WASHINGTON, D. C., March 12, 1900.

To the officers and members of the board of trade:

GENTLEMEN: The Commissioners of the District of Columbia have very courteously referred to the board of trade, for its opinion, a bill proposed to be introduced in Congress, the title of which is "An act to regulate the assessment and collection of taxes and licenses in the District of Columbia, and for other purposes," and this bill, in conformity with the rules of your honorable body, has for the past two weeks received the careful examination and consideration of your committee on taxation.

The bill before your committee is intended to provide for more systematic collection of personal taxes than at present prevails, and for a great variety of occupation taxes in the shape of licenses, some of which are reduced from the figures now obtaining.

OBJECTIONS TO PERSONAL TAXATION.

1. A personal tax is inquisitorial in its nature, as indeed is illustrated by the pending bill. It demands from the owner an exposure of the condition of his business affairs, which exposure, from the soundest business reasons, he may be unwilling to make. Justice to himself and to his creditors may forbid that he should place upon the tax records a detailed statement of his financial condition. Aside from this view of the question, he may entertain a natural shrinking from taking the community into his confidence as to matters in their nature purely personal.

2. Because of the reasons above indicated, as well as for other reasons entirely human, false returns as to personal property are rendered. The man making a false return does not commonly fear exposure of his turpitude in such action, and is unable to withstand the temptation to gain an advantage involving no fear of loss. This feeling may not be commendable, but it is at any rate well-nigh universal, and the result is that wherever the enforcement of the personal tax law is attempted truthful men suffer, while the unscrupulous gain by their unprincipled actions.

3. Personal taxes are unequal. One business may be of such nature that it can afford to stand the interference and expense of the personal tax; another business can not, and many of those engaged in it are, as a consequence, forced out of their occupations, while monopolies are fostered.

4. A personal tax does not commonly reach those at whom it is directed. For instance, if it be levied upon the stock of a storekeeper, while it may be an immediate drag upon his business, and diminish his present ability to meet the demands of his customers, it is not in the end paid by him, but by those who purchase from him. The payment of personal tax becomes one of the expenses of his business, and the storekeeper expects out of his receipts to pay his expenses and secure a reasonable profit. Accordingly, he charges and obtains, in addition to such other elements as may enter into the selling price, an amount for the goods he sells which will repay him for the tax and reoup him for the expense of advancing it. If he can not do this he goes out of business. In the last analysis, therefore, this tax does not fall upon the storekeeper, but upon the consumer. It becomes not a tax upon accumulated wealth, but a tax upon the necessities of life, vitally affecting all classes of the community, and the poor in an infinitely greater degree than the wealthy. Again, if it be sought to tax bonds and money loaned, the holder of the bonds or the lender of money does not pay the tax, but, either in the shape of added commissions or of a higher rate of interest, provides in advance for this payment by the borrower. Once more, it happens that the necessitous pay the tax, while the wealthy escape.

5. A personal tax is always a double tax; sometimes obviously so, oftentimes not so generally recognized, but always of the same character. Some illustrations have been given, and we may add the following: If a man borrow \$1,000 with which to assist in purchasing a piece of real estate worth \$2,000, and if he pay taxes upon the value of the real estate and also upon the money borrowed, he would pay twice upon the sum of \$1,000 and a total tax upon a basis of \$3,000, when his actual possessions would be worth but \$2,000. This illustration is obvious and trite, but in a larger though less obvious sense every personal tax is a double tax. Real estate increases in value according to the opportunity it affords for the possession, preservation, and production of personal property. Certain classes of personal property are produced and preserved to the largest possible extent in this country on Wall street, and there we find that the value of land, because of the opportunity thus afforded, reaches the highest possible point. The same rule applies with relation to sites offering the greatest facilities for manufacturing purposes; and, again, the residential portions of our cities, where personal property appropriate to the surroundings is gathered together and enjoyed in the largest possible degree, because largely of such fact, exceed in value all other properties similarly used. If, therefore, we tax both the

opportunity of producing, preserving, and enjoying wealth represented by personal property, and also the thing produced, preserved, or enjoyed (personal property), we are, in the truest and largest sense, inflicting double taxation.

6. All personal property can not be taxed, and for this reason such a tax operates unequally. If a man's property be invested in Government bonds they will escape taxation, while other evidences of ownership may be taxed.

7. A personal tax may be evaded. It is common, where a rigid enforcement of personal property taxation is attempted, for a man, the day before return is made, to exchange other classes of securities for Government bonds, free from taxation, and the day after his return is handed in to reexchange, placing himself upon his former footing and contributing nothing to the public revenues. The same Government bonds may be made to do duty many times over.

8. The direct effect of the personal tax is to interfere with thrift and throttle industry. To tax articles produced is to diminish their production. To diminish production is to lessen comfort and create squalor.

9. The assessor can know little of the personal property he assesses, nor can any board of assessors be made large enough to meet the exigencies of the occasion. The difference between a \$5 paste diamond and a \$5,000 gem may not be obvious to the tax officer, and so a chromo and a Murillo may be equally valuable in his eyes, while the latest product of a New England loom may seem of greater worth than a rug which has adorned the palace of the Shah of Persia.

THE TAX ON CORPORATIONS.

The preceding remarks, both in the way of general comments on the bill and addressed to the theory of taxation of personal property, have special relation to any particular tax levied upon corporations. A tax of the latter sort is a tax upon personal property, and (except it be placed upon a corporation enjoying natural or artificial monopolies) must fall under the same ban. If corporations are proper business instrumentalities, then no needless drag should be placed upon their activities; if they are improper, then they should be forbidden. The committee, however, are disposed to believe that if any special tax is to be levied as to corporations, it should be a tax (subject, perhaps, to a qualification as to those enjoying special monopolies) upon their net (not gross) earnings, this method presenting, in the judgment of the committee, the minimum of evil incident to any tax levied upon this special subject or taxation. This committee does not at this time consider the best method of dealing with corporations enjoying special monopolies, whether such treatment be through the exercise of the taxing power or otherwise.

OCCUPATION TAXES.

The bill under examination perpetuates a great variety of trade licenses, some of them being reduced in amount from the fees now fixed. This relief, of course, is desirable, but the principle upon which the bill is based remains for the most part obnoxious. If a man possesses, as we declare, inalienable right to life, liberty, and the pursuit of happiness, this right is emphatically interfered with when we compel him to pay an occupation tax, for such demand upon the part of the Government implies that he has not the right to live by pursuing a gainful occupation, unless he first pay for the privilege; that he is not entitled to the fullest share of liberty, which consists in doing whatever he may desire consistent with the well-being of others, and this for the same reason; that he is not entitled to the pursuit of happiness, because bounds are placed upon its pursuit.

Taxes under the proposed law will operate with the highest degree of inequality, and it is impossible that it should be otherwise. Banks, whose profits may be large, pay a relatively small occupation tax. Caterers, whose earnings are meager, pay a large proportion of their annual profits, in fact, so large as to interfere with their ability to gain a livelihood. Brokers, who may well earn thousands each year, pay \$100, while dealers in old barrels, whose living is of necessity of the narrowest character, pay \$10 annually. Hucksters, who pursue an occupation humble but useful to the community, are required to pay \$18 annually, while brewers, whose gains run into the tens of thousands each 12 months, pay \$100. A hackman, for the privilege of driving his hack, pays the usual earnings of several days before he is permitted to earn a dollar. If the burden of occupation taxes fell with any degree of equality upon the rich and poor there is no question that they would speedily be rescinded. As it is, the poor and defenseless are nearly taxed out of existence, while the rich accept their comparatively small occupation tax as a greater or less protection against competition, and therefore as useful measurably in the maintenance of business monopolies—a condition of affairs which is in itself a gross perversion of the taxing power. It is to be borne in mind that in certain particulars license taxes may have a place. For instance, perhaps, those engaged in given occupations should be identified, and as to certain other occupations police reasons may demand a high license. Identification could be secured where necessary by furnishing a tag

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costing 25 or 50 cents a year; but it is not within the purview of this report to discuss the police question.

PARTIAL EXEMPTION FROM TAXATION OF HOUSES OCCUPIED BY THEIR OWNERS.

In addition to giving careful consideration to the various phases of taxation presented by the bill under examination, your committee has thought the time propitious to investigate the possibility of exemption from taxation, at least partially, of houses occupied by their owners. Deeming such a course likely to prove beneficial, we report herewith a resolution favoring it to the extent in each case of \$1,000 of the assessed value.

Among other reasons bringing your committee to this conclusion have been the following:

The effect of such exemption would be to increase the number of home owners in this District, placing, as it does, a premium upon the purchase of homes and diminishing the annual outlay necessary to maintain them.

It will favor industry by lightening the burden of taxation upon this great product of labor (houses). The construction of more and better houses will be stimulated, and every industry connected therewith will feel the quickening effect of such a step, and the whole community consequently share in its benefits.

It will tend to the use of larger lots of land in connection with individual homes, because men will be better able to afford their use, and the natural effect will be increased healthfulness throughout the community.

In facilitating the purchase by our poorer citizens of better houses than they now occupy, the tendency of this measure will be gradually but surely toward abolition of slums and raising the standard of morality.

Perhaps it may appear that your committee is claiming too large a measure of benefits to flow from the lightening of taxation in certain cases to the extent of \$15 per year per \$1,000, but it must be remembered that this sum represents the full average weekly wage of a mechanic, and his surplus earnings for many weeks, or, otherwise stated, interest on \$250, a sum which, put in a house, might well mark the difference between comparative comfort and abject poverty, and which would suffice to purchase a loaf of bread daily for the year.

Your committee believe that the District of Columbia can well afford to take this forward step. Only one family in four now lives in its own home, less than 15,000 houses in the District being occupied by their owners. If all were exempted from taxation as proposed and were worth \$1,000 and upward, the diminution in revenues to result from the adoption of this measure would be \$225,000 per year, but inasmuch as an immense proportion of the houses to be affected are assessed for less than \$1,000, it is not probable that the reduction of revenues would equal \$200,000 annually.

This sum would be offset speedily by the increased production of houses, the increased basis for taxation on land values because of the larger use of land, and, in a less material but more important sense, by the improved health and developed morality of our citizens.

We believe that the District of Columbia as containing the capital of the United States should represent the highest possible ideals in matters of taxation and the loftiest tendencies so far as the well-being of her citizens is concerned. We believe that the measure proposed leans in this direction, and that it should receive the approval of the board and the sanction of Congress. We may then take pride not simply in the fact that we are the seat of government of a free people, but in the further fact that our municipality shows itself in its operations the leader in at least one matter vitally affecting the welfare of those coming under its control.

Nor can it be said that the suggestion of your committee is without precedent in principle. The exemption laws in every jurisdiction in the country illustrate attempts on the part of legislators to protect the poor against their poverty, and even the recent income-tax law did not undertake to interfere with the gains of the less wealthy. The measure suggested, therefore, would be in the line of protecting home builders in the possession of their homes.

The committee subjoin resolutions expressive of the ideas hereinbefore set forth and also add extracts from the opinions of the tax authorities of various States as to the effects of laws compelling personal tax.

Very respectfully submitted.

J. B. WILSON, *Chairman*.
M. I. WELLER.
SAM S. BOND.
J. H. RALSTON.
V. BALDWIN JOHNSON.
WM. JNO. MILLER.
WM. OSCAR ROOME.
RAYMOND J. DONALDSON.
ANDREW WILSON.
RALPH P. BARNARD.
N. L. BURCHELL.

RESOLUTIONS.

Whereas the opinion of the Board of Trade has been asked by the Commissioners of the District of Columbia relative to a bill intended to be proposed to Congress entitled "An act to regulate the assessment and collection of taxes and licenses in the District of Columbia, and for other purposes," and the same has received our careful consideration.

Resolved, That if it is desirable, as proposed in the bill under consideration, to exempt church property from taxation, with equal reason should charitable institutions conducted not for gain be exempted.

Resolved, That taxes should be collected semiannually instead of annually, as proposed by said bill.

Resolved, That, believing a tax on personal property inimical to the best interests of this District, we are opposed to the enactment of any law providing therefor.

Resolved, That if any special tax be levied on corporations not enjoying public franchises such tax should be levied on net earnings.

Resolved, That occupation taxes should only be levied to insure identification and for police purposes, or only in the event of absolute necessity to insure revenue, and the said bill should be so amended as to attain this end and no other.

NEW YORK.

The tax upon personalty is therefore unjust as between individuals; unjust as between communities, and, as experience has shown the world over, it is impossible of even approximately just administration. Then why should it be continued?—(Report for 1898 of Comptroller James A. Roberts.)

To successfully enact and enforce an equitable law which would reach every description of personal property and so distribute the burden as to make it light for all, only four things were necessary:

First, to amend the constitutions of the States; second, to amend the Constitution of the United States; third, to amend the constitution of human nature; fourth, to amend the constitution of things.

The Constitution of the United States would have to be amended, for under it full one-third of the personal property in this city is placed beyond the reach of State tax laws.

The constitutions of other States would have to be amended so that their laws shall conform to yours, for you might as well burn down certain business portions of the city as to attempt to enforce such a law in the face of competing rivals with more liberal tax laws.

The constitution of human nature and of things would have to be amended, or persons and personal property would hide or die, or fly to other countries beyond the reach of your amendments, impelled by the instinct of self-preservation.—(Letter from George H. Andrews, commissioner of taxes in New York.)

MASSACHUSETTS.

The taxation of personal property in the form of securities and investments is thus a failure. It is incomplete, uncertain, not proportional to means as between individuals, grossly unequal in its effects in the different parts of the State. The experience of Massachusetts in this regard is the same as the other States in the Union.

Everywhere, without exception, the testimony is that this part of the system of the general property tax is unequal, unsuccessful, often demoralizing to tax officers, always irritating to taxpayers. (The commission appointed to inquire into the expediency of revising the tax laws of the State, report issued October, 1897.)

NEW JERSEY.

It is now literally true in New Jersey, as in other States, as has been well said by another, that the only ones who now pay honest taxes on personal property are the estates of decedents, widows and orphans, idiots and lunatics. (Commission to investigate the subject of taxation, appointed by Governor Griggs, reporting in 1897.)

OHIO.

The system (providing for personal taxation) as it is actually administered results in debauching the moral sense. It is a school of perjury. It sends large amounts of property into hiding. It drives capital in large quantities from the State. Worst of all, it imposes unjust burdens upon various classes in the community; upon the farmer in the country, all of whose property is taxed because it is tangible; upon the man who is scrupulously honest, and upon the guardian and executor and trustee, whose accounts are matters of public record. (Report of taxation commission in 1893.)

ILLINOIS.

The following tables graphically express the demoralization to which Chicago has been reduced by the general property tax, and indicate the goal toward which every community subject to that or a similar system must invariably tend. The tables are direct indictments of assessors and wealthy and influential property owners, and incidentally they condemn our constitutional principle of taxation itself. (Report of bureau of labor statistics for 1894.)

WEST VIRGINIA.

Things have come to such a condition in West Virginia that, as regards paying taxes on this class of property, it is almost as voluntary and is considered pretty much in the same light as donations to the neighboring church or Sunday school. (Tax commission report, 1884.)

PENNSYLVANIA.

The establishment of personal taxes by law would "injure the business interests of the city and stop or retard the growth of our industrial establishments." (Report of the committee of the common council of Philadelphia, February, 1871.)

CALIFORNIA.

The experience of California furnishes perhaps the latest example of the utter failure of all schemes for taxing personal property to work out anything like an approximation of justice. (Who Pays Your Taxes? G. P. Putnam's Sons, publishers.)

MARYLAND.

This question was propounded by tax commission of 1881 to the appeal tax court of Baltimore: "To what extent do you succeed in reaching investments made by residents of this State in private securities of any kind?" The answer was: "We utterly fail in reaching private securities of every description. Here and there only have they been returned by some conscientious holder." The city collector was asked by the same commission: "Does your experience enable you to suggest any effective way of collection?" His answer was: "No!" (Report of bureau of industrial statistics, 1894.)

WASHINGTON, D. C., June 13, 1901.

TESTIMONY OF MR. D. P. HUTCHISON,

Chairman board of trustees of Charlotte Township, Mecklenburg County, N. C.

The commission met at 10.05 a. m., Mr. A. L. Harris presiding. At that time Mr. D. P. Hutchison was introduced as a witness, and, being first duly sworn, testified as follows:

Q. (By Mr. TOMPKINS.) Please give your name and address.—A. D. P. Hutchison, Charlotte, N. C.

Q. Have you a paper prepared?—A. I have a paper.

Q. Will you first state what contact you have had with the building of roads, and where and when, in order to give to the commission some information as to your experience?—A. I have been chairman of the board of trustees of Charlotte Township, Mecklenburg County, N. C. I have had direct charge of the opening of many of the roads and the repairing of all of the roads in that township for the last 10 years.

Q. Have you had any contact with the county organization of road building?—A. Only, you may say, in a consulting way.

Q. Your experience in repairing would give you a good opportunity of observing the deficiencies of construction?—A. Yes.

Q. Have you had any opportunity to observe the working of free labor and of convict labor?—A. Yes; by comparison. The convicts have been worked right there, not under my charge, but under my observation.

Q. Why were there two different gangs of labor, one free and the other convict?—A. The convicts are worked under the control of the county commissioners, who up to the present time have been building all the macadam roads in the county. The township force at the present time have been engaged in repairs almost entirely,

and it has been done almost entirely by free labor, whereas the county uses convict labor.

Q. Now, if you will read your paper, I think we can formulate a number of other questions that will be of value and of interest.

(Witness reading:)

MR. CHAIRMAN AND GENTLEMEN OF THE COMMISSION:

"Allow me to thank you for the compliment paid North Carolina, Mecklenburg County, and myself by the invitation given me to testify before you in behalf of one of the greatest educational and commercial movements of the closing years of the nineteenth century.

"This movement for road improvement started not in the country, as would seem natural, but in the towns, where its strongest advocates and supporters were to be found. It was the citizens of Charlotte who submitted to a road tax, in addition to their town taxes, that made possible the building of the first macadam road in Mecklenburg County. The first crushing plant in this county was bought by the trustees of Charlotte Township and placed in the hands of the county commissioners, who had been constructing a stone road with convicts, using stone hammers, a slow and expensive method.

"It has been the policy of Mecklenburg County to build out from Charlotte on the main roads, in rotation, a mile or more at a time. This was thought best, as every one coming to town would have the use of a mile or so of good road, and this plan has been pursued until we have some 90 miles divided among 13 roads, or an average of about 7 miles to the road, with the work of building going on at the rate of 8 to 10 miles per annum.

"An election is to be held this fall at which the people will be asked to vote \$200,000 to complete the macadam to the county lines. The value of suburban property has increased much more than has the value of city property. Farming lands on macadam roads within 2 to 10 miles of town have increased from 50 per cent to 100 per cent in value in the last 10 years. People living 3 to 5 miles in the country frequently attend church services at night, and send their children to the city high schools.

"Rural mail delivery has been made possible by the advent of good roads, thus bringing the farmer into direct daily contact with the movements of the business world and giving him a knowledge of the prices ruling in the different markets.

"A few years since 4-horse teams were the rule; now they are exceptions. I know of only one within 6 miles of Charlotte, and I think that it is used more as an advertisement than from necessity.

"The supply of wood was formerly drawn from a territory not extending more than 5 miles out; to-day it is brought as far as 10 miles and sold for less, so that both the farmer and the dweller in the city are benefited by the reduction in the cost of transportation. This transportation cost has been reduced at least one-half by good roads.

"Mecklenburg County has two camps of convicts, averaging about 75 men, with teams, rollers, and crushers, etc. The men are kept in portable quarters, heated by stoves in winter and well ventilated in summer.

"The quarters, 60 by 17 feet, cost \$300, stables (7 teams) \$50, commissary \$50, guard quarters \$50. Convicts cost to work 28 cents per day. Stone is 67 cents per cubic yard placed on the road, as per report of C. A. Sprat, county engineer.

"Charlotte Township has an outfit which is chiefly used in repairing and overhauling, though we have done some construction. The first and most important question, once it is decided to build a road, is the location. The first consideration then is the grade; the second, the cost of maintenance; and the third, the cost of construction.

"Theoretically, a level road is the one to be sought after, but experience has taught me that a one-half per cent to 1 per cent grade is preferable, as better drainage is to be had, upon which the life and usefulness of the road depends. I speak feelingly as to the level road, as in the summer of 1899 I had to take up a mile of macadam, put back the earth that had been removed, and then replace the macadam, and then I did not have fall enough to get rid of the rainfall as rapidly as I would have liked. The people who had for years been traveling this section of road and floundering through the holes that had developed by reason of the fact that there was no drainage were loud in their praise of the change, and asked why it had not been so constructed in the first instance, as it would have cost less by one-half.

"A road, like a crop, to do well should have the benefit of the sun. It does not prosper in the shade. So always locate it, if possible, on the sunny side of the hill or forest, on account of rains and frosts.

"Distance should always be sacrificed in favor of grade. The grade should never break on a fill, but at either end, so as to keep as much water off the fill as possible. Ditches should be made on all embankments to prevent washes."

[I would add that this last was a suggestion of Mr. Tompkins some years ago when passing over one of our roads, and we took it up.]

"The grades established and the fills and cuts made, the preparation of the road bed for the first layer of stone demands the attention of the supervisor. With a little practice most of the earth required to be removed can be displaced with a road machine, leaving the bed with the same crown that you wish for the macadam. The bed should now be thoroughly rolled and all depressions filled in. Spongy places should be dug out and filled with dry earth.

"The bed is now ready to receive the bed rock, which should consist of 6 inches of stone broken so that it will go through a 3-inch ring, evenly spread by a dumping wagon or by being cast with a shovel, never by dumping and pulling to place with a rake, as there will always be more stone where the dump was. A heavy harrow is of great assistance in leveling the stone preparatory to rolling.

"The second layer should consist of 3 to 4 inches of stone broken to go through a 2-inch ring, with everything that will go through a 1-inch ring taken out. This layer should be sprinkled and rolled until there is no impression of the rolls visible. The third and last layer to be put in consists of the screenings or any stone less than 1 inch in diameter, which should be spread on to the depth of 1½ to 2 inches. I find that, if it is possible, it is best to flood this coat with water in the evening and leave it until it is dry enough the next day not to stick to the rolls. It should then be rolled until it is so firm that a piece of the material used, thrown under the rolls, will be crushed and not be forced into the surface.

"The repairing of a macadam road in my opinion requires more skill and intelligence than the original construction, as there are more varied conditions to be met with. For the first few years the loosening of the surface of any depression and the filling up of the same with broken stone not larger than 1½ inches will keep the road in good shape, if the proper quantities are used. But after 4 or 5 years' usage it will generally require to be surfaced with 3 to 5 inches of stone.

"To do this, first fill all the ruts and depressions with broken stone, insert the spikes in the large rolls, and break up the surface of the road by going over it with the roller. This will not break the bond so that a heavy harrow (5 by 5 feet), with teeth 1½ by 12 inches, will leave it looking as if a roller had never been used. To properly shape up or crown, use a road machine, as it does the work rapidly and economically. The spikes having been removed, the surface is thoroughly rolled to prepare it for the reception of a coating of 3 to 4 inches (1½ inches stone), which is put on to replace what has worn and been blown or washed away. The further treatment is the same as in the original construction. To get stone for this work it is necessary to set the jaws of the crusher very close, thereby diminishing the capacity about one-half. With the exception of about the first 10 or 15 yards of screening or small stone which has to be dumped, the entire output of the crusher may be disposed of at one handling. This work costs about \$100 per mile, or 80 cents per cubic yard.

"A serious drawback to this work is the use of large stone in the first layer, which is done by some road builders to save the cost of crushing, whereas the extra labor in placing, and the greater quantity required, to say nothing of the greater wear in the roller, make their use much more costly in the first instance. In spiking very many of the large stones are brought up and have to be taken out, causing a break in the foundation, which is hard to repair.

"Our rule is that no stone is to be put on the road that does not pass through the jaws of the crusher, and that no clay or loam shall be used as a bond. In some instances we have had to take up all the stone, putting the bed rock through the crusher, as we could not get a satisfactory job otherwise.

"The amount of money that is being expended in the building of improved roads most certainly calls for special legislation for their preservation. The greatest destroyer of a road, stone or earth, is the narrow-tired wagon with its axles of even length. The average width of tire is not over 1½ inches, which after a few months' use is rounded off to an inch or less. All that the wagon will bear is usually put on (if on an improved road), so that we have four wedges, a little blunt it is true, working away to loosen up or grind the bond of the road. With the small stones out they go deeper, working out larger stone, and the persistence with which each wagon follows in the track of the one preceding is sickening to the eye of the road supervisor.

"Charlotte Township had enacted by the last legislature a bill to impose a license on all wagons in the city and township with tires less than standard width, which is—

"One-horse wagon, tire 2 inches wide, spindle not over 1½ by 7 inches.

"Two-horse wagon, tire 3 inches wide, spindle not over 1½ by 9 inches.

"Three-horse wagon, tire 4 inches wide, spindle not over 1½ by 10 inches.

"Four-horse wagon, tire 5 inches wide, spindle not over 1½ by 10 inches.

"The license is \$1.50, \$3, \$4, and \$5. Wagons now in use are exempt until new tires are required. This legislation is not what was wanted, but was the best to be had.

"Why such a prejudice should exist against the broad tire is hard to conceive, as everyone who has given it a fair trial is its advocate. The question of draft is in its favor as has often been proven by the most careful tests. The life of the wagon with the broad tire is 50 per cent greater than with the narrow tire.

"In constructing a road across a marsh some three years since, having put on a foot or more of earth our wagons with 4-inch tires were going over nicely with a load of 1½ yards of earth while a light surrey came along, and much to our surprise, cut through and had to be helped out. On the same road a team of small mules were hauling wood with a wagon with well-worn tires, which so cut up the road that we had to shut them out.

"The cost of repairs to streets and roads in a few years could be cut down from 50 per cent to 75 per cent in city, town, and country if the broad-tired wagon with short front axle could be substituted for those now in use, and without any additional cost to anyone."

Q. Do I understand that last sentence to be to the effect that by the use of tires of proper widths you can cut the cost of maintaining roads 50 per cent?—A. From 50 to 75 per cent.

Q. And you say, also, with tires of proper widths the draft would actually be lighter?—A. On macadam roads the tests show there is frequently very little difference; on earth it is from 20 to 50 per cent in favor of the broad tires.

Q. And yet the people at large are prejudiced in favor of the narrow tire, in spite of these facts?—A. Not so much the people as the wagon manufacturers. Originally, the tires were much wider, but the wagon makers in figuring out the expense of building kept cutting down on iron until they got them down as low as possible to sustain the load. I had a conversation with one of the largest manufacturers in our State last winter, and he said, "We do not like to make these wagons, because there is not anything like the profit there is in the narrow tire; and then, again, they last so much longer." We have 2 wagons that have been in use for 5 years, never having been under shelter for a day. In that time the tires have been cut once, and they are good for 5 years more.

Q. They belong to the township and are used in keeping the roads up?—A. Yes.

Q. Will you give to the commission a synopsis of the plan of building and keeping roads in repair in Mecklenburg County?—A. We have two taxes—a county tax, levied by the commissioners for the whole county, and that amounted last year, I think, to 30 cents. It is now fixed by law at a minimum of 30 cents. For the township they usually levy a tax at a minimum of 10 cents, but it can be as high as 30 cents, for township purposes, in addition to what is known now as the public-road tax or highway tax. The highway is the macadam road constructed by the county commissioners.

Q. What is the aggregate money collected by the county in those two funds?—A. I think about \$50,000—between \$40,000 and \$50,000.

Q. (By Mr. FARQUHAR.) Does the county benefit any from the State tax for roads?—A. None at all.

Q. By Mr. LITCHMAN.) Is there any assessment on the abutters in the building of the roads?—A. No.

Q. It is paid from the general tax?—A. Yes.

Q. Does the building of your roads contemplate also sewerage, or have you reached that problem yet?—A. No sewerage; we have that established in the towns.

Q. (By Mr. TOMPKINS.) It does constitute drainage, however?—A. Yes.

Q. Is there any difficulty about the citizens of the county paying the tax and not getting roads built to their places or near their places?—A. There has been some clamor about not getting a proper division, but I think that is pretty well passed away now, and they find by adopting the plan of rotation—a mile or two on each road—none have to go more than a short distance until they reach a macadam road.

Q. This matter of issuing bonds to the extent of \$200,000 to at once extend the roads to the county line would overcome that?—A. To a large extent.

Q. Is it not due to that sentiment that the movement has been brought about for borrowing money to finish the roads?—A. Everybody should get the benefit as well as pay the tax. Many have been paying taxes for some years and still the road is some miles from their place.

Q. Can you give us an approximate list of the machinery necessary to make a complete equipment—first to build a road as it is done in your county, and, second, to keep the road in repair?—A. The outfit should consist of a portable engine of, say, 15 horsepower and a portable crusher, with bins that could be set up. We have a portable bin, but I do not like it, because it is too small. I have never seen one big enough. I prefer a portable bin put up in sections, which can be taken down and set up in a very short while. There should be a road machine, a large plow, a harrow, and a steam roller.

Q. What weight of steam roller?—A. Twelve and one-half tons I think is preferable for country work, though we use a 15 ton. I would not like anything less than

12½ tons. There should also be scrapers. That same machinery will do all necessary repairs. A sprinkler should be included.

Q. What would that whole equipment cost for an ordinary county?—A. That outfit would cost about \$6,500, I think. There is another item I left out; that is teams.

Q. How much more would it cost to get the necessary equipment of wagons and mules or horses?—A. Well, put that cost at \$2,000 additional.

Q. That would make a total sum of \$8,500?—A. Yes.

Q. I want to get at whether in your judgment a county that did not feel disposed to expend that much money at once could with a smaller equipment commence the building of roads?—A. Yes; most of them commence with considerably less than that.

Q. Could you give the very simplest outfit with which it would be possible for a county, whose people would not very willingly tax themselves, to begin the construction and thus demonstrate the value of good roads?—A. It could be done with hand hammers, but not satisfactorily. The cost of the work would be entirely too much.

Q. Was it started in your county in that way?—A. It was.

Q. If you had required \$8,000 or \$10,000 worth of machinery in the first place it would never have been started?—A. No.

Q. Could it be started in any other way than by starting by hand and demonstrating the value there was in it?—A. I think not.

Q. Are there not probably a great many people who would have to go through the same process?—A. Yes.

Q. Is not a road built by cracking stone by hand with hammers infinitely better than a great many of the older roads not practically built at all?—A. No question about that. With sufficient care a No. 1 road can be built by hand.

Q. (By Mr. FARQUHAR.) In your crusher do you use screens?—A. The screen is generally about a 2-inch perforation, and just the tailings go over the end.

Q. What do you use for binding?—A. We use anything that will go through the inch ring. It is better to have stone of that size, at least a mixture of it, than of the fine screenings, because the fine screenings are very liable to wash off.

Q. Do you use gravel at all, or is there any to be found?—A. We used some decomposed granite one time and found it very satisfactory. Before we had a crusher we had a piece of road turned over to us and no binder put on; in fact, nothing less than 2-inch stone. There was about a mile of it, and the people would go around 3 miles to keep off it.

Q. What experience do you have in the matter of ruts in your macadam roads?—A. They will form a rut and everything in the county will strike that when it comes onto the road.

Q. What do you have to do—rake in?—A. Fill that in with broken stone. There is enough on the ground that you can rake in.

Q. Have you any system of inspection on your roads to see that they are not abused by any party, or is the road left to take care of itself after you have made it?—A. We have a man whose business it is to go about from one road to another, and who has charge of all repairs and everything, and who is employed constantly.

Q. (By Mr. TOMPKINS.) Bad places are reported to you, are they?—A. They are reported; yes.

Q. (By Mr. A. L. HARRIS.) Has he any authority to keep heavy loads off the pike in soft weather?—A. No.

Q. Does freezing and thawing soften your roads at any season of the year?—A. That is a question that practically never has to be contended with. Probably once in 10 years the matter of freezing is to be considered.

Q. Can your inspector exclude small tires?—A. No; our bill on that subject goes into effect the 1st of August. We do not exclude any tires now in use, but all new wagons purchased have to have the standard width of tire or pay a license.

Q. Do you think your license sufficient as a deterrent?—A. Yes; I think so. We had it considerably higher than the figure named, but it was a question of getting it through at all.

Q. (By Mr. TOMPKINS.) That was a special enactment?—A. Special for our township.

Q. What do you think of the use of convict labor for building roads in a county as compared with the use or employment of free labor?—A. I think it is the labor for building roads.

Q. You think it is the best use to put convicts to?—A. By far.

Q. And you think the road is built cheaper than if you employed free labor?—A. Yes.

Q. Do you think the use of convict labor on the highways has in your county been instrumental in lowering the wages of free labor or interfering with any profitable employment that free labor has?—A. It has not.

Q. Has it had the effect of causing an indisposition on the part of the free labor to engage in the manufacture of roads?—A. No.

Q. (By Mr. TOMPKINS.) You actually employ free labor in the townships and convicts in the county? How many people are there in your gang of free laborers?—A. We work 15 to 30 men.

Q. White or colored?—A. All colored.

Q. Are the convicts mostly white or colored?—A. Ninety-eight per cent are colored.

Q. (By Mr. KENNEDY.) Do you mix your white convicts up with the colored?—A. They work side by side.

Q. (By Mr. TOMPKINS.) Will you give us an idea of the terms of the law by which the county keeps its own convicts and works them on the public highway instead of sending them to the State penitentiary?—A. There is a special act by which the judge, in passing sentence, can sentence a man to labor on the public roads instead of sentencing him to the penitentiary. Long-term convicts are usually sent to the penitentiary.

Q. Is there any limit to the discretion of the judge? Are there any convicts that the county could not keep, but that would have to go to the penitentiary?—A. I think that in cases of murder and arson they are probably required to go to the penitentiary.

Q. Into whose hands are these convicts turned when the court releases them?—A. They are put in charge of the county commissioners.

Q. The county commissioners have absolute authority over this whole organization of road-building convicts?—A. Yes.

Q. Of course, none of the county commissioners do any work or do any more than direct the terms under which the labor shall be employed?—A. They have a county engineer, who is elected by the county commissioners.

Q. How much compensation does he get in your county?—A. I think he only gets \$40 a month.

Q. He has other employment?—A. Oh, yes; he is city engineer, and he does outside work.

Q. In other words, for \$40 a month the county commissioners are able to get good engineer services to lay out the road and give all the data for its construction?—A. Yes.

Q. Who is in charge of the work on the ground?—A. There is a superintendent of convicts, who is elected by the commissioners.

Q. How much does he get?—A. Fifty dollars a month.

Q. What assistants has he?—A. He has 4 or 5 guards—whatever is necessary.

Q. Guards night and day?—A. Yes. I think probably 1 guard at night, and 4 or 5, or possibly 6, in the daytime, according to the number of men.

Q. This whole organization lives practically in camp?—A. Yes. They have portable barracks built of inch lumber put up in panels.

Q. They build their own houses?—A. They build them. A man can take down his quarters in the morning, move them 10 miles, and put them up and sleep in them at night.

Q. How much road is usually built from one camp?—A. From 2 to 2½ miles is about as much as they build from one set-down.

Q. Is the camp about midway?—A. They locate it about as near midway as possible, water and everything considered.

Q. (By Mr. LITCHMAN.) Are long-term convicts used?—A. No; they are short term—up to 3 years. I have known one as long as 12.

Q. (By Mr. TOMPKINS.) Many of them 30 and 60 days?—A. Yes.

Q. (By Mr. LITCHMAN.) Do these longer-term convicts develop any particular skill in road building?—A. Yes.

Q. (By Mr. TOMPKINS.) Does the whole organization acquire special skill?—A. Yes; in the distribution of the stone.

Q. And in the moving of camp; do they get so they can do that without instruction and without trouble and quickly?—A. I do not know about that. I have never witnessed it.

Q. (By Mr. LITCHMAN.) How far is this comparative excellence between convict labor and free labor due to that fact?—A. It is from their enforced training. They have to stay there and stick to it, while the other fellow may want to get off to a picnic or to hear the band play.

Q. In regard to hours of labor employed, are they the same in both cases?—A. No.

Q. How do they compare?—A. We work 10 hours a day with free labor; the convicts work from sunup to sundown.

Q. In winter that is short hours and in summer longer?—A. Yes.

Q. Is there any evidence of its being any particular hardship to put the convicts on the road instead of sending them to the penitentiary?—A. No. I think they prefer it. Their friends can visit them on the road on Sundays, and so on. I was out at the camp not long ago with some gentlemen, and a man was telling us about a boy whose term had expired a few days ago and who had a convict friend. He said, "Jim, you have a month longer to stay, and if Mr. Lytle will agree to it I will stay

in your place. I would rather stay here than go home." I do not think there are many instances of that kind, but that was an actual occurrence.

Q. You spoke of there being very few 4-horse teams in the county now. That is because of the fact that as good a load can be hauled with 2 horses as formerly with 4?—A. Formerly they would haul a half to a cord of wood with 4 horses, and now they bring a cord and a quarter with 2 horses.

Q. Will you give some idea of how you find it best to locate macadam on the width of a road—the middle or one side?—A. Our custom is to put it about in the middle, and then we have a dirt track on either side. We find it is easier to maintain 2 dirt tracks—1 on each side—than it is when we have all on 1 side, because the disposition of the people is to stork to the clay track after it becomes wet and cut it up without going on the stone road. It is easier on the teams to drive on the clay.

Q. What thickness of macadam do you put down?—A. We try to get it about 9 inches.

Q. And how wide?—A. Twelve feet. I do not like the 12-foot width, because it is not wide enough to pass on, and it is just a waste of 25 per cent of the road, in my opinion. If you would add that to the length it would accomplish every purpose.

Q. What do you think the width ought to be?—A. I would build it from 9 to 10 feet for a single-track road; if wider than that I would make it 16 feet, so that wagons could pass.

Q. Do you know what, in round numbers, is the cost of building an average road in the kind of country that your county is—hilly and rolling country—the approximate average for 50 miles of road? If you are going to issue bonds you will have to find it out.—A. Mr. Spratt has figured it out at \$2,800 per mile.

Q. A graded road, macadamized, 12 feet wide and 9 inches thick?—A. Yes.

Q. Suppose you would cut that macadam down to 9 feet wide, it would cost correspondingly less?—A. Twenty-five per cent less.

Q. What materials do you use mostly?—A. Field stone hauled in by farmers and piled up at intervals along the road where they wish to locate it.

Q. What are the farmers paid for the stone?—A. Forty cents per cubic yard.

Q. Who measures it?—A. The county engineer.

Q. Who piles it?—A. The farmers.

Q. He gets his pile ready to be measured up and gets the county engineer to go and measure it and give him a certificate for his money?—A. Yes.

Q. Do you get enough stone from the farmers?—A. Yes; there is very seldom any trouble. In some neighborhoods there is sometimes a little trouble.

Q. You then have to quarry it?—A. It has to be quarried then, yes; but I have not known an instance in 5 years where it was necessary to quarry.

Q. I understood you to say that in building embankments you arrange to build them in a way that you can get a ditch on the side, the same as through cuts or on level ground?—A. Yes.

Q. You find that necessary because the embankments wash down?—A. The rains accumulate the water and it overflows. A big rain will take out 15 or 20 loads of earth, and it will take 25 loads to replace the 20.

Q. Have you ever planted anything on the embankments to keep them from going to pieces?—A. We use Bermuda grass on all embankments.

Q. Has it been successful?—A. Very. After 2 or 3 years a stream of water 2 or 3 inches in depth and several feet wide can run down an embankment that has Bermuda grass well set and it will not wash out.

Q. What is your provision for surface drainage?—A. Our rule is to get rid of the water as fast as possible. We simply cut the ditch through in order to get rid of it.

Q. Between the hedge and roadbed do you make a guttering?—A. No; a plain ditch.

Q. Is there any cleaning out in that at all so as to assist drainage?—A. We build these ditches with the side sloping next to the road, and we use the road machine to clean it out always. That saves very much of the labor.

Q. (By Mr. TOMPKINS.) Where a county like this spends \$50,000 a year, is the improvement worth the money to the people in the county?—A. They think so.

Q. Is it worth much more than the money?—A. I think it is, from the very fact that lands bring better prices and it is easier to market products.

Q. Are many products marketed over these roads that were formerly not marketed at all, like milk and butter?—A. Yes; I recollect one dairy as much as 8 miles out.

Q. Before they had the macadam roads, how far out could a dairyman live and keep up a milk route in town?—A. I have known the time when they were just along the edge of town. I had one dairyman tell me he could not afford to market his milk, the roads were so bad.

Q. How much more would the road building cost with free labor than with convict labor, in your opinion?—A. I think it would cost anywhere from 30 to 60 per cent.

Q. (By Mr. FARQUHAR.) Do the convicts receive any compensation for their labor at all?—A. None at all.

Q. How much does it cost per day to feed these convicts?—A. The cost varies from 25 to 31 cents each, owing to the number on hand.

Q. Is there to be added to that the cost of the guards?—A. That includes guarding, food, medical attention, and clothing.

Q. What is the average rate of wages in that same section for free labor of the same class?—A. About 60 cents per day.

Q. Is there not other comparison in your State with respect to convict labor besides this road labor?—A. We have the penitentiary and a State farm. We also lease the convicts to railway companies for construction work.

Q. Is that leasing done through State officers or county officers?—A. It is done through State officers. One county may lease to another county prisoners to work on the road. The judge can so order.

Q. (By Mr. TOMPKINS.) And they do do it?—A. And do do it; yes.

Q. (By Mr. FARQUHAR.) In construction, then, your entire labor is convict, with the exception of your foremen and bosses?—A. Yes.

Q. Do you think that your people would have adopted this good-road system if they had had to pay free labor at the rate of 60 cents a day?—A. I think not. I am confident they would not.

Q. Do you think it would be possible to build the roads and maintain the taxes if you had to pay 60 cents?—A. I do not think they would have undertaken it.

Q. So the fact is the reform in respect to your road building in your State has been brought around on account of convict labor and its cheapness?—A. Yes.

Q. What is the shortest term of any of the convicts employed on the roads?—A. They send them out there probably for the smallest fine. They go there from the recorder's court. If they fail to pay a fine, they are sent to the road to work it out.

Q. How a long a time?—A. Fifteen days up.

Q. So that you utilize all your convicts?—A. We utilize everything; yes.

Q. Previous to the road-building era how were your convicts employed?—A. Those of long term were sent to the penitentiary and the very short-term prisoners were kept in jail.

Q. Kept at the expense of the county?—A. Yes.

Q. (By Mr. TOMPKINS.) Do the people pay this road tax more or less willingly as time goes on?—A. There is no complaint about paying the road tax.

Q. Would they in the beginning have paid what they now pay?—A. No.

Q. And was there any complaint about what they did pay?—A. There was very great complaint about it.

Q. That complaint has disappeared?—A. Yes. There were people in the township—citizens of the town—who first thought they would bring suit. They objected to paying the road tax; but they canvassed the matter and decided that they would try it for a year or two. They continue to pay it, and no suit has ever been brought. Mr. Tompkins pays a road tax in the town the same as I do in the country.

Q. (By Mr. FARQUHAR.) How many miles of road have you now improved?—A. About 90 miles of macadam road. Most of that is paralleled by dirt track, and some of it has dirt track on either side.

Q. (By Mr. TOMPKINS.) Which you use in good weather?—A. It is used 8 months in the year.

Q. (By Mr. FARQUHAR.) What has been the entire cost of that 90 miles?—A. I could not tell you.

Q. You said about \$2,800 a mile?—A. Yes.

Q. And that probably would hold as an average over the whole 90 miles, according to Mr. Spratt's estimate?—A. Mr. Spratt figured that as the cost.

Q. That would make \$250,000?—A. Not far off. I know in our township we have spent \$40,000 in the last 6 years.

Q. Would the people have considered voting bonds at all before this system was developed?—A. No.

Q. And yet you say they are considering the expenditure of \$200,000 on top of this \$250,000 they have already expended?—A. Yes.

Q. Besides this cost of construction, what has been spent in the township in repairing these roads?—A. We have spent about \$40,000 in the last 6 years. We have done considerable widening of the earth roads.

Q. (By Mr. A. L. HARRIS.) Who builds your bridges?—A. The wooden bridges are built by the convicts.

Q. The larger bridges?—A. The larger iron bridges are built by contract.

Q. Does the contract in such cases include abutments and approaches?—A. The abutments are generally built by the convicts.

Q. How many months in the year can your force work on the roads?—A. About 11 months.

Q. (By Mr. LITCHMAN.) What do the convicts do in the other month?—A. That comes between times, and, in a way, they rest. We have probably 3 or 4 days or a week at a time that they are off. This last winter I do not think they laid off at all; there was work they could do all the time.

Q. (By Mr. A. L. HARRIS.) Would that obtain in the States where they have a colder winter?—A. No; unless you are quarrying; they could work in the quarries in cold weather.

Q. (By Mr. TOMPKINS.) You could do all your quarrying in the hard weather?—A. Yes.

Q. (By Mr. A. L. HARRIS.) You spoke of using field stone. Do you mean the ordinary boulder?—A. Yes.

Q. What is the character of that stone?—A. Some of it is very fair and some of it is not. We have to guard against it, and reject the softer grades.

Q. Is it granite, or cyanite, or bluestone?—A. The bluestone is the preferable, if we can get it. It is commonly known as "nigger head." We use a good deal of quartz, others to the contrary notwithstanding. Some people are very much surprised when I tell them we have some quartz roads standing up about as well as any others. I was over those roads last week and they are still wearing well.

Q. Have you any trouble in getting crushers that will stand the crushing of your field stone?—A. No.

Q. What crusher do you use?—A. We have two, the Champion and the Climax.

Q. (By Mr. TOMPKINS.) Where are they built?—A. The Champion is built in Pennsylvania, and the Climax at Marathon, N. Y.

Q. (By Mr. A. L. HARRIS.) How long will what is known as the jaw of the machine last in crushing stone?—A. That is owing a great deal to the quality of the stone. Sometimes it will crush 4,000 to 6,000 cubic yards.

Q. Have you any gravel beds?—A. No.

Q. No creek gravel?—A. No. We have some beds of decomposed granite.

Q. Then you depend altogether on decomposed stone?—A. You may say we depend upon crushed stone. If you use plenty of water you always get bonding material enough.

Q. How many convicts have you in your State?—A. I think there are some 1,200 in the penitentiary. I could not tell you how many are employed on the road.

Mr. TOMPKINS. This is a special kind of law, as I understand it. There are a number of counties that have that same law in regard to working convicts—Anson, Gaston, Forsyth, Guilford, Cabarrus.

Q. (By Mr. A. L. HARRIS.) How do you secure your convicts by night?—A. They are secured by chain. There is a long rod that goes through the quarters, and the chain is slipped over this rod.

Q. Would the character of camp that you describe be sufficient protection in a colder climate?—A. By the use of stoves, yes. With them you could get any heat you wanted.

Q. (By Mr. TOMPKINS.) How many convicts are at work in a county?—A. About 75 at each camp; that is about the average.

Q. How many camps?—A. Two out of 15 is about the average.

Q. How many convicts go from your county to the penitentiary at the discretion of the judge?—A. I suppose the number would probably average 4 a year.

Q. Those are for grave or very grave offenses?—A. Very grave offenses.

Q. The convicts are sent to work in the counties by the judges instead of sending them to the penitentiary?—A. Yes.

Q. (By Mr. KENNEDY.) Is there any belief that the judge gives longer sentences because of the use the county makes of the convicts than he would if they were sent to the State penitentiary?—A. No.

Q. (By Mr. FARQUHAR.) Does the county utilize the convicts in any other way than in road making?—A. No.

Q. (By Mr. A. L. HARRIS.) Do the white men and the colored men receive the same sentences for the same offenses?—A. Yes. In the county of Gaston their convicts are about half and half.

Q. In the use of your steam roller in making your road do you roll more than one time? Do you roll before you build the surface or after?—A. We roll each layer separately.

Q. How many layers do you put on?—A. Three layers. We roll the first layer, then go over it and fill up the depressions that may occur there until we get a true surface. Then we put on the stone and roll that until we get an even surface.

Q. I see in your paper you describe the kind of stone you put on for the first course. Is the ordinary macadam preferable to what is known as the Telford system?—A. I rather think that it is, though I can't say positively, because I have never seen what I consider a genuine Telford road.

Q. When you repair your roads what preparation do you put on before you put on the coat of stone?—A. The first work done in repairing is to fill the holes and all ruts with 1½-inch stone, fill this up, then probably put a little bit in, and then the roller going over with spikes will crush this stone down and level it up.

Q. How long are those spikes?—A. They are about 3½ to 4 inches. They roll down to 1½.

Q. This is a machine especially made for the purpose?—A. Yes. The spike is about 4 inches long, and at the point I suppose it is 1 inch or 1½. It tapers.

Q. Do you put the spikes in and use the same machine for rolling?—A. Yes. There are holes punched in the rim of the larger roller; 52 spikes; 26 to each roller. They are about 18 inches apart.

Q. Then, after you go over with your spike roller what do you do?—A. That we follow with the harrow. That loosens up everything and allows the road machine to level up all that is loose and get it in proper shape.

Q. The road machine is a scraper?—A. Road scraper.

Q. That makes the roadbed then perfectly level?—A. True.

Q. Then, how much macadam do you apply for the roadbed, as a rule?—A. About 4 inches, we strive to get it.

Q. What size stone is used in that?—A. That is 1½ inches. Then we put binding material upon that.

Q. Then you roll it thoroughly again?—A. Roll it thoroughly again, yes, as in the first instance.

Q. When complete, what impression does an ordinary road wagon have passing over it?—A. It has none.

Q. (By Mr. TOMPKINS.) This large roller is heavier and has more effect in packing the stone than the wagon would have in undoing the work?—A. Very much more. We have there a pressure of about from 500 to 700 pounds per lineal inch on the macadam, while on the ordinary wagon I suppose you would not have over 40.

Q. (By Mr. LITCHMAN.) Is there any difference by reason of the width of the roller as compared with the tire of the wagon?—A. Yes.

Q. Then the narrow tire would cut into the road more than a wide roller, even if there is a difference in weight, would it not?—A. The difference is in the weight. If you had anything like the weight on a narrow tire you could force it in.

Q. (By Mr. A. L. HARRIS.) Is it possible, in your judgment, to make a good road without a roller?—A. No.

Q. Is it economical to make a macadam road without a roller?—A. No; it is not.

Q. (By Mr. TOMPKINS.) Is it possible to do it with a little roller?—A. I do not think it is. I have seen it attempted, and I do not think it is.

Q. (By Mr. A. L. HARRIS.) If you had \$50,000 to apply upon a road, would it be advisable to purchase a roller so as to leave your road in a good condition when you were through?—A. Yes. We did not buy a complete outfit. We bought a roller and mounted a crusher, and we used the roller for driving the crusher.

Q. (By Mr. TOMPKINS.) The roller is a steam roller with a steam engine on it?—A. Yes.

Q. (By Mr. A. L. HARRIS.) Is it satisfactory?—A. We have used it for 5 years, and it is satisfactory; but if you have a good deal of road to build you would have employment for the roller all the time.

Q. But if you are building a small quantity of road you could utilize the machine for the two purposes?—A. Yes.

Q. Is the interest in good roads increasing in your State?—A. I think so, judging from the legislation.

Q. Is it increasing among the farmers?—A. Yes; I think so.

Q. Are they now generally disposed to do a good, fair day's work when they have an opportunity of working upon a neighborhood road?—A. We have had some of them offer to come and help if we would do so and so, but we do not think any of them want to do more than they have to do.

Q. (By Mr. TOMPKINS.) Do you work people that way any more?—A. No.

Q. All people are employed and paid?—A. Yes; every man is required to work 2 days in a township or pay \$1, and we collect, I suppose, about 50 per cent of that.

Q. You do not get any work from the others?—A. Yes; we do.

Q. (By Mr. A. L. HARRIS.) Are any of your roads built by public contract?—A. No.

Q. (By Mr. TOMPKINS.) If these bonds should accrue, how would the roads be built—by contract?—A. I think a good deal would be done by contract; that is the plan at present.

Q. (By Mr. FARQUHAR.) How many other counties have adopted this system?—A. I think there are some 15 or 20 in the State.

Q. (By Mr. TOMPKINS.) How many counties are there in the State—over 100, are there not?—A. Somewhere about 90.

Q. Do you know how many counties have utilized convicts on this work?—A. I do not.

Q. How many years since Mecklenburg County started this road system?—A. It commenced some 12 years ago.

Q. Was the agitation for good roads started in the city or in the country?—A. The first bill was introduced by S. B. Alexander. It became a law, but it was repealed by the next legislature. Then the second legislature following reenacted another bill, introduced by Mr. Adry.

Q. (By Mr. FARQUHAR.) Each succeeding year this system has increased?—A. For the last 8 years it has increased. It was at a standstill for quite a number of years; there was very little done.

Q. In the presentation of the question before your legislature, was the argument mostly that it was a saving to the State in the utilization of these convicts in the labor on the road, or was it on the ground that it was in the interest of a better commercial and industrial system to make better roads for the State? Which argument held?—A. Well, I could not tell you that, because it is so far back; but my recollection is that it was urged that it would be economy to the county to use the convicts in that way.

Q. They had to keep the convicts, and expected in that way to utilize them in building roads?—A. Instead of sending convicts to the penitentiary, the county was taxed with all costs and got nothing back, because any income from them went to the State.

Q. (By Mr. A. L. HARRIS.) As I understand, your State doesn't pay for the prosecution or conviction of the convict?—A. No; each county bears all court expenses.

Q. (By Mr. TOMPKINS.) Then the motive was partly to get good roads and partly to get something in return for these expenses?—A. Yes.

Q. And good roads were the best they could get?—A. Yes.

Q. (By Mr. FARQUHAR.) In the care of these convicts in your camp do you have good police regulations?—A. A great many of the convicts are made "trusties" in a very short while and chains are taken off. Of course they are not allowed to go away from the camp. Most any day you are in town you may see two or three wagons driven by some negro, without any chains or anything, who could pull up and get out any time he saw fit.

Q. Is there any system of surveillance used over the men while at work other than that of the guard?—A. No.

Q. Is your trusty allowed to go around anywhere at night without a guard?—A. He must stay in the quarters, but he is not chained in any way.

Q. There is no Sunday labor?—A. None at all.

Q. Do you have any Sunday sermons—anything of that kind?—A. I think so; yes.

Q. (By Mr. TOMPKINS.) Is there much disposition amongst this organization of convicts to get away and resist the guards?—A. Very little.

Q. Are they much discontented because of the confinement?—A. They do not seem to be. That depends very largely upon the men in charge. If they get a man that is kind there is no trouble, but when they have a man that they can take liberties with they keep crowding him up. I only know of one case where they had an insurrection and made a break, and that has been 10 years ago.

Q. (By Mr. TOMPKINS.) Was there very much trouble about quieting that?—A. No; I think they shot a couple of them, and maybe a couple of others got away. The others were put back to work.

Q. Did they change superintendents—anything of that sort?—A. I think not at that time.

Q. Have they changed superintendents for inability to handle the men?—A. I think they have—two or three times.

Q. (By Mr. FARQUHAR.) In the transfer of work of convicts from one county to another, what is the rate of compensation to the county?—A. I think in some instances they pay probably half the cost, possibly all the cost of the trial. It is owing to the length of time, a good deal, as to what they will pay. Sometimes it is a fixed charge; they pay so much for a year or a two years' sentence.

Q. (By Mr. TOMPKINS.) The county that uses the convicts always pays all the expense of keeping?—A. Yes.

Q. (By Mr. FARQUHAR.) What I desire to know is if there is any compensation?—A. Of course the county working the convict would have to pay the keep anyway, and the question would be what return is there for the county that rents the convict?

Q. (By Mr. TOMPKINS.) There is compensation, is there not?—A. In some cases I think there is. The county lets the convict out and gets rid of the keep.

Q. And for how long terms?—A. I do not know. It is some small compensation I do not know how much.

(Testimony closed.)

WASHINGTON, D. C., June 11, 1901.

TESTIMONY OF MR. ELWOOD MEAD,*Expert in Charge of Irrigation Investigations, Department of Agriculture.*

The commission met at 11.02 a. m., Vice-Chairman Phillips presiding. At 4.20 p. m., Mr. Elwood Mead, irrigation expert, Department of Agriculture, appeared as a witness and, being duly sworn, testified as follows:

Q. (By Mr. A. L. HARRIS.) You will please give your full name, post-office address, and your occupation.—A. Elwood Mead; I am irrigation expert in charge of the irrigation investigations of the Department of Agriculture.

Q. What State are you a native of?—A. Born in Indiana. For the past 18 years I have lived in Colorado and Wyoming; for the past 12 years, Wyoming.

Q. How long have you made this subject of irrigation a study?—A. Eighteen years.

Q. How long have you been with the Agricultural Department?—A. Three years.

Q. Have you studied the subject of irrigation in connection with agriculture in the various States of the West, and I might say of the East also?—A. I have.

Q. Have you a written statement that you desire to present to the commission?—

A. If you desire I will give an outline of my connection with irrigation. I went from Indiana to Colorado in 1882 to accept a professorship in the State Agricultural College. Four years later I became the professor of irrigation engineering in that college, being the first professor of this branch of engineering in this country. Between the time of going to Colorado and my acceptance of the last-named professorship, I was employed during two summer vacations by the State engineer of Colorado to make official measurements of the capacities of the irrigation ditches of the State having adjudicated rights to water. Colorado was the first of the arid States to assume public control over the diversion of water from streams. One of the first necessities of the legislation providing for this control was a table showing the capacities of the different ditches in use, and the measurements made to ascertain these capacities were the first of such measurements made. After 2 years of employment by the State engineer during the summer months I became assistant State engineer, resigning from the college, but returning to it when a school of irrigation was created there. In 1888 I became territorial engineer of Wyoming and continued in that capacity until 1898. In 1897 I became connected with the irrigation investigations of the Department of Agriculture and for the past 3 years I have been in charge of these investigations.

Q. Have you written a number of reports that have been issued by the Agricultural Department?—A. Since coming to the Department I have had charge of the bulletins issued by the Department with reference to irrigation, of which the following is a list:

Publications of the Office of Experiment Stations on irrigation.

- Bul. 58: Water Rights on the Missouri River and its Tributaries. By Elwood Mead. Pp. 80.
- Bul. 60: Abstract of Laws for Acquiring Titles to Water from the Missouri River and its Tributaries, with the Legal Forms in Use. Compiled by Elwood Mead. Pp. 77.
- Bul. 70: Water-Right Problems of Bear River. By Clarence T. Johnston and Joseph A. Breckons. Pp. 40.
- Bul. 73: Irrigation in the Rocky Mountain States. By J. C. Ulrich. Pp. 64.
- Bul. 81: The Use of Water in Irrigation in Wyoming and its Relation to the Ownership and Distribution of the Natural Supply. By B. C. Buffum. Pp. 56.
- Bul. 86: The Use of Water in Irrigation. Report of investigations made in 1889 under the supervision of Elwood Mead, expert in charge, and C. T. Johnston, assistant. Pp. 253.
- Bul. 87: Irrigation in New Jersey. By Edward B. Voorhees. Pp. 40.
- Bul. 90: Irrigation in Hawaii. By Walter Maxwell. Pp. 48.
- Bul. 92: The Reservoir System of the Cache La Poudre Valley. By E. S. Nettleton. Pp. 48.
- Bul. 98: Irrigation Laws of the Northwest Territories of Canada and of Wyoming, with Discussion, by J. S. Dennis, Fred Bond, and J. M. Wilson.
- Bul. 100: Irrigation Investigations in California, under direction of Elwood Mead, assisted by William E. Smythe, Marsden Manson, J. M. Wilson, Frank Soulé, C. E. Grunsky, James D. Schnyler, and Edward M. Boggs.

FARMERS' BULLETINS.

Bul. 46: Irrigation in Humid Climates. By F. H. King.

Bul. 116: Irrigation in Fruit Growing. By E. J. Wickson.

SEPARATE.

Rise and Future of Irrigation in the United States. By Elwood Mead. Yearbook of Department of Agriculture for 1899. Pp. 25.

Now, if the commission desires I will take up and follow the general lines of the summary I sent you yesterday, and I will take up the questions that seem to me to be fundamental.

We are accustomed to think and speak of irrigation in the United States as being of recent development. Nothing could be farther from the truth. In many parts of the Southwest, notably in northern New Mexico and Arizona, there are well-defined remains of irrigation works which have outlived by many centuries the civilization to which they belonged. Near Las Cruces, N. Mex., is an irrigation ditch which has an unbroken record of over 300 years of service. The Spanish settlers along the Rio Grande were irrigating their gardens 70 years before the settlement at Jamestown. It is true, however, that irrigation by English-speaking people is only about 50 years old. For its beginnings we must go to Utah, where the little band of Mormon emigrants was compelled to adopt it to save themselves from starvation. It was 20 years after the beginnings in Utah that irrigation came to be an important factor in the growth and settlement of Colorado and California. It is an interesting fact that the earlier attempts in these 2 States where irrigation has assumed the greatest importance were made at the same time. The discovery of gold in California created the overland trail and opened the great interior valleys of the arid West to miners and stock raisers. At the stage stations bordering on streams and in the vicinity of mining camps men without any knowledge or experience built small, rude ditches and turned water on the thirsty soil. In every instance work was begun without apparent consideration of future necessities, and by men to whom the whole subject was strange and new. It is only by understanding this lack of direction and the haphazard methods which prevailed in the beginnings of our age that we can understand the present situation.

There are few countries in which irrigation is destined to assume greater importance than in the United States. Throughout nearly all that portion of the country west of the one hundredth meridian successful agriculture is not possible without it, while each year sees an increase in its use east of that meridian. Leaving out of consideration Alaska and the recently acquired insular possessions, in some of which irrigation is already an important factor, the area of the United States east of the one hundredth meridian is 1,618,830 square miles. West of that meridian there are 1,443,819 square miles. Taking this meridian as an approximate division of the humid and arid portions of the United States, they stand in a ratio of about 53 to 47. The humid portion is, however, somewhat larger than this. There is a narrow strip of well-watered territory along a part of the Pacific coast, and scattered throughout the arid region there are relatively small areas with a rainfall considerably above that of the surrounding country, and where crops can be grown without irrigation. Making the one hundredth meridian the eastern boundary of the arid region is also purely arbitrary. The decrease in moisture begins 500 miles east of the Rocky Mountains, and gradually but irregularly increases as they are approached. Taking into consideration these minor modifications of the rough division changes the percentage of humid to arid land to a ratio of about 60 to 40.

Within the limits of the arid region it is not too much to say that irrigation is the basis of civilized life. In many of the arid States the value of the crops grown by irrigation exceeds the output of the mine or the profits of the factory. Not only is this true, but the cheap and abundant food supply which irrigation has provided has made possible the operation of many mines and the development of important industries which would have been impossible if the food supplies of their operatives had all to be shipped in from the farms of the humid East. The influence which irrigation has exerted in beautifying the landscapes of the watered areas of the arid West, in lessening the dust and discomfort, and rendering life more healthful and attractive, must not be lost sight of. The oases of fruit and foliage and the marvelous beauty of the gardens and orchards of southern California have done as much to fill the transcontinental trains from the East with health and pleasure seekers as has the healthful and enjoyable climate of that region. Nor does this statement apply to California any more than to the business centers of the other arid States. The cities of Phoenix, Reno, Boise, Salt Lake, and Denver are almost as much the creation of irrigation as the farms and orchards which surround them.

Irrigation in the United States differs from irrigation in nearly all other irrigated countries in one important particular. In Italy, France, Egypt, India, and even in

Australia, many of the important irrigation works have been built by the Government and owned and protected as public works. In the United States, on the other hand, every canal in operation and, with one or two exceptions, every reservoir used in irrigation is owned and protected as private works. Neither the several States nor the general Government have as yet entered into the work of ditch or reservoir building. Colorado has built 2 or 3 reservoirs with State funds and begun 1 canal, but outside of this, investments of \$200,000,000 or more to provide water for the cultivated lands of the arid West have come from private funds. Whatever has been done in the way of overcoming physical obstacles, the building of dams to control mountain torrents, the aqueducts which follow the precipitous sides of mountain canyons, the thousands of smaller ditches, and the hundreds of important canals, together with the immense outlay of money and toil required to put arid land in condition for the distribution of water, have all come as the result of the outlay and effort of individual companies and corporations.

Owing to the fact that this development has been left to private enterprises, there has been a delay in the enactment of laws required to protect irrigation investments and to secure to the water user his proper share of the stream along which he lives. In countries where canals are built with public funds, adequate laws for governing the division of a stream which fills them receive early attention, and the leading consideration in the location of these public works is a conservation of the water supply and its use on the best land. In the United States, on the contrary, the building of ditches and the reclaiming of land being a private matter, public considerations have received but little attention in the location of works or in the enactment of laws to determine rights to streams. The amount of money which the individual company projecting irrigation works had was the controlling consideration in the location of canals and ditches. As a rule, the places where ditches could be built at the least cost were first selected. Where these favorable locations have been utilized, then larger and costlier works have been undertaken. And after the natural flow of streams has been absorbed, there has followed a natural construction of reservoirs to store the flood waters and the waters which run to waste during the season when water is not required in irrigation. In States having a favorable climate, like California, or people of exceptional enterprise, as in Colorado, or where there has been from the first a large local demand for farm products, owing to the proximity of mines, irrigation has developed more rapidly than in States where the demand for irrigated products or the price received for them has not been so favorable. Utah has more cultivated land than Montana, although the area susceptible of irrigation in Montana is many times that of Utah.

It is probable that if canals had been built as public works the leading consideration would have been an abundance of water supply, but being private works the leading consideration has been the cheapness with which ditches could be built and the profit with which the rights in these ditches could be disposed of. Because of this there are many streams in the West where the natural flow has already been fully utilized. The ditches and canals, which take water from the Arkansas River in Colorado and Kansas, cover more land than the stream can be made to irrigate if every available reservoir site along the stream is improved, and all the water which can be utilized. The canals which divert the South Platte River in Colorado and Nebraska cover all the land which that stream can be made to irrigate. On hundreds of streams in the various arid States and Territories the capacity of the canals and ditches already built is fully equal to the water supply. In some cases there are more ditches than can be filled, and the people who depend on them suffer from drought as severely as do the people who depend on rain. As a rule, all the land which can be cheaply irrigated is now either being irrigated or is owned by parties who intend to irrigate it, and the streams which can be easily diverted will require reservoirs to make a further extension of the cultivated area safe and profitable; nevertheless, there is a great field for future development. The large rivers of the arid region like the Missouri, Big Horn, Snake, Rio Grande, Green, and Sacramento are as yet almost undiminished in flow. The reason for this is that the cost of works to utilize them has been too great. In many cases this cost will for years to come be beyond the reach of private enterprise or beyond the hope of any profitable return if undertaken as private enterprises, and this is one of the reasons why State or national aid is regarded as a necessity, or if not a necessity, as a wise public policy for the country to adopt.

Wherever irrigation is necessary, laws for the regulation and control of streams must be enacted if development is to be peaceful and prosperous. It is just as necessary for the farmer to know who owns the water he uses as it is for him to know that he has title to the land that he cultivates. In the arid region of the United States the character of titles to water has an especial importance, because of the scarcity of the supply. With very few exceptions, there is more irrigable land along the river than the stream will serve. Hence, whoever controls the stream practically controls the land on which it is used, because he can dictate what land shall be made productive and what land must remain forever arid and almost worthless.

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Within the limits of the arid region it is not too much to say that irrigation is the basis of civilized life. In many of the arid States the value of the crops grown by irrigation exceeds the output of the mine or the profits of the factory. Not only is this true, but the cheap and abundant food supply which irrigation has provided has made possible the operation of many mines and the development of important industries which would have been impossible if the food supplies of their operatives had all to be shipped in from the farms of the humid East. The influence which irrigation has exerted in beautifying the landscapes of the watered areas of the arid West, in lessening the dust and discomfort, and rendering life more healthful and attractive, must not be lost sight of. The oases of fruit and foliage and the marvelous beauty of the gardens and orchards of southern California have done as much to fill the transcontinental trains from the East with health and pleasure seekers as has the healthful and enjoyable climate of that region. Nor does this statement apply to California any more than to the business centers of the other arid States. The cities of Phoenix, Reno, Boise, Salt Lake, and Denver are almost as much the creation of irrigation as the farms and orchards which surround them.

Irrigation in the United States differs from irrigation in nearly all other irrigated countries in one important particular. In Italy, France, Egypt, India, and even in

diverts it, the tendency is to favor the union of land and water. But on many streams corporations have built large and costly works in advance of settlement to supply lands they did not own and never expected to own. Under such conditions the natural tendency has been to favor a doctrine which would make the owners of the works the appropriators of the stream and to give them the greatest possible freedom in disposing of the water supply to users when the lands below the canal were brought under cultivation.

Another troublesome problem in many of the Western States has grown out of the conflict between the rights of appropriators of water under State laws and the rights of riparian proprietors, as recognized by State constitutions. In Colorado, Wyoming, Montana, Idaho, Utah, Nevada, and in the Territories of New Mexico and Arizona, riparian rights have been abrogated, but in California, Washington, Oregon, the two Dakotas, and Nebraska the constitution recognizes the common-law doctrine of riparian rights, which requires that streams must flow undiminished in volume. Later on these States have passed laws which permit irrigators to appropriate and divert the entire supply until it is an open question which of these two conflicting policies is to prevail. It will hardly be wise for either the State or General Government to extend any considerable aid, while whatever is done by private enterprise will be attended by so much hazard as to make development comparatively slow and uncertain.

For several years past none of the arid States has had a more rapid growth than Nebraska. Many large canals have been built, and a large acreage of land in the western part of the State brought under cultivation. This was due in part to favoring natural conditions, but more largely to a very excellent law providing for the systematic record of water appropriators' rights, and their legal recognition when the water had been used. All this has been changed by a recent decision of the supreme court, declaring the common-law doctrine of riparian rights to be the law in that State. If this is true, then every diversion of water is illegal. No one knows what is to be the result. Irrigators are fearful and investors in canals greatly alarmed. There seems to be reason for this feeling, as the millers of Nebraska, some 50 in number, at their meeting last week, perfected an organization under which they are to institute lawsuits to enforce the recent decision of the supreme court, and close up the irrigation canals that are depleting the streams.

In Kansas the statute law recognizes the doctrine of riparian rights east of the ninety-seventh meridian, and the doctrine of appropriation west of it. This seems to be a sensible arrangement, although it sounds rather arbitrary to say that west of an imaginary line all the water of a river may be used, while a few feet away to the east of it none may be diverted.

Next in importance to the nature of a water right is the method by which it is established. To Colorado is entitled the credit of passing the first law on this subject. It gives to each claimant of water the right to inaugurate in court a procedure, under which all claimants to the same supply can be compelled to come into court, and have the relative priorities and amounts adjudicated. After this has been done the Colorado law provides that the streams shall be under public control, and the State officer known as a water commissioner shall in times of scarcity divide the water among the holders of these adjudicated rights.

In many of the States and Territories there is no orderly procedure for the settlements of the rights of all irrigators to a stream at one time. In these States whenever the ditches at the head of a stream rob the ditches below, controversies are sure to arise. If the irrigators below are lawless or impulsive, raids to tear out the dams and head gates above are likely to result. But among law-abiding water users the only remedy is an appeal to the courts, which stand as the sole tribunal between injustice and violence. The objection to this court litigation is that it is exceedingly costly and apparently unending. A lawsuit of one ditch owner against another may settle the issues between those two parties, but it can not be made to apply to the ditch owners and irrigators not made a party to the suit. It too often happens, therefore, that litigation, instead of settling controversies, only serves to create new issues, which, in turn, have to be litigated. In one case in California "A" brought suit against "B," and was decreed to have the first right to the water of a stream, and "B" was enjoined from interfering with "A's" use of the river. "B" then brought suit against "C," and was declared to have a better right than "C," and "C" was enjoined from interfering with "B's" enjoyment of the stream. Then there was trouble for "C." He saw there were no superior rights to his, and he made adequate preparation and gathered his witnesses and all the information he could and brought suit against "A," while "A," relying upon the fact that there had been two judgments in his favor already, put up a weak defense, and "C" was decreed to have a superior right to "A," and "A" was enjoined from interfering with "C's" use of the river, and all parties were back at the beginning again. That is not an isolated instance; on the contrary, it is a typical instance of the litigation over water.

It can scarcely be doubted that there should have been provided at the outset some orderly tribunal which would have managed and disposed of the water of streams, as the General Government has surveyed, cared for, and disposed of the public lands. If that had been done, records of claims and appropriations would have been complete and accurate, and the danger which now threatens us of excessive and speculative appropriations would have been averted without injury to anyone, and with less cost in administration than has been necessary to carry on the litigation in the courts. The experience of Wyoming with such a tribunal has fully supported this conclusion. In Wyoming the waters of streams are public property. This property is managed by special tribunal. Every intending user of water must secure from this tribunal a permit. Where all of the water of a stream is appropriated, permits are refused, because additional ditches would not mean the cultivation of more land, while they might mean controversy with other ditches or lessening the rightful water supply of prior appropriators. This law has been in force for 10 years. Under it the rights of over 4,000 appropriators have been established without litigation or controversy, and these rights are recognized as having nearly the same stability as patents to public land.

This is a brief and imperfect outline of the methods by which the streams used in irrigation have been appropriated and the rights to their waters established, but the term "water right" has also another meaning. Many of the appropriations to large ditches and canals carry volumes of water sufficient to irrigate anywhere from 100 to 500 farms. The owners of farms along these canals purchase from the holder of the appropriation what is also called a water right. The limitations of the water right of the canal owner are fixed by law, while the limitations of the water right of the irrigator are fixed by the terms of his contract with the canal owner. As a rule, the two water rights have no resemblance to each other. The right of the canal owner gives him a continuous flow of the volume appropriated, with the right to dispose of it to whomsoever he pleases, and with no restrictions as to the means of diversion or place of use. The water-right contract under which irrigators usually obtain their supply only gives them a right to water during the irrigation season. This right is not to a continuous flow, but is to vary with the irrigators' necessities. Instead of the place of diversion and use being unrestricted, both are defined in the contract. If the commission desires it I will submit a number of blank water-right contracts of the form used by ditch companies in disposing of water for irrigation, as they illustrate the conditions which govern the growing commerce in water.

Q. (By Mr. PHILLIPS.) Are there different contracts in different States?—A. Yes; the irrigation investigation of the Department of Agriculture has about 500 of these contracts altogether.

Q. All different kinds of contracts?—A. They are all contracts of different companies, but a majority of them are essentially alike in their conditions. Out of this collection I will submit to you a half dozen or more. These contracts fix the conditions of the traffic in water, the conditions on which the users receive it, and its value. Decrees give the water to the canals, and the canals sell the water represented by those decrees. Some of the contracts are of a dual nature; they provide a charge for the right to the water itself, and also a charge for the service rendered in the delivery of the water by the company. Some of them are of a character that contemplates the eventual transfer of the works and of the appropriation to the purchasers of these contracts. Now, I will give some details regarding the prices of water rights. I will submit as samples of water-right contracts, 3 from Colorado, 1 from California, and 1 from New Mexico.¹

Q. (By Mr. LITCHMAN.) We would like some description at some point in your statement of the manner of constructing these ditches.—A. Permit me to submit the map in Bulletin 92, showing the canals taking water from the Poudre River, in Colorado. It will be seen by examining this map that each of these ditches receives water from the stream and in this way covers a considerable area of land between the canal and the river or between it and the canal next below. This is made possible by the topography of the country. The map shows a canal system east of the Rocky Mountains. From the eastern base of this range for nearly 500 miles the country has a slope varying from 25 feet to the mile near the foothills to 4 or 5 feet to the mile as it nears the Missouri River. Denver has an elevation of 5,250 feet above sea level. Omaha is nearly 4,000 feet lower. The intervening country is so free from hills or broken and irregular slopes that it would be possible to build a canal to reach from one city to the other and to water the intervening country, if there was water enough to supply it. In a general way the country slopes away from the base of the mountains, and canals can be built to take water from the streams as they flow away from the mountains and distribute by gravity over all of the country suited to irrigation. Bear River, in Utah, for a mile below the head of the Bear River Canal, has a fall of 120 feet. The canal in that distance has a fall of 4 feet. Hence the bed of the canal is 116

¹ The contracts referred to are on file with the commission. Two typical contracts are set out in full at the end of Mr. Mead's testimony as exhibits.

feet above the stream at the end of that distance, a sufficient elevation to permit of the watering of the plateau, embracing nearly 100,000 acres of land. The river shown in the map (the Poudre) has a fall of 25 feet to the mile, the canals shown have each a fall of about 2 feet to the mile, so that for each mile of canal through which the water passes there is a gain of 20 feet or more in elevation above the river. In using the water it is turned from these canals and ditches on the lower side and distributed by gravity over the fields below. The methods of distribution vary with different crops and in different sections of the country. Where crops are cultivated water is run down furrows. Furrow irrigation is now the method generally employed in the irrigation of orchards. Small grain, native and cultivated hay are usually irrigated by flooding, which means that the water is spread over the entire surface.

The map of the canals taking water from the Poudre shows by the different colors the area irrigated by each. The first of the larger ditches to be built has its irrigated area indicated by diagonal lines; the next is on the opposite side of the river. These two are the Greeley Colony canals, and they were built at the lower end of the stream because there were fewer obstacles there. Later the canals farther up the stream were built, and as they took more and more water from the stream they lessened the supply which ran down to the older ditches below.

In all of the West except southern California irrigation ditches and canals are unlined. The soil over which the water passes is expected to retain it in its channel; but there are cases where it fails to do this and the losses from seepage and percolation are excessive. Where canals cross strata of coarse gravel, or where there are gypsum deposits, the losses from this cause are very great. In one instance the measurements of the irrigation investigation of the Agricultural Department showed a loss in a canal of 75 per cent of its entire supply in a distance of less than a mile. The following, taken from the report of these investigations for 1899, shows the extent and character of these losses over a widely distributed area:

"In practice the losses in canals from percolation, leakage of flumes, evaporation, etc., are an important factor in fixing the average duty of water from a river or an extensive canal system. To determine this average duty the volume should be measured at the head gate, and the acres it irrigates is the duty which canal managers have to consider in determining the area their works will irrigate. This duty is much lower than that obtained by measurements made on laterals or at the margins of the fields where used, the influence of the losses between the head gate and the heads of laterals being greater than has usually been supposed. Where canals cross gravel beds or gypsum deposits the results closely resemble trying to carry water in a sieve. The following table gives the number of acre-feet used in the irrigation of an acre of land where the measurements were made at the canal head gates, and include the loss from seepage and evaporation:

Duty of water when losses in main canals are included.

Name of canal.	Acre-feet.
Pecos Canal, New Mexico.....	6.61
Mesa Canal, Arizona.....	3.81
Butler Ditch, Utah.....	6.24
Brown and Sanford Ditch, Utah.....	5.32
Upper Canal, Utah.....	6.30
Amity Canal, Colorado.....	4.92
Rust Lateral, Idaho.....	5.06
Average.....	5.47

"A comparison of the duties in the above table with those obtained when the water was measured where used will show that more than twice as many acre-feet were required where the water was measured at the head gate as where measured at the place of use; or, in other words, the losses in the canals from seepage and evaporation amount to more than one-half the entire supply. This is in accord with many of the measurements made on irrigation canals in India. Among those recorded in Buckley's Irrigation Works in India is one which shows that the irrigation of wheat under the Jamda Canal, in Bombay, required 5.6 acre-feet of water for each acre irrigated where the water was measured at the head of the canal, but where the water was measured at the place of use it required, in two experiments, only 2.1 acre-feet and 1.4 acre-feet to irrigate an acre, the loss in the canal being more than 50 per cent. On the Hathmati Canal, in the same country, the loss from the seepage and evaporation was 50 per cent. These losses in transit are much heavier than is the rule on the older canals of India, and are doubtless more general than they will be in this country when the banks of canals are older and when they are operated with greater regard for economy.

"The report of Mr. Reed (p. 109) shows that 47.7 per cent of the water turned in at the head of the Pecos Canal reached the consumers, while 52.3 per cent was lost through seepage and evaporation. The causes of this loss are explained to be the checking of the velocity in the canal by dams in order to throw water on ground too high to be irrigated without this, certain defects in construction, and the nature of the soil in which the canal is built. The canal has a bank on one side only. This has produced stagnant lakes and pools on the upper side wherever the canal crosses ravines or where the ground on the upper side is so low that the water overflows it when the canal is filled. Mr. Reed's report also shows the variation in rate of seepage due to the character of the soil, three-fourths of the water entering one section of the canal 1 mile long being lost. To his summary of the causes of the great loss of water there may be added the fact that the water used in this canal is taken from the reservoirs. Its temperature is already above that of most mountain streams, which facilitates alike its rapid filtration and evaporation. It is perfectly clear, owing to the fact that all of the sediment carried by the river is deposited in the reservoirs. This canal affords an illustration of a lower duty on a particular farm, measuring the water at its margin, than the average under the main canal, measuring the water near the head gates. Mr. Reed points out the causes for this, and shows that it does not illustrate the necessities of irrigation, but the possibilities of waste under encouraging conditions.

"The water taken into the Mesa Canal during the 4 years that measurements have been made has varied from enough to cover land to a depth of 5.9 feet in 1896 to 3.8 feet in 1899. A measurement was made in 1899 of the water used on a farm where the land had not before been irrigated and where more than the average amount of water was required. Owing to the fact that rotation was practiced on the lateral leading to this farm, it is impossible to determine the exact quantity lost in passing through it, but the water delivered at its head for this farmer would have covered the land to a depth of only 2.8 feet. The difference between the average depth under the main canal and the depth of water used on this farm was just 1 foot, or a difference in quantity of 1 acre foot per acre irrigated. Mr. Code estimates that this difference would have been much larger if the loss in transit through the lateral had been determined. As it is, this shows a loss of over 25 per cent.

"The construction of the Gage Canal is such as to make losses through seepage practically nothing, owing to the canal being cemented. The loss from evaporation is also small, because the canal is deep and narrow and has throughout its length a uniform cross section, with no pools of still water on the upper side. As compared to losses varying from 25 to 75 per cent shown in other canals, the loss of only 6 per cent in this canal has great significance. The water turned into the head would have served to cover the land irrigated to a depth of 2.24 feet, while the mean depth for the water delivered to irrigators' laterals was 2.11 feet, a loss of only 0.13 of an acre-foot per acre irrigated. Canals can only be cemented on earth, as is done in California, in localities where frosts in winter are not severe. There are other remedial measures which can be employed in other sections which will, no doubt, be largely adopted when the extent of the loss from this source is more generally realized. Dumping clay into the canal and causing it to be distributed by agitating the water has been tried with good results on some Nebraska ditches.

"The report of the careful and interesting investigations of Professor Fortier at the Montana Agricultural Experiment Station shows that in the Middle Creek Canal nearly 22 per cent of the total flow was lost in seepage in the first 4 miles, while the probable loss in the entire canal was 35 per cent. The conclusions of Professor Fortier are in accord with those of other observers as to both the evils resulting from this loss and the methods by which it may be reduced.

"The water taken into Logan and Richmond Canal would cover the entire area it irrigates to a depth of 3.59 feet. The water actually used on the Cronquist farm would have covered it to a depth of only 2.6 feet, the difference between the average duty under the canal and the measured duty on one farm under it being nearly 1 acre-foot of water for each acre irrigated, or a difference of about 28 per cent. It is believed that this can be fairly taken as the loss resulting from the seepage and evaporation in carriage.

"The water entering the head gate of the Amity Canal in Colorado would have served to cover all the land irrigated to a depth of 4.92 feet. The water delivered from the Biles lateral would have covered the land under that lateral to a depth of only 1.82 feet. The difference between the average duty under the canal and the special duty under one lateral is 63 per cent. This seems to indicate that more than one-half of the water taken from the river disappears before it reaches the place of use. An examination of the map of the Amity Canal (Pl. XII, p. 100) will show the reason for this excessive loss. The canal is a large, long one and much of the time last season was only partly filled. More than one-half of the time the water flowing through it was spread out in a broad, thin sheet, which reduced its velocity and gave abundant opportunity for the continuous sunshine to raise the temperature. This increase in temperature facilitated both its disappearance in the air and its filtra-

tion through the soil. Mr Berry's report shows that the season of 1899 was unusually windy, making evaporation greater than usual.

"Enough water was taken into canal No. 2 at Wheatland, Wyo., to have covered all the land irrigated to a depth of 2.53 feet, while only enough water was delivered through the J lateral of that canal to cover the two fields on which the water used in irrigation was measured to a depth respectively of 0.7 and 1.55 feet, the apparent loss in the canal being one-half the water entering it. In this case this high rate of loss is what might have been expected. The canal is long. It traverses a steep hill-side slope for 2 miles, in which distance the loss under the lower bank is excessive. In many places the bottom is gravel, through which water escapes freely.

"In order to more carefully study the variations in these losses, arrangements were made early last season by Frank C. Kelsey, city engineer of Salt Lake City, Utah, to measure the seepage loss from the Jordan and Salt Lake Canal from the Jordan River. This canal is 29 miles long, with a bottom width of 20 feet. It originally had a grade of 2 feet per mile, but when measured was in bad condition, with a flow of 30 cubic feet per second at the head. The loss in 29 miles was 45 per cent.

"The losses from seepage in new canals are excessive. For the past 6 months 500 inches of water have been flowing in at the head of a 10-mile lateral built at Billings, Mont., in 1899, but as yet not a drop has reached the lower end. On a canal built in Salt River Valley, Wyoming, there was a loss in 1896 of 10 cubic feet per second in a distance of 100 feet, which continued for several weeks with no apparent prospect of the loss diminishing. This was about one-third of the canal's flow. The canal was then abandoned. The canals which take water from the North Platte River are all subject to excessive losses when first built, because of the sandy soil through which they must pass. In high water, however, this river is heavily charged with a white clay, due to the erosion of its banks. When this is deposited on the sides and bottom of ditches it forms a coating only less impervious than cement, and after a few weeks' operation during high water seepage losses always show great diminution.

"Mr. Code reports that the water of Salt River, Arizona, contains a cementing material which in time renders its banks almost water-tight so long as they remain undisturbed. This has not heretofore been possible on the Mesa Canal, because it has been undergoing constant repairs and improvements."

Q. (By Mr. A. L. HARRIS.) Does that seepage come to the surface below on ground that may be used for crops?—A. Yes. The loss of water by seepage is not only a serious problem with canal owners, but frequently becomes the cause of grave injury to the farming lands below. The water which escapes through the bottom of the canal follows the path of least resistance, and this sometimes takes it into the channel of the river or causes the appearance of springs in ravines which before were dry, or it may lead it to reappear in the fields below, often converting them into marshes and swamps. Instances are not infrequent where thousands of acres of land have for a time been rendered valueless from this cause. The saturation of the subsoil and the gradual rise of the water level nearly always attend irrigation. The first wells dug in the San Joaquin Valley in California were 60 to 70 feet deep. Since then the water has risen in many of these wells to within 4 or 5 feet of the surface.

Where seepage is not excessive it furnishes an inexpensive method of irrigation; where it is it may cause a double injury. It prevents the growth of crops because of too much water and renders the soil unproductive through the accumulation of alkali which it causes. Water passing from canals through the subsoil dissolves the soluble salts which all Western lands contain in greater or less measure, and the subsequent evaporation of this alkali-impregnated water so increases the percentage of alkali in the lower lands as to prevent the growth of crops. This evil is not, however, destined to be a permanent one, and, like the excessive moisture, can be remedied by drainage.

Q. (By Mr. FARQUHAR.) In Colorado and Wyoming is the general characteristic of your streams seepage or are they on solid ground and solid bottom?—A. In both of those two States, as a rule, the losses are not excessive in canals. There are exceptions, of course, but in both eastern Colorado and eastern Wyoming the soil is of a character to hold water pretty well, although in the older districts in Colorado there is a considerable area of land in the low bottoms along the streams that has become supersaturated both with water and alkali. This is not altogether due to losses from ditches. Probably the greater part comes from putting too much water on the fields. It is rather a drainage from the area irrigated.

Q. The characteristics of the Arkansas from its source north of Leadville to its reaching the Mississippi has usually been characterized as a river of seepage. Anywhere along the banks by digging a few feet down you reach a well. Is it not a fact that that river itself, in its whole course, a good part of it, is really below the surface?—A. All of the rivers that flow out on the plains sink into the sand of their bed. I did not take your question as applying to the rivers, but rather to the ditches.

Q. The point was this, that many of the foothill streams east of the mountains—

would not the seepage be generally supposed to amount to a great deal or do much harm, but when you come to a river like the Arkansas, with a large body of water passing over plains with very little fall, the water itself is drawn out and distributed a good deal in the banks and surrounding low ground?—A. That is true of all the streams flowing from the Rocky Mountains out on the plains. It is a characteristic of the Rio Grande, of the Arkansas, the South Platte, and the North Platte. The North Platte has been measured 100 miles west of the Wyoming border and found to carry 400 cubic feet per second, while a few miles east of the Nebraska and Wyoming border it was entirely dry. The entire 400 cubic feet per second had sunk into the sand.

Q. Have you anything to say about the filling up of these canals with silt and other substances that are quite expensive in canalizing?—A. The canals taken out of the lower portion of those streams running out on the plains are more or less troubled by the moving sands in the bottom of the stream that tend to fill them up; and all canals that are taken out of rivers that carry considerable quantities of mud in high waters have to be cleaned out every year. The deposits of mud can be handled as a rule without any excessive expense, but in streams like the North and South Platte and the lower part of the Arkansas the sand question is quite troublesome; and on the lower part of the Rio Grande the question of mud becomes an important factor. The red rise in the Rio Grande occurs when there are torrential rains along certain portions of the river where there is a red soil, and enormous volumes of mud are washed down in the river; samples of the stream taken at that time have shown as high as 17 per cent of solid matter. All the ditches have to be closed during the time of the red rise because they would immediately fill up.

At Las Cruces, N. Mex., is one of the oldest ditches, if not the oldest ditch, in the United States. That ditch was formerly a channel cut below the surface of the ground. Now it is raised 4 or 5 feet above the surface of the ground. As the mud which was carried into the ditch was cleaned out each year it was thrown on the banks; and when the banks became so high as to be troublesome they simply let the mud fill up a foot or so in the bottom. In time the ditch got above the stream, and they had to move the head farther upstream. In the period of operation of that canal the head has been moved upstream 3 or 4 miles from the original location. Not only that, but since the time the irrigation began the level of the soil on which the water and mud has been spread has been raised from a few inches to 2 feet—higher, of course, nearer the ditch, and becoming thinner and thinner as you recede from it. The Rio Grande at El Paso has filled up its channel from this cause until the river itself is higher than some of the streets of either El Paso or Juarez.

Q. (By Mr. A. L. HARRIS.) Has there been any conflict between irrigators on account of priority of rights?—A. In recent years litigation and controversy over the division of water has been alike a conspicuous and injurious feature of our irrigated agriculture. It has been due to two causes. The first is the lack of any plan for the establishment of rights to a stream, or public protection of those rights. When the men along the lower end of a stream see its waters shrink and their crops burning up for the lack of water they realize that it is due, not to the absence of the snow in the mountains, but to the fact that later ditches above them are robbing them of their just share. Before the farmers will permit the loss of their year's labor from this cause they will resort to almost any expedient to obtain what they believe belongs to them, and so they organize raids to tear out the dams above or go into court to obtain legal redress. The remedy for this is to have water divided under public control. In the 4 States where this has been done irrigators are far more contented and controversies far less numerous and injurious than where no such control has been exercised. The second reason for controversies has grown out of the mistakes made in the adjudication of rights to streams. In the study of the water-right problems of California recently completed there were claims for 28,630,932 inches from a stream which can not be relied upon to furnish 10,000 inches. On another stream which carries in the irrigation season less than 200 cubic feet of water per second there were claims amounting in the aggregate to 147,600 cubic feet per second. On another river whose greatest measured flow is less than 60,000 cubic feet per second there are claims amounting in the aggregate to 461,794 cubic feet per second in addition to six separate claims of the entire supply.

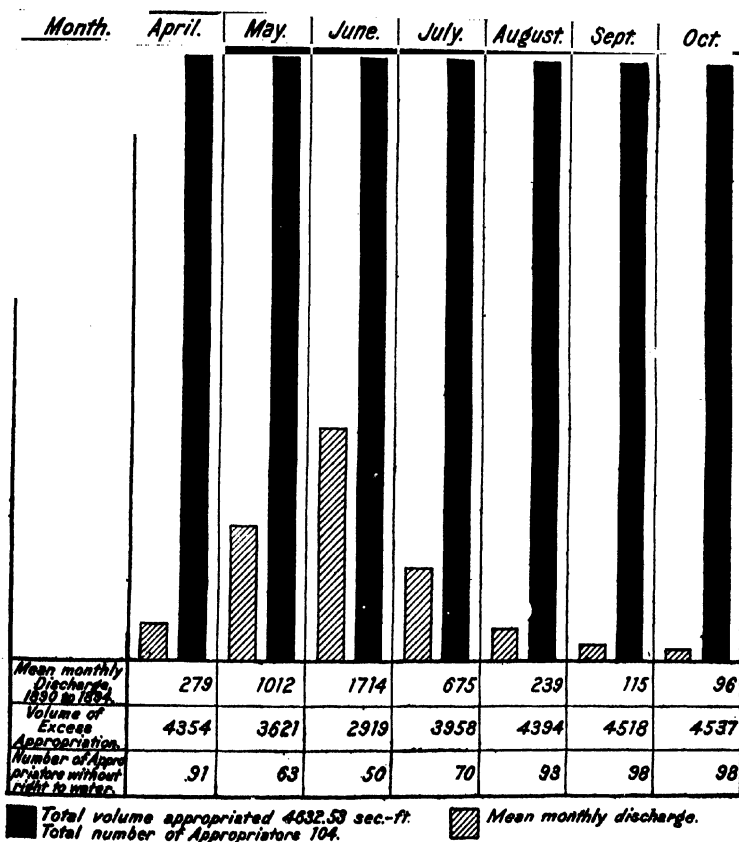
The situation in California is the situation in nearly every other arid State or Territory. Before the value of water was appreciated titles to its use or control in amounts far beyond the present or any possible future need of appropriators were repeatedly established, and the question whether these excess rights are now to be corrected or to be recognized as vested rights is one of the grave issues confronting irrigators, lawmakers, and courts in every Western State.

In 1884 and 1885, while acting as assistant State engineer of Colorado, I measured the ditches of northern Colorado on the streams which had been previously adjudicated. My report of these measurements called attention to the discrepancy between the decreed appropriations and the actual carrying capacity of these ditches and canals in the following terms:

"So great was this in some instances that the result of the gaugings and the decreed capacity seemed to have no connection with each other. Ditches were met with having decreed capacities of two, three, and even five times the volume they were capable of carrying, ever have carried, or will probably ever need. Other ditches in the same district have decrees which fairly represent their actual needs. It needs no argument to show the worse than uselessness of these decrees as a guide to the water commissioner in the performance of his duties."

When these decrees were rendered the majority of appropriators believed that rights for irrigation were limited to the lands already irrigated, and that, so long as used there, the actual volume stated in the decree cut very little figure. Hence there was little solicitude on the part of late appropriators as to any danger arising out of excessive grants. Under the terms of these decrees each appropriator is entitled to a definite volume of water, described in cubic feet per second, and to a continuous flow of this volume throughout the year.

Recent decisions have recognized the right of the holders of these decreed appropriations to sell the entire volume granted. As a result, the owners of earlier pri-



Relation between the mean monthly discharge of the Poudre River and the appropriations therefrom.

orties are enlarging their ditches and extending them to other lands, or, where this is not possible, are attempting to dispose of the surplus to other users. Every attempt to do this, however, is contested. The truth is that irrigators have, in practice, been building up a system of one theory of water rights while the courts have rendered a number of decisions based on another theory. We have now reached a point where one of the two must give way. If the doctrine laid down in these decisions is carried to its logical conclusion it will transfer the ownership of a majority of the

streams of northern Colorado to a few early appropriators, and compel a large proportion of the actual users of water to purchase from such appropriators the water they have heretofore had for nothing. That this is not an extreme statement is shown by the accompanying diagram, which exhibits the relation between the mean monthly discharge and the decreed appropriations of the Poudre River.

The last examination of the records showed there were 104 appropriators from this river, the aggregate of these rights being 4,632 second-feet, each right being for a continuous discharge of the volume decreed; yet in August of 1894 the stream carried only 162 cubic feet per second; in August, 1893, 141 second-feet, and the stream has frequently fallen during the irrigation season to below 100 second feet. If the holders of these rights had lived up to their opportunities during the last half of their irrigation season, fully one-half of the actual users of water would have had to buy from the holders of these excess rights every gallon of water used after the middle of August. That they have not been compelled to do this is due to the fact that irrigation practice in that State is superior to irrigation law.

The appreciation of the dangers which this situation creates is not confined to farmers alone. In a different brief from the one before referred to it is thus forcibly stated by Judge Elliott:

"Excess priority decrees are a crying evil in this State. From every quarter the demand for their correction is strong and loud. Such crying demand can not be silenced by declaring that the meaning and effect of such decrees can never be inquired into, construed, or corrected after 4 years.

"In many cases such decrees are so uncertain, so ambiguous, so inequitable, so unjust, and their continuance is such a hardship that litigated cases will be continually pressed upon the attention of the courts until such controversies are heard and settled, and settled right. Litigation in a free country can never end while wrongs are unrighted."

The settlement of this issue is not of local importance. It concerns the State and nation as much as the individual irrigator. The individual irrigator needs to know who owns the water he uses, if State or national aid is to be extended. It needs to be known who owns the water which public funds render available.

Before either public or private development proceeds much farther there is need of some more general agreement regarding the nature of a water right than now prevails, as well as some more effective means of disposing of streams than has yet been provided. For several years Canada has been dealing with this problem and has finally reached a definite result. The fact that their conditions are similar to ours makes the general principles which underlie the Canadian irrigation code worthy of our study. These principles are given below:

"(1) That the water in all streams, lakes, ponds, springs, or other sources is the property of the Crown.

"(2) That this water may be obtained by companies or individuals for certain described uses upon compliance with the provisions of the law.

"(3) That the uses for which water may be so acquired are 'domestic,' 'irrigation,' and 'other' purposes, domestic purposes being limited to household and sanitary purposes, the watering of stock, and operation of railways and factories by steam, but not the sale or barter of water for such purposes.

"(4) That the company or individual acquiring water for irrigation or other purposes shall be given a clear and indisputable title to such water.

"(5) That holders of water rights shall have the protection and assistance of permanent Government officials in the exercise of such rights.

"(6) That disputes or complaints regarding the diversion or use of water shall be referred to and settled by the officials of the Government department charged with the administration of the act, and that decisions so given shall be final and without appeal."

It is interesting to compare these principles of the Canadian law with those underlying the Wyoming irrigation code, Wyoming having gone farther than any of the other arid Commonwealths in direction of public control of streams. These follow:

"First. That water is not subject to private ownership, but is the property of the State.

"Second. That the board of control is the trustee for the administering of a great public trust in the interests of the people of the State.

"Third. That all rights to divert water from the streams must be based on beneficial use, and that the right terminates when the use ceases.

"Fourth. That the volume diverted shall in all cases be limited to the least amount actually necessary for the accomplishment of the purposes of the diversion.

"Fifth. That under no circumstances shall the water diverted for irrigation exceed 1 cubic foot per second for each 70 acres of land actually irrigated.

¹ Bul. 58, Office of Experiment Stations, U. S. Department of Agriculture, pp. 30-32.

² Bul. 95, Office of Experiment Stations, U. S. Department of Agriculture, p. 12.

"Sixth. That the right to the use of the public waters attaches only to the use for which the right was originally obtained.

"Seventh. That the right of diversion for irrigation attaches to the land reclaimed and none other; that the transfer of the land carries with it the right, and that apart from the land the right can not be transferred.

"Eighth. That when a ditch waters land not the property of the ditch owner the right attaches to the land on which the water is used and not to the ditch. The owner of the lands irrigated makes the proof of appropriation and the certificate is issued to him. No certificate of appropriation can be issued to a ditch owner for the watering of lands not his own. The ditch owner is a common carrier and is subject to regulation as such.

"Ninth. That when proper diligence has been exercised in the construction of works and in applying the water to the purpose for which it is diverted the priority is fixed by the date of beginning the survey. When diligence is lacking, the priority dates from the time of use."

Q. (By Mr. FARQUHAR.) Does the State control the reservoirs?—A. Except for 2 or 3 reservoirs in Colorado, all the reservoirs there are in the West are private property, and their owners exercise the same control over them that they do over ditches. Irrigation from reservoirs has not yet, however, assumed much importance as compared to irrigation from canals which take water directly from the streams. So long as there is water running in a river which can be diverted there is no need of reservoirs, since storage is only an added expense to the direct diversion from streams. On every river, therefore, reservoirs receive little attention until the natural flow has been utilized; that is, on rivers having a perennial flow. On the Poudre River in Colorado, however, the natural flow has been exhausted and an extensive system of private reservoirs have been built to supplement it.

Q. (By Mr. KENNEDY.) How far is Greeley from the head of the stream that feeds their canal?—A. About 125 miles from the head; about 40 miles below the head of the upper ditch.

Q. Are there lands adjacent to that river all the way to the head, as well as the Greeley Colony lands?—A. Only to where the stream leaves the mountains, about 40 miles above.

Q. Plenty of water for all?—A. No; there is plenty of water early in the season, but they have had to resort to storage to secure enough for the later part of the season.

Q. (By Mr. A. L. HARRIS.) Is there a possibility for storage so as to economize the water at dry seasons?—A. Yes.

Q. What is the effect, if any, of storage on prior rights?—A. That is a troublesome question to answer.

We will take up the question of storage in connection with this matter. Bulletin 92 deals with the subject of storage on the Poudre River. It is the stream where storage has been carried further, probably, than any other in the whole Rocky Mountain drainage area. The diagram of the run-off of that river in the different months of the irrigation period for a large number of years shows that distribution of water during the season is far from uniform. The highest water occurs in May, and from the middle of May to the middle of June nearly half of the entire year's discharge runs away. The needs of irrigators in this valley are not in accord with this variation in discharge. They are now growing crops which require more water in July, August, and September than the stream will supply, and this has made it necessary for them to build reservoirs to hold back the surplus flow of the early summer months until it is needed. They have done this by utilizing natural depressions which lie outside of the channel of the stream, which are filled by the higher canals and turned into the lower ones. The development of this reservoir system has given rise to a very interesting system of exchanges between the canals, described in this bulletin, and hence need not be referred to here. Where reservoirs are located outside of the channel of streams there is no question of public policy involved in their construction and operation as private works, and as irrigation extends there will be more and more private capital invested in such reservoirs, because these investments are proving exceedingly profitable. But where reservoirs are located in the channel of running streams, and especially in the mountains on the headwaters of these streams, there is a question of public policy as to whether or not they should be built as public works, even if private capital is willing to undertake their construction. The water from reservoirs so located has to be turned into the natural channel of the stream and carried down with the natural flow to the valleys where it is to be used. If there is no public control of streams, irrigators will not discriminate between the natural flow and the stored supply. They will raise their head gates and take whatever comes in. Unless there is some means for the public regulation of head gates, those having no right to the stored supply will often times have a better opportunity for

¹ Bul. 96, Office of Experiment Stations, U. S. Department of Agriculture, pp. 49 and 50.

securing it than its legitimate owners. If public regulation is attempted, certain perplexing questions are sure to arise. If there are no restrictions on the price that the owner of the reservoir charges for his water, those injured by public control will be certain to urge that the taxpayer's money is being expended for the benefit of an oppressive monopoly. If the law which protects the reservoir owner also regulates the charge which he may make for water, there will still be controversies as to whether the rate is reasonable. If, however, these reservoirs at the heads of streams are built and operated as public works, and the water they impound used to make more secure the supply of the appropriators of the natural flow, just as bridges are built to facilitate the safe and comfortable travel of people of different communities, all these troublesome questions will be avoided. There can be no question, however, that the construction of reservoirs on the heads of streams makes necessary one of two things, either public ownership of the supply or public protection in the delivery of water stored in private reservoirs. Last year I had an interesting experience in observing the emptying of a reservoir built as a private enterprise on one of the tributaries of the Weaver River in Utah. The owners of this reservoir irrigate their lands from a ditch which diverts the stream many miles below. Between the outlet of their reservoir and the head gate of their canal were 11 other ditches all willing to share in the stored supply. There is no public control of streams in Utah, and the manager of the reservoir was greatly disturbed to know how he was to get the stored water past the head gates on the 11 ditches and down to the head of his own canal. In reply to his inquiry of me as to how I would accomplish it, I asked him how he had gone about it the year before. At first he was reluctant to tell, but finally said that he turned down enough water to wash out all the intervening dams, thus leaving a clear passageway. Before the dams could be repaired the reservoir had been emptied. He realized that this year the same expedient could not be employed. Fortunately, a temporary compromise was effected, which answered for the season, but the same issue must be met next year, and there will be no enduring peace or stability until the whole matter is regulated by law.

There is no question but that the subject of reservoirs will in the next few years assume a much greater importance than it has in the past, because on many streams it is the only means by which the area now irrigated can be extended. We can not determine too soon, therefore, whether we are to continue to permit their construction as private works or to build those on the head of streams as public works. I believe reservoirs located away from the channel of streams can be safely left to private enterprise. I believe those built to supplement the natural flow of streams and to meet the needs of a number of ditches or canals should be public works. Whether they should be State or national work depends on whether or not the present policy of having all rights to water regulated by State laws is to be continued. If it is, these reservoirs should be State work and owned and operated as a part of the State system.

Q. Should that matter be determined at an early date?—A. It ought to be, in order that both State and national laws shall be in accord with the policy adopted. Any uncertainty regarding future legislation is also likely to interfere with the building of ditches and the reclamation of new land by individuals or corporations. The success of irrigation depends so largely on the wisdom or weakness of the water laws in force, that if any changes are to be made the sooner they are made the better.

Q. Is there any reason why the State could not take hold of the whole subject of irrigation within the State and thereby protect the private landowners?—A. There is not. On the contrary, the fact that the subject is of paramount importance in each one of the arid States, that the people who have made the beginning understand local conditions and necessities, makes it possible for the States to bring to the solution of the problems of irrigation a higher intelligence and more direct interest than can be secured in any other way. That they have not succeeded in the past has been due in part to a lack of appreciation of the necessity for legislation and to a disagreement regarding the principles which should govern the ownership of water. The States are entirely capable, in my judgment, of regulating and protecting all interests connected with this subject; but they are not capable, under present conditions, of securing the full utilization of their resources. As I have before stated, on some of the larger rivers it will cost more to irrigate land than private capital can afford to expend. The building of reservoirs as public works to provide for the larger utilization of rivers does not appeal to private investors. In both cases, however, there is an argument in favor of the expenditure of public funds which does not appeal to the private investor. The public reaps benefits from the construction of irrigation works which private capital can not share. It gives to land now worthless a high value, and largely increases the taxable resources of the States and the productive wealth of the whole country. If the arid States were in a position to build canals and reservoirs, there are many instances where it would be wise public policy for them to do so; but, unfortunately, they lack the resources to undertake this. They are young and sparsely populated, the expenses

of maintaining local government are heavy, and all of this has to be paid for by taxes levied on only a small fraction of the land within the borders of each of these States. The table which follows shows how large a percentage of the area of each of these States is still public land. It contributes nothing in the way of taxes to the local government and can not be used as a basis of credit to borrow money for its improvement.

Table showing total area of each of the arid and semiarid States, the area of public land still remaining undisposed of, and the area set apart for Indian reservations.

State or Territory.	Total area.	Undisposed of and unreserved.	Indian reservations (estimated).
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Arizona.....	72,876,800	50,286,986	15,150,757
California.....	101,269,120	42,467,612	406,396
Colorado.....	66,540,160	39,650,247	None.
Idaho.....	58,049,920	43,286,694	953,655
Kansas.....	52,631,040	1,196,900	28,279
Montana.....	94,119,040	67,963,057	9,500,700
Nebraska.....	49,619,840	9,798,688	74,592
Nevada.....	70,834,560	61,277,506	954,135
New Mexico.....	78,519,680	56,541,170	1,667,485
North Dakota.....	45,362,560	18,725,239	3,701,724
Oregon.....	61,976,320	34,377,907	1,300,225
South Dakota.....	49,651,200	11,930,809	8,991,791
Utah.....	54,353,920	42,967,151	2,039,040
Washington.....	45,167,360	11,125,843	2,333,674
Wyoming.....	62,641,920	48,358,169	1,810,000
Total.....	959,213,440	528,958,630	48,912,358

It has been suggested, and a number of bills have been introduced in Congress embodying the idea, that the States be given the proceeds of the sales of public lands within their borders as a fund with which to construct important public irrigation work. The following table shows how much the States would have realized from this during the year 1900:

Table showing receipts from the sale of public land in the arid States and Territories for 1900, less cost of local land offices.

State or Territory.	Amount.	State or Territory.	Amount.
Arizona.....	\$32,000	North Dakota.....	\$314,000
California.....	120,000	Oregon.....	284,000
Colorado.....	172,000	South Dakota.....	150,000
Idaho.....	126,000	Utah.....	67,000
Montana.....	377,000	Washington.....	182,000
Nebraska.....	72,000	Wyoming.....	166,000
Nevada.....	7,000		
New Mexico.....	38,000	Total.....	2,107,000

These revenues represent sales of land. They can be largely increased if some system is devised for collecting a revenue, by rentals or otherwise, from the public grazing lands. It must be borne in mind that only a small fraction, probably not more than 10 per cent, of all the lands of the arid region can be irrigated, while of the arid land still remaining public the irrigable percentage is much smaller, certainly not over 5 per cent and probably not over 2 per cent. The reason for this is that lands easily irrigated have passed into private hands. The public lands along many rivers require more water than the streams contain. Of the remainder of the public lands more than 400,000,000 acres are grazing lands, valuable for pasturage purposes alone. Sooner or later it will be necessary for the Government to exercise some sort of management or control over these lands in order to prevent neighborhood controversies and preserve the native grasses from being destroyed from overstocking the range. If in connection with this a leasing system could be devised which would unite the grazing and irrigable lands in such a way that each irrigator could have a right to lease a small area of the contiguous pasture land a large income from rentals would be secured and both the irrigable and grazing interests put on a more secure footing than now. In order to show the possibilities of these rentals the fol-

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lowing table has been prepared to show the income some of the arid States receive from the small areas they lease:

Summary showing results of leasing State and Territorial lands in some of the arid States and Territories.

State or Territory.	Total area of State or Territorial lands undisposed of.	Acres under lease at close of last fiscal year or biennium.	Total rents received.	Average rental per acre.
Colorado	3,689,938	1,251,770	\$108,121	\$0.082
Idaho		32,271.98	23,060	.614
Montana		985,912	112,467	.112
Nebraska	2,483,372	1,878,143	(2)	
Utah		106,631	6,300	.059
Wyoming		1,969,945	80,841	.011

a Total receipts for biennium ending Nov. 30, 1900, for interest, rentals, bonus, etc., were \$782,975.65.

A few of the States have received aid in the way of land grants. Colorado was given 500,000 acres of land to provide a fund for making public improvements. Some of this money has been spent on irrigation works.

Q. What is the name of that grant?—A. Public improvement fund. Reservoirs and ditches are not the only public improvements for which this fund could be expended. Roads and bridges belong to the list, and the greater part of the fund has been expended in their construction. Utah was given 500,000 acres of land to provide a reservoir fund, but that was a recent donation, and I do not think that any of the lands have been sold. There are other means, however, for promoting the growth of irrigation besides the appropriation of money. The present land laws were framed for the humid region. They do not meet the requirements of the arid region. The benefits which can come from their modification have been illustrated in the passage of what is popularly known as the Carey Act, which gave to each State the power to control 1,000,000 acres of land during its reclamation. It has resulted in the irrigation in Wyoming of about 100,000 acres of land, which would never have been reclaimed under the public-land act. The projects inaugurated under this act in Idaho embrace in the aggregate about 400,000 acres. In both of these States the conditions of irrigators are rendered superior to the average result where land is reclaimed under the homestead or desert-land acts. To acquire land under this act in either of these States there must be actual settlement and cultivation. No one can acquire more than 160 acres, but attached to that 160 acres is a water right and a share in the canal which supplies the water under it.

Q. Let me ask this question: If a stream is interstate is there danger of conflict of authority between the States as to the rights of water?—A. Yes; such conflicts have already arisen and they are likely to arise in the future, although the importance of this question is not nearly so great as securing a proper division of water between users inside of a State. The lack of any law to determine how the waters of an interstate stream shall be divided is only one instance of a number of the uncertainties which now exist regarding the limits of State and Federal jurisdiction over the control of rivers. There is in addition the conflicting rights of irrigation and navigation, which in California apply to rivers wholly within the State's borders. Here the Government looks after the rights of navigation and the State after the interests of the irrigator. The relative rights of navigation and irrigation have been raised in litigation over the waters of the Rio Grande, and the decision of the United States Supreme Court indicated so strong a tendency toward maintaining the interests of navigation as to give rise to considerable apprehension in many parts of the West. The conditions along the Missouri serve to show why this is true. This river drains a large part of the country east of the Rocky Mountains, and, with its tributaries, is the main dependence of Montana, the Dakotas, Wyoming, Colorado, Nebraska, and Kansas for the water used in irrigation. If it should become necessary to close the head gates to prevent steamboats from running aground it would put an end to all hope of any considerable increase in the acreage now cultivated. I believe, however, that this is a theoretical rather than a practical question, since, owing to the fact that the tendency of irrigation is to equalize the discharge of streams, reducing the floods and raising the low-water discharge, its extension on the headwaters of the Missouri will be a help to steamboats instead of an injury. It has been found that ditches along the lower end of a stream which formerly were unable to secure any water in July now have an ample supply the season through, because of the increased flow from seepage and percolating waters.

Q. I believe you have not said anything yet in regard to the cost of irrigation and its value, have you? I do not want to anticipate.—A. No. The first ditches built always are the cheapest. Men go along streams and find a place where they can take out little ditches in the favorable bends, and such ditches cost but little more than later laterals from main canals.

Q. (By Mr. LITCHMAN.) Have you gone over the manner of making the ditch?—A. Yes. So that from a great many of the earlier ditches water was taken out and spread over the lands for anywhere from \$2 to \$5 an acre. A great deal of land was irrigated and ditches were built for prices not to exceed that. When you come to building large ditches you have the expense for the lateral and also the expense for the main canal, and there the expense runs all the way from \$5 to \$15 an acre. We have about reached the point where the cost is above that, because we are now dealing with the large rivers that require costly head gates and where the fall is less than where the first small ditches were built. While the streams that were first used had a fall to the mile ranging from 5 to 50 feet, we now have to deal with such streams as the Missouri, which has a fall of from 2 to 10 feet to the mile, and the Big Horn, with a fall during a large part of its course of about 4 feet to the mile. There you have to build a much larger canal to get onto the table-land bordering the river, or you have to build a costly dam in the river to raise the water up at the outlet, and the larger projects which remain to be built will require a much larger outlay. The estimates on a good many of these canals range anywhere from \$7 to \$20 an acre for water, and that is a higher price than can be paid, because there has to be added to the cost of the water the cost of the settler's equipment, including the expense of his house, his tools, his stock, and of putting his land into condition for cultivation. The surface of the land has to be smoothed off so that the water can be made to flow over it, and in many cases where there is sagebrush on the land it has to be removed; so that the expense of putting the land in condition for distribution of water is frequently almost as much as the land is worth. And in many places where there is an abundance of land it is not being developed, because it would cost as much to develop it as it would to buy an improved farm in the older States in the Mississippi Valley. There is no inducement for immigration under such conditions.

Now, the value of irrigated land is governed by nearness to local markets, by the climate, which governs the kinds of products grown, and by the distance and cost of railway transportation to the great markets of the world. In southern California and around Phoenix, Ariz., where you can raise citrons fruits and other high-priced products, irrigated land reaches a value as great as is found anywhere in this country, or perhaps in the world. There lands having no improvements except the orange orchards planted on them have sold as high as \$1,800 an acre, perhaps higher. I have seen lands that sold for that price in southern California, and water has a corresponding value. Water rentals reach to figures that would be impossible elsewhere in the irrigated sections. I know of instances where water rents for \$45 an inch a year, and where rights to it reach as high as \$1,000 an inch. Now, when you come to the northern part of the arid region, the portion that competes with the agricultural districts east of the Rocky Mountains, there you get into districts having cheaper water supplies and cheaper lands.

Throughout its greater part the arid region will always be largely devoted to the raising of live stock and to gardens to supply the mines and the manufacturing and commercial centers of the region. After you have satisfied your local market the only demand for your produce is for furnishing the winter's food supply for live stock, and aside from these two outlets there is no basis for any large development. The live-stock industry is largely based on the use as a grazing ground of the remaining public lands and the private lands that have passed out of the hands of the Government or the railroads. Formerly it was the practice to turn cattle and sheep loose on these grazing lands and let them go from youth to old age without ever having any care or shelter during either winter or summer. They earn their subsistence off the open range. But that is now giving way to the practice of feeding in winter. This is not voluntary; it has been forced. The overpasturing of the public and private grazing lands has made it impossible to depend on them for the winter's food supply, and you have to provide for it from other sources. Therefore you have to depend on the irrigated lands. Those lands, to be available, have to be distributed throughout the range country, because when the storms come in the winter you can not supply stock 50 or 100 miles from a railroad, even if you had an unlimited supply of feed at the railroad. It is impossible to transport it. You must store it where it is needed, and the needs of the live-stock business have been one of the great incentives to irrigation, and furnish one of the best markets for grown crops, principally native hay and alfalfa. Those are the two leading general products of the grazing region.

Q. (By Mr. A. L. HARRIS.) Would it be possible to raise wheat and corn at a profit with the high price for water rights?—A. I do not think corn can ever become a general crop under irrigation. It is grown in restricted areas as a part of the system of rotation, but there is a considerable portion of the arid land where the

nights are too cold for it. In fact, it is a characteristic of the arid region that the nights are too cold to make it a corn-growing region. Besides, alfalfa is a better stock food, and you could not grow corn at a profit if you had to ship it out. The same thing is true of wheat. Unless there shall be a market which can be reached by water, and without excessive railroad charges, there will never be any large development of the wheat-growing industry in the irrigated regions. You can not grow it and ship it out. The great bulk of the wheat grown now is consumed at home, and in a good many of the arid States enough is not raised to supply the home demand—not nearly enough. Montana, Wyoming, and Idaho are all importers of flour. They are also considerable importers of oats. They have not reached the point where they supply the home demand, and it is true of nearly all those States that the development of mining the precious and useful metals and the resulting growth of the home demand for the local food supply is now going on faster than the extension of irrigation. Furthermore, when we have done all we can there will not be 10 per cent of the territory west of the one hundredth meridian and east of the rainy districts on the Pacific coast that can ever be brought under cultivation. Either there is not the water or it is not available. We can never make use of but a small fraction of the Columbia, it is certain we can never utilize all of the Colorado, and it is doubtful if we can ever completely use the Missouri.

Q. (By Mr. LITCHMAN.) Have you gone into the question of artesian wells?—A. Yes; I know something about artesian wells.

Q. Would it be true if the land were irrigated, as you propose, that a given quantity of stock could be raised on a less area of land?—A. Oh, yes; I think so.

Q. And would not the limited amount of land as suggested by you be compensated by that fact?—A. Oh, yes; only you would have a great many more people. As it is now a great many men interested in the stock business will occupy 50,000 or 100,000 acres of land with flocks and herds. This plan I have suggested would make smaller flocks and herds and larger farms.

Q. (By Mr. A. L. HARRIS.) Would the lease system be better than the absolute title?—A. The only objection to the disposal of the public land by absolute title would be that there may be some of the land so disposed of for grazing purposes which is irrigable. I should say that the better plan for the present as a tentative measure would be the lease system; perhaps not ultimately but simply as an alternative or a temporary measure.

Q. How long would you have the lease?—A. Not for more than 5 years, and I would have every tract of land leased remain subject to entry under the public land laws and have the man who leased it take it with that condition. I would not restrict the operation of acquiring title under the present land laws at all, but would leave those open even on leased lands. It is my judgment that men would lease land and take those conditions; that is, men who leased land would know whether or not a homestead or a desert land filing can be made on it, and if they select land that is irrigable and subject to cultivation they take their chances.

Q. (By Mr. FARQUHAR.) These remarks that you make are predicated on the fact that you do not interfere with land already disposed of under the public land laws?—A. Entirely.

Q. You can not dispose of them or subdivide them?—A. No. You see there are between 300,000,000 and 400,000,000 acres of public grazing lands. My plan relates entirely to that land.

Q. (By Mr. A. L. HARRIS.) The earlier, then, some steps are taken in the direction of a general plan the better?—A. I think so.

Q. There has been a survey of a portion of this arid country by the Federal Government, has there not?—A. Nearly all the country is now subdivided by the general surveys. I think that a leasing system could be inaugurated, so far as that is concerned, without any additional survey. If you leave the lands subject to entry just as they are now there is no need of discriminating as to whether the lands are agricultural or pasture; they are open to entry just the same after they are leased as before they are leased. If you are going to make the lease absolute, so that when a man leased land for 5 years you could not file on it, then you would want to have an economic survey, and know absolutely what were irrigable and what were pasture lands; but if you do not make it absolute, and you make it simply conditional and leave it to the man who leases, then if he does not want to be interfered with, to go outside of the irrigable territory himself, then it would not make any difference.

Q. What has been the objection heretofore to the Federal Government adopting some plan of irrigation?—A. I do not think there has been any objection, except that in the East there has been a feeling that any large development of agricultural lands there would interfere with the prosperity of farmers in the East; that has been one objection outside of the irrigated territory. And there has been a question as to whether or not this was a matter which the General Government could take in hand without transcending the limits of the Constitution. That relates more, however, to appropriations of money for work. There can be considerable legislation without an appropriation of money that will very materially promote successful

development and which can properly precede appropriations of money or the determination of how money is to be appropriated. In the West there has been, and will be until this matter is settled, considerable discussion about the best means of extending Government aid, growing out of the sensitiveness of people who have rights to any disturbance of those rights. Communities have built up their systems under local laws and customs and have become wedded to them and they do not want them interfered with. On the other hand, there is in the West another element in favor of turning this whole matter over to the National Government and having the National Government have a complete system of laws and administration; but to do that will necessitate a revolution of existing systems.

Q. (By Mr. FARQUHAR.) It seems to be a question, does it not, of artificial development through irrigation under the expenditure of the National Government and the natural development of the settlement of the country through the present land laws of the country?—A. No, not that.

Q. Well, how is it?—A. It is a question between stimulated development under national aid or natural development, not under present land laws, but under laws framed to meet the conditions of the Western region.

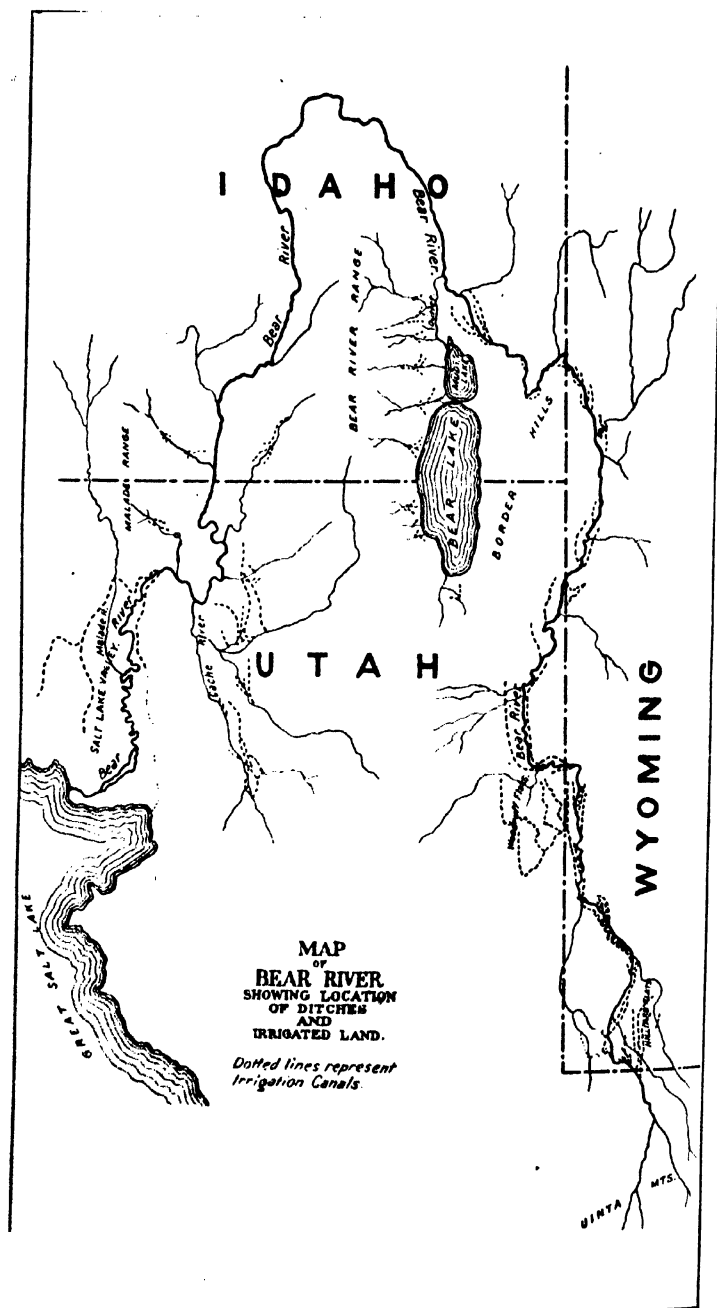
Q. Whether under State control or national control as far as the land is concerned?—A. Yes.

Now there is going to come a time, and that time is here now, when there will have to be an expenditure of public funds in order to secure certain kinds of development. There are rivers, like the Missouri, from which I do not believe it will ever pay within our lifetime to take the water, because it will cost so much that the land will not pay for it. Irrigated land and the value of irrigation improvements is measured by the value of lands in the Mississippi Valley or the value of irrigated lands under cheaper works, and you can go only just so far with private enterprise. Now, there are projects that would pay as a public work, perhaps, because in bringing land that is now worthless into a condition of productivity you create homes; you create taxable values that the public gets the benefit from, but that the private investor does not share in, and there is the argument in favor of State or national aid to certain classes of important works.

(Recess taken until the following day.)

Q. (By Mr. A. L. HARRIS.) Last evening when we took a recess you were about to take up the consideration of the Bear River country.—A. If the members of the commission will take Bulletin No. 70 and the map at the front [see next page], it will serve to illustrate the nature of some of the interstate complications. Bear River rises in Utah; the stream flows across the northern boundary of Utah into Wyoming. There is a section of it about 50 miles long in Wyoming, and then it crosses back on the western border of that State into Utah again. There is a section of 25 or 30 miles in Utah, and it crosses back into Wyoming, and then it leaves Wyoming and enters Idaho, and finally returns to the State of its source, Utah. This winding cuts that stream into five different sections, and there are ditches taken out of the stream along its entire course, and yet each one of those sections is absolutely independent of the other. Take the two sections in the State of Wyoming. The people have complied with all the requirements of the State law. They have recorded their rights; they have permits to appropriate water, and the doctrine of priority is the theory of the State; but it is impossible to enforce that doctrine of priority, because some of the last ditches to be built have their head gates just over the border in Utah and the Wyoming authorities can not go over there to close down the head gates. Consequently those people, although they have the last ditches, have practically the first right to the stream. In the same way there is no use to attempt to enforce priorities on the upper section of the stream in Wyoming in favor of earlier rights on the lower section in Wyoming, because if the water were not taken out above it would simply go into Utah and there appropriators would take it without any reference to Wyoming rights. Exactly the same thing is true in reference to the improvement of Bear Lake. There is an important storage basin that the irrigators on the lower end of the river desired to develop; but they were confronted by the fact that if they did store the water and turn it out into the stream all the ditches in Idaho would have the first chance to utilize that water supply and they would have no means, unless it was recourse to the courts, to prevent it. Now, if we had been aware of the development that was coming, we could have avoided all those complications by changing the boundary about 10 miles. So far as Wyoming and Utah were concerned, it would have thrown the whole of that stream into Utah. There are a great many instances of this kind where a very slight change of State boundaries, having them follow divides, would have entirely obviated interstate questions; but as it is now it is one of those open, unsolved problems that will in time either be settled in the courts or by State or national legislation.

Q. You desired to make some reference to the California map. Have you that at hand?—A. That was simply to illustrate. We have the map here, but I think we have gone over the points. I may, perhaps, in speaking of the extent of irrigation



and the restricted areas that are irrigated and will be irrigated, call attention to one of the California maps here that shows the relative area irrigated in the leading irrigation State of the country with the unirrigated and uncultivated portions. The purple areas there are the areas that are irrigated.

Q. (By Mr. LITCHMAN.) Appears to be a very small portion?—A. Very. That is true of every State if you compare the total.

Q. (By Mr. A. L. HARRIS.) Now, you will please take up the humid parts of the United States.—A. We have in this country been considering irrigation as a sectional matter, and it never will have the importance in the East that it has in the West. But there is every reason to believe that irrigation is to be largely employed throughout the humid portion of the United States in the growing of high-priced and special products. The work done in Connecticut, Massachusetts, and New Jersey shows that in the growing of small fruits irrigation is exceedingly profitable, and in market gardening it is now being largely utilized. The cranberry growers of Wisconsin and the farmers in the sandy pine lands of the Northwest are beginning to utilize irrigation as a means of getting crops started, of getting a sod established on those sandy lands; and there seems reason to believe that there will be quite extensive stretches of territory scattered through the humid districts where irrigation will be very largely employed. The market gardeners around our large cities in the East and the tobacco growers of Connecticut are using irrigation to some extent in the growing of fancy varieties; and in the South irrigation seems certain to have a very large usefulness. In the past 5 years more land has been brought under irrigation in southern Louisiana and southern Texas than in any single State of the the arid region within that period, and there has been more money invested. Not only that, but in its engineering features irrigation in these States is entirely distinct from that of the irrigation of the arid regions. Now, in the arid regions water is conducted by gravity. You have a rapid fall away from the mountains which carries the water through the canals and away from the streams. But in the South the streams have little or no fall. They are simply reservoirs with the water in them practically stationary. You have to pump water up into canals, and then it flows very slowly, because the country has so little fall. So canals are built there that are simply banked reservoirs. Instead of a channel cut below the surface of the ground, 2 banks are built, sometimes 200 feet apart. Now, the canal is the land between those two banks. The banks could just as well be 400 feet apart.

The width of the canal has nothing whatever to do with the cost. These long lines of embankment will be built and the water pumped up from the river into the canal. Now, turning water out at different points causes the current; it is the inclination of the water surface rather than the inclination of the land. Now, in order to reach a higher territory, they establish at convenient points other pumping stations, and raise the water up to a higher level. This method of irrigation has been extended until now the country embraced is about 200 miles in length and about 50 miles wide. It is not all irrigated now, but that is the total area in which irrigation is being extended.

The first canals were taken out of the sluggish streams that flow into the Gulf of Mexico; but when the importance or the value of the rice product became established, and lands rose in value from \$5 to \$50 and \$100 an acre, it became manifest that those streams would not supply the need of water, and the farmers began looking about for other sources of supply. They found one by putting down wells, so that the pumping stations to supply water from the rivers are being supplemented largely now by wells. Hundreds of wells are going down throughout the portion of Louisiana where rice is grown, and this year a study is being made to determine the source of that water supply. If the subsoil is simply filled with water, and it can be pumped out, it will soon be exhausted; but there is a belief that it is being replenished from the Mississippi. That was a conjecture at the time I was there, but a study is being made to ascertain if it is true. If it be true, there will be a capacity for indefinite extension of the supply by wells.

The success of rice-growing there, after the long period in which we had been continually shrinking in our rice production, has led to increased interest in rice growing along the Atlantic seaboard. For years the rice growing there, if not unprofitable, has not been sufficiently profitable to lead to any extension. In fact, there has been a constant decline. Old canals in use long before the war were going out of operation; but the industry is now being extended, and the question now is whether the Louisiana method can be adopted.

Rice cultivation in the Carolinas is largely after the methods prevailing before the war. The crop is harvested by hand—cut with the sickle and bound by hand. The reason it is so much more successful in Louisiana is the application of modern machinery. The crops there are cut with a self-binder. There have been economies brought into the field labor, and the methods of applying and distributing water are patterned after those of the West rather than those of the Carolinas. There is an economy in the distribution of water, and there is another very marked economy in

the harvesting of the crop. An industry that was not before remunerative has been made exceedingly profitable.

The southern territory is also likely to develop irrigation in the growing of forage crops. Alfalfa grows in the South. It will not grow in the middle East; it freezes out in the winter and does not seem to thrive, but it will grow and live through the winter and become a perennial in Louisiana. There seems to be quite a field for the use of irrigation in the growth of alfalfa and other forage crops in the South wherever you can get water at a sufficiently low cost.

Now, the same questions arise in the East, where development has gone far enough, that have arisen in the West. In the South the question has come up between the different canals as to who has the better right to the water supply if more water is needed than the wells will supply. In time some system of priorities will have to be established there. They will have to determine how they are going to operate under the doctrine of riparian rights. That is an unsettled question there as yet, just as it is in the West. On one of the streams last year so much water was pumped out that the river changed its direction and ran up stream for a distance of 50 miles. The current changed and ran back and salt water came in from the Gulf and ruined the usefulness of the pumps in the stations furthest downstream. Those are matters that will require adjustment. If there should be in the East any considerable demand on the streams, the right to take water from Eastern streams will be called in question; so that the economic and legal phases of irrigation have already ceased to be sectional.

Now, there is a very large district reaching from the Gulf of Mexico to the Canadian border, embracing western Texas, western Kansas, western Nebraska, and the western Dakotas, which were first settled up in their humid parts. They were settled up quite sufficiently in the western arid or semiarid parts to render irrigation problems important. They are in some respects among the best parts of the arid region, because ditches there can be built at small cost. It is a country well adapted to the distribution of water, and only a comparatively small amount of water is required to supplement the rainfall. As you go farther West, if you have only 10 inches of rainfall and of increased evaporation, you must supply more moisture by irrigation than where you have 20 inches of rainfall and less evaporation; so a given amount of water will irrigate more acres there than farther West.

In this central region we have two questions. In the Dakotas it is very expensive to bring water from the Missouri River, and in Nebraska we have the uncertainty at the present time regarding the State law. Nebraska is comparatively well supplied with water. The North Platte is a stream that can not be utilized to any great extent in the west. The Loupe is a good stream; and they have in these two rivers an opportunity for a very large development. As you go south of that the difficulty in Kansas is the question as to the extent of the underflow and whether it is practicable to get some means of pumping it up.

When you go south into Texas you have still a different question. In southern Texas there is a considerable territory that can be irrigated from springs and wells, and also all the way through Arizona and New Mexico.

A great many streams are torrential in character, carrying an immense flow of water and then running down to nothing. You must store these streams in order to make much use of their waters, and the problem of storage is a complicated one. It involves the question of the sediment in these Southern streams—the silt. It is disastrous to build a reservoir in the channel of a river, and, when you have a large investment in houses and people settled there, to have it fill up and necessitate these settlers moving out. It is simply a waste of energy and a waste of money. That is a question that the Department of Agriculture is studying, and arrangements have been made with the agricultural college of Texas to gather samples from these streams and see what would be the probable result of letting the mud they carry deposit on the soil.

Q. Does evaporation go on so rapidly in some portions of the country that it would leave the reservoir salty?—A. The total evaporation from the water surface in the West ranges from 3 to 6 inches per month. Where the waters of the river itself are heavily charged with alkaline salts this evaporation will so concentrate them as to make it injurious; but there are very few instances of that kind. The only one that I know of personally is the Pecos River, and I think that action only occurred in one season. I do not think that would be a very important question. The streams carry so little alkali in the portion of the country where the water is stored that the accumulation would not amount to much. Then the water is discharged every year and there is no cumulative action. It is only the concentration that would take place in a single season.

(Testimony closed.)

EXHIBIT A.

Water right.

FRESNO CANAL AND IRRIGATION COMPANY.

[Incorporated February 16, 1871.]

FRESNO, FRESNO COUNTY, CAL.

This agreement, made the — day of —, 19—, between the Fresno Canal and Irrigation Company, the party of the first part, and —, the part— of the second part, witnesseth:

That for and in consideration of the sum of — dollars, gold coin of the United States, paid to the party of the first part by the part— of the second part, the receipt whereof is hereby acknowledged, and of the covenants and agreements herein contained, the party of the first part agrees to furnish to the part— of the second part, from the main canal of the party of the first part, or from a branch thereof, all the water that may be required, not exceeding at any time — cubic — per second, for the purpose of irrigating the —, in Township No. — south, range No. — east of Mount Diablo meridian, from the — day of —, 19—, until the 16th day of February, 1921, and during the existence of said corporation.

The party of the first part agrees to place a suitable box or gate in the bank of said main canal, or a branch thereof, at the most convenient point for the conveyance of the water to said land, as soon as the ditch to be constructed by the part— of the second part shall be commenced.

The part— of the second part will construct a ditch from said box or gate to said land at — own risk, cost, and expense; and it is covenanted and agreed that the ditch so constructed may be a branch ditch of said company, and he under the control thereof, at its option, and that said company shall have the right to use and enlarge said ditch, provided such use will not interfere with the flow of water to said land; and the part— of the second part hereby grant — to the party of the first part the right of way to convey water through any of — lands situated in said township to contiguous land.

The part— of the second part covenant— and agree— that — will not use or permit the water to be used on any other land except the land above described, or permit the water to run off on any contiguous land, or permit the water to spread out in low places on such land, or in any way to run to waste, and — will construct ditches to convey the surplus water, if any there be, back into the canal of said company, or a branch thereof.

It is understood and agreed that the water to be furnished under this agreement is intended to form a part of the appurtenances to said land, and the right thereto shall be transferable only with and run with said land, and that the party of the first part is bound by this instrument to all subsequent owners of said land, but to no other person.

The part— of the second part, for —, — heirs, and assigns, covenant— and agree— that — and — successors in interest and estate in said land will pay annually to the party of the first part, at its office, in gold coin of the United States, on the first Monday in September, in each year, until the year 1920, and during the existence of said corporation, the sum of — dollars (\$—), and this instrument shall be deemed equivalent to a notice and demand on the day the same becomes due, by the terms hereof, and in case of default of such payment in any one year for the space of 30 days after it shall become due, this agreement shall terminate, and become thenceforth null and void and of no effect, at the option of the party of the first part, its successors, or assigns. And said part— of the second part covenant—, for —, — heirs, and assigns, that — will pay all legal expenses, including a reasonable attorney's fee, necessarily incurred by said party of the first part in the collection of said annual payment.

And it is further covenanted that the party of the first part may shut off the water any fall, for purposes of general or special repairs of its canals, bulkheads, or gates, and at such other times as urgent necessity may require; but shall restore the water in said canals as speedily as the nature of the case will permit.

It is covenanted and agreed by the parties hereto that the party of the first part shall not be responsible for deficiency of water caused by drought, insufficient water in the river, hostile diversion or obstruction, forcible entry, temporary damage by flood, or other accident; but that the party of the first part shall use and employ all due diligence, at all times, in restoring and protecting the flow of water in its canals and ditches.

It is understood and agreed that the party of the first part may sell 1,000 water rights of 1 cubic foot each, and if at any time the aggregate quantity of water in the

canals of said company shall fall short of 1,000 cubic feet flowing per second then each water right shall represent the one-thousandth part of said aggregate quantity, and the part— of the second part shall be entitled to receive water in that proportion.

It is covenanted that this agreement and the covenants therein contained on the part of the part— of the second part run with and bind the land.

It is covenanted that any violation of this agreement by the part— of the second part, or — assigns, shall render this agreement null and void, and of no effect, at the option of the party of the first part, its successors, or assigns.

In witness whereof the parties hereto have hereunto interchangeably set their hands and seals, the day and year first in this agreement written.

Executed in duplicate.

[SEAL.]
[SEAL.]

THE FRESNO CANAL AND IRRIGATION CO.,
By ———, *President.*

THE FRESNO CANAL AND IRRIGATION CO.,
By ———, *Secretary.*

EXHIBIT B.

Agreement for water right in the Larimer County ditch.

I. This agreement made this — day of —, in the year 188—, between the Larimer County Ditch Company, a corporation existing under the laws of Colorado, as the first party, and —, of the county of — and State of —, as the second party, witnesseth:

II. That in consideration of the stipulations herein contained, and the payments to be made as hereinafter specified, the first party hereby agrees to sell unto the second party — water right— to the use of water flowing through the ditch of said company, each water right representing one six-hundredth part of the capacity of said ditch (less an amount from such total capacity sufficient to water 80 acres), subject to the terms and conditions herein specified, to which the said second party, — heirs or assigns, hereby expressly agree.

III. Said company agrees to continue said ditch on a suitable grade to a point not less than 6 miles, on the line of said ditch, after crossing Box Elder Creek, having a width on the bottom of not less than 10 feet, and a depth of not less than 4 feet from bottom to top of lower bank, such extension to be completed on or before May 15, 1883.

IV. Said company agrees to incur all the expense of building said ditch and extension, of the dimensions hereinbefore specified, without any assessment on purchasers of water rights for such purpose.

V. Said company will enlarge said ditch and its extension when it shall deem expedient.

VI. Said company agrees to furnish said water to the second party, — heirs or assigns, continuously during the irrigating season, except as hereinafter provided, and at no other time.

VII. Said water shall be used only for domestic purposes, and to irrigate the following described tract of land, and none other, to wit:

VIII. Under no circumstances shall said water or any portion thereof be used for mining, milling, or mechanical power, or for any purpose not directly connected with or incidental to the purposes first herein mentioned.

IX. Said second party, — heirs or assigns, shall not permit said water, or any portion thereof, furnished as aforesaid, to run to waste, but as soon as a sufficient quantity shall have been used for the purpose herein allowed and contracted for, the second party, — heirs or assigns, shall shut off said water, and keep the same shut and turned off until the same shall be again needed for the purposes aforesaid; but in no case shall the amount of said water, taken or received by the second party, — heirs or assigns, exceed the quantity hereby sold.

X. Said company shall deliver said water at such point along the line of the said ditch, or from any of its reservoirs, either or all, as it may determine from time to time to be the most practicable, and all head gates, and the manner of withdrawing and regulating the supply of water from said company's ditch and reservoirs, shall be prescribed by said company, and shall at all times be under its control as determined and directed by the board of trustees of said company.

XI. The head gate or gates through which the water hereby sold shall be drawn off shall be made and placed by said company, and the cost thereof, and for keeping the same in repair, shall be paid for by the said second party, and be collected and enforced in the same manner as prescribed for collecting and enforcing assessments.

XII. Said company agrees to keep and maintain said ditch and any and all of its reservoirs in good order and condition, and in case of accident to the same to repair the injury occasioned by said accident as soon as practicable and expedient; and the company shall have a right to assess for said maintenance, and the cost of enlarging said ditch, and enlarging any and all reservoirs, either owned or operated by it, and repairing, maintaining, and superintending the same, a sum equal to one six-hundredth part per water right sold of such cost, per annum, and the amount, manner of collection, and time of payment of said assessments shall be determined by said company according to its judgment and discretion; and the company also reserves to itself the right to establish and enforce such rules and regulations, and to provide and declare such penalties and forfeitures as it may deem necessary or expedient for the purpose of enforcing and collecting said assessment, or any part thereof.

XIII. When said company shall have sold, and have outstanding and in force, 600 water rights, of a size and amount each as specified herein (or sooner, at the option of the company), it will then issue and deliver to the holder of each water right, who shall have complied with the terms and conditions of this contract, without further consideration, one share of the stock of said company and also one share of the stock of the Larimer County Reservoir Company for every water right hereby sold, which the second party, — heirs or assigns, hereby agree to accept.

XIV. Said company shall have the right to distribute such water as may flow through said ditch (less said amount sufficient to irrigate 80 acres) to the holders of such water rights, pro rata, and for the purpose of so doing may establish and enforce such rules and regulations as it may deem necessary or expedient.

XV. And the second party for ——— and ——— heirs and assigns agree, in consideration aforesaid, to waive, and hereby does waive any claim for loss or damage by reason of any leakage or overflow of said ditch, or any of its reservoirs, lakes, or laterals, either upon the land aforesaid or any other tract belonging to said second party or ——— assigns, anything in any statute, law, or custom to the contrary notwithstanding.

XVI. In consideration whereof the second party agrees to pay unto the first party the sum of ——— dollars, with interest, payable annually, at the rate of 12 per cent per annum, at the office of the first party in Fort Collins, Colo., in ——— payments, at the times and in the manner following, that is to say:

	Day.	Month.	Year.	Principal.	Interest.	Amount.	Remarks.
First payment.....							
Second payment.....							
Third payment.....							
Fourth payment.....							
Fifth payment.....							

And the second party, in consideration of the premises, hereby agrees that — will make punctual payment of the above sums as each of the same, respectively, becomes due, and that — will regularly and seasonably pay all assessments that may hereafter be imposed by said company for the purposes aforesaid.

XVII. And it is hereby agreed and covenanted by the parties hereto that time and punctuality are material and essential ingredients to this contract. And in case the second party shall fail to make the payments aforesaid, and each of them punctually, and upon the strict terms and times above limited, and likewise to observe, perform, and complete all and each of said agreements and stipulations aforesaid, strictly and literally, without any failure or default, then this contract, so far as it may bind said first party, shall become utterly null and void, and all rights and interests hereby created or then existing in favor of the second party, or derived from —, shall utterly cease and determine, and all equitable and legal interest in the water right hereby contracted to be conveyed shall revert to and revert in said first party, without any declaration of forfeiture, or any other act of said first party to be performed, and without any right of said second party of reclamation or compensation for moneys paid or services performed, as absolutely, fully, and perfectly as if this contract had never been made. And it is further stipulated that no assignment of the premises shall be valid unless the same shall be indorsed hereon, and that no agreements or conditions or relations between the second party and — assignee, or any other person acquiring title or interest from or through — shall preclude the

first party from the right to convey the premises to the second party, or — assigns, on the surrender of this agreement and the payment of the unpaid portion of the purchase money which may be due the first party.

XVIII. It is further expressly understood and agreed between the parties hereto that neither this contract nor any of its terms, conditions, or provisions shall be in any manner supplemented, altered, or changed from what has been provided, or any other or further contract be made respecting the subject-matter of this contract, except that it be indorsed hereon in writing, signed by the president and attested by the secretary, under the corporate seal of said company.

XIX. It is also stipulated and agreed that from and after the execution hereof the said second party may enter into the use and enjoyment of the water flowing through said ditch to the extent of the right above contracted to be conveyed, as fully as though a final certificate for said right had been issued, but subject, nevertheless, to all the terms and conditions above set forth.

XX. In witness whereof the Larimer County Ditch Company has caused its corporate name to be hereunto subscribed by its president, and its corporate seal to be hereunto affixed by its secretary, as well as to a duplicate hereof, and the second party — subscribed — name— and affixed — seal— hereto, as well as to a duplicate hereof, the day and year first above written.

By _____,
 _____, *President*.
 _____, [SEAL.]
 _____, [SEAL.]

Attested by—
 _____, *Secretary*.

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